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**'RESEARCHERS AS AGENTS OF CHANGE'**

# **SPARC 2016 Book of Abstracts**

Salford Postgraduate Annual Research Conference

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## SPARC 2016 Book of Abstracts



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## Preface

Welcome to the Book of Abstracts for the 2016 SPARC conference. With contributions from over 130 presenters, these abstracts provide a taster of the research strengths of Salford's postgraduate community, and provide delegates with a reference point for networking and initiating critical debate. With such wide ranging topics being showcased, we encourage you to exploit this great opportunity to engage with researchers working in different subject areas to your own. Increasingly, research funders are investing in interdisciplinary projects therefore engaging with the work of others and forging collaborations across subject areas is an essential skill for the next generation of researchers.

SPARC is part of a programme of personal and professional development opportunities offered to all postgraduate researchers at Salford. More details about this programme are available on our website [www.pg.salford.ac.uk](http://www.pg.salford.ac.uk). You can also follow us at @SalfordPGRs.

This year we also welcome taught students from our undergraduate and master's programmes as audience members. We hope you enjoy the presentations on offer and that they inspire you to pursue your own research career. If you would like more information about studying for a PhD here at the University of Salford the PGR Director for your School will be happy to advise; their details can be found at <http://www.pg.salford.ac.uk/contact>.

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## **Health and Wellbeing: Patient Experience**

### **The impact of social media based communities of practice on new mothers and midwives: Facemums**

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#### **Abstract**

Pregnant women are motivated to make positive, previously unconsidered, life style choices (Olson, 2005) and there is evidence of changed health behaviours in response to advice during pregnancy (Crozier, 2009). Therefore using this time to influence their long-term health behaviours could be beneficial. Women seek information and support during pregnancy from several sources, but the quality and accuracy of un-validated shared information can result in misconceptions, poor decision making and increased anxiety. A Community of Practice (CoP) is a social structure of a group of people who share an interest and information, and in which situated learning takes place. This study uses online social media to develop moderated groups for pregnant women to provide information and support.

This qualitative study uses an action research approach to explore the impact of peer and professional social media based interactions on the situated learning of individual women, and examines whether a CoP can be developed and used as an effective framework for learning. CoPs have not previously been used or evaluated as a context for learning in individual healthcare service users and as such this study will provide new knowledge and understanding as to whether online CoP's could be adopted as a new model of support within midwifery. The presentation focuses the importance of building trusting relationships online, and community members interacting socially to create the social glue which allows for opportunistic delivery of health information. CoP characteristics are emerging from both groups and the Facemums community is described as... 'my go to community for mummy stuff.' (FacemumCentral1, 2016)

#### **Keywords**

Motherhood, Community of practice, Social learning, Social media, Health Information

# Lived experiences of Chronic Kidney Disease patients receiving Haemodialysis in Nigeria: A Case study of UNTH Enugu

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## **Abstract**

**Background/aim:** The paper reports the initial findings to date of a longitudinal study to gain a deeper understanding of the wider economic, cultural, family and societal challenges faced by people managing chronic kidney disease (CKD) and accessing haemodialysis (HD) in Nigeria; to better understand why some people do not attend for treatment.

**Methods:** The research adopts a longitudinal qualitative exploratory approach, capturing the experiences of a cohort of CKD patients. 17 participants (5 female; 12 male) who met the inclusion criteria were recruited from a government-owned renal facility in Nigeria. Primary data is gathered through three waves of longitudinal interviews (months 1, 4, and 7). Interviews last between 1-2 hours and are digitally recorded, spoken in the native language. Thematic analysis maps over time patient barriers, influences, challenges, priorities, cultural, physical and economic impact of dialysis treatment on their individual.

**Findings:** Wave one interviews identified that most participants reported difficulty in accessing dialysis treatment due to financial challenges, pressure from family members, long waiting hours and distance to dialysis facility. Surprisingly, most of them reported lack of adequate patient education on nutrition and lifestyle and poor attention from nurses in government-owned renal facilities. Overall, the following themes have been identified: suffering, fear of death, uncertainty, and ignorance/lack of awareness.

**Contribution of the study:** Findings from the study will help in the articulation of patient experience and barriers to accessing dialysis treatment with the view to influence government policy and improve access to healthcare for renal patients in the country.

## **Keywords**

Haemodialysis, experiences, access, barriers, Nigeria

# Adaptation of Gait in Stroke Survivors

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## **Abstract**

Stroke survivors have difficulty adjusting foot-placement to step over obstacles or step medially and impairments are worse under time pressure. The extent to which online step length adjustments can be made in healthy young and older adults and stroke survivors is not known.

AIM: To compare the control of reactive and planned anterior-posterior and mediolateral stepping adjustments in healthy young and older adults to stroke survivors. Participants stepped to targets projected on a force-instrumented treadmill (CMill) while walking at comfortable speed. Targets were either visible two steps ahead (planned) or at late stance of the aiming foot (reactive). Targets (8cm deep x 40cm wide) were placed to elicit lengthening or shortening of steps ( $\pm 25\%$  of baseline step lengths) and narrowing (20cm deep x 15cm wide on the midline of the treadmill). For all healthy participants errors in stepping were small (mean 9cm SD $\pm 5$ ) but higher in reactive step adjustments than planned (mean 10cm SD $\pm 4$ ). Healthy young and older adults had greater error when lengthening steps than shortening. Stroke survivors had most misses narrowing steps than shortening or lengthening in both planned and reactive tasks.

CONCLUSIONS: Stroke survivors have greatest difficulty adjusting steps to narrow their base of support (especially reactively). This indicates walking assessments including reactive stepping ability (especially medially) may be useful in identifying stroke survivors who have balance impairments, which may influence their ability to adjust steps in response to the environment.

## **Keywords**

Adaptability, gait, stroke, falls, reactive

# What makes myoelectric prostheses difficult to control?

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## **Abstract**

Upper limb myoelectric prostheses are designed to replace segments of the arm that are absent due to illness, trauma or congenital deformity. They are controlled using electrical impulses generated when the muscles of the affected forearm contract. Research has shown that some users find these devices difficult to control reducing prosthesis usage and increasing injuries to the contralateral intact arm through overuse.

Most commonly, prostheses are controlled using an open-loop approach with respect to the user, meaning the user is reliant on visual feedback as to the state of their hand (open/closed). Whilst substantial progress has been made in the development of biofeedback, enabling users to 'feel', laboratory-based studies suggest that factors such as improving response predictability and reducing delays, may be as, if not more, important.

A protocol has been developed to assess each aspect of the control chain and establish the relative contributions to overall functionality. If the key aspect(s) can be identified, then it should be possible to enhance user training and/or make future prostheses easier to control for improved functionality.

Here we present a novel assessment protocol that allows for assessment of skill in generating muscle signals, unpredictability of response introduced by poor electrode contact with the skin, and electromechanical delays within the prosthesis itself. Aspects of prosthesis functionality include the duration of task performance, movement quality, gaze behaviour and everyday prosthesis use.

Corresponding equipment has largely been designed by the researcher, and the assessment protocol is currently undergoing piloting before assessment of prosthesis users begins.

## **Keywords**

Control, Functionality, Myoelectric, Prostheses, Trans-radial

# What is the role of muscle inhibition in patients with patellofemoral pain?

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## **Abstract**

Patellofemoral pain (PFP) is a frequent overuse injury, which is particularly common in young physically active individuals. Although it is the most frequently diagnosed condition in patients with knee complaints, studies revealed that one third of individuals with PFP suffer from persistent complaints. This indicates that current treatments fail to prevent the chronicity of symptoms, leading to the question if the underlying mechanisms of PFP are understood sufficiently.

A systematic review has been carried out showing that current research agrees that patients with PFP have a substantial weakness of their quadriceps muscle. Muscular inhibition (MI) is an important underlying mechanism of weakness. MI is induced by an inhibitory signal, which is sent by the central nervous system to the muscle resulting in an involuntary inability to recruit all necessary motor units. The treatment approach of an inhibited or weak muscle are entirely different and studies reveal that MI needs to be eliminated before improvements in muscle strength can be achieved. However, to date MI remains understudied in patients with patellofemoral pain.

Thus, this study aims to investigate MI and to explore the influence of MI on functional performance and the direct link to pain in patients with and without patellofemoral pain. Therefore an integrated test battery of posture analysis, muscle flexibility tests, strength and MI testing, 3D movement analysis and surface electromyography has been developed and will be presented at the SPARC conference.

## **Keywords**

Arthrogenic muscle inhibition, muscle strength, muscle dysfunction, patellofemoral pain, anterior knee pain

# A generalizable method for the assessment of static stability of walking aid users

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## **Abstract**

To assist balance and mobility, older adults are often prescribed walking aids. Nevertheless, their use has been associated with increased falls-risk, although the reasons for this are, to date, entirely unknown. This problem may be addressed through an improved understanding of what exactly constitutes stable walking aid use. To this end, we present a generalizable method for the assessment of static stability of walking aid users. Given that there are more walking frame (WF) users than users of crutches [1] and since seven times as many injuries are associated with WF compared with walking sticks [2], we focus our research upon WF. Our method, for the first time, considers user and device as a combined system. Thus, we define the combined centre of pressure (CoPcombined) of user and WF to be the position through which the resultant load of the frame and anatomical feet acts and the combined base of support (BoScombined) to be the polygon connecting each of the anatomical and/or frame feet in contact with the ground. Our corresponding technology includes a WF instrumented with a load cell in each foot, force-sensing insoles, a camera system, and custom-written software able to determine the stability margin of the combined system, defined as the distance between the CoPcombined and the nearest edge of the BoScombined. In addition, our software informs on device dependency in terms of body weight support and timings of user and device movements. Our pilot work showed feasibility for our approach in both, laboratory and home environments.

## **Keywords**

Stability margin, pick-up walker, real-world monitoring, walking aids, biomechanics

## **References**

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## **Accounting and Finance**

### **A study of the Factors influencing the adoption of management accounting innovations in less developed countries: The case of Libya**

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#### **Abstract**

The study investigates factors that influencing the adoption of management accounting innovation (MAIs) in Libya. In particular, in manufacturing and non-manufacturing sectors whether they are state-owned, private, or joint-venture with foreign companies.

Mixed Methods research was adopted as a study's methodology, where quantitative approach is dominant and qualitative approach is used to complement findings. The study framework is mainly based on a combination of Old Institutional Economics theory (OIE) and New Institutional Sociology (NIS). OIE employed to measure the role of internal factors in adopting MAIs among the organization (demand side), while NIS adopted to explore the environmental role in the adoption process (supply side).

Data were collected by using two data collection instruments, questionnaire and interview. 250 questionnaire were distributed by hand, 121 questionnaire were returned and 103 questionnaires are considered to be usable representing a response rate of 41.2 %, where 18 questionnaires were eliminated because of their invalidity. On the other hand, 10 semi-structured interviews were conducted in order to obtain in-depth information related to MAIs in Libya.

The primary descriptive analysis of the questionnaires indicated that the adoption rate of traditional MAPs in use in Libya is in consistence with the previous studies that conducted in Libya. However, the adoption rate is lower than other developed and developing countries.

With regard to the adoption rate of MAIs, findings showed that it is higher than previous studies conducted in Libya.

Also, the factors that facilitate and impede the adoption of MAIs were investigated and ranked.

#### **Keywords**

Management accounting innovations, management accounting practices, adoption rate



# Management Accounting System change; institutional perspectives from Nigeria

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## **Abstract**

Institutional theory has been used as a theoretical lens in many studies of change in accounting systems. This study explores the process of Management Accounting System (MAS) change experienced by a family owned bank while transforming to a financial services group during the period 1979 to 2013. The study examines possible influences of internal and external factors in shaping the overall process of MAS change and how MAS change is transmitted within the group and its subsidiaries.

The study relies on a single case study organisation with multiple units of analysis and data obtained from multiple sources (using semi-structured interviews, observation and documentary analysis) to explore MAS change process in the case study organisation. The research's theoretical framework adopts theoretical triangulation and is designed to extend the present application of institutional theory to include the role of external and internal institutions, power blocks, and family interests in influencing, designing, implementing or resisting MAS change processes within the case study organisation.

By extending current knowledge of institutional factors and how they affect the process of MAS change to a varied context as family businesses operating in an emerging market economy, the study provides evidence of how change evolves under varied influences of institutional factors and how actors reshape change initiatives. Similarly, the study provides additional insight on how MAS change initiatives are transferred between subsidiary organisations and the group as well as a direct transfer between subsidiary organisations in emerging economies.

## **Keywords**

Management accounting change, Management accounting systems, institutional theory, emerging markets, family business

# Proposing an Engineering Geologic Mapping Based Costing Prototype: Towards a Change from Traditional Highway Costing Practices

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## **Abstract**

The conceptual phase of cost estimation determines the fate of new transportation projects. This is against the backdrop of the high level of inaccuracy evident at this point of ill project definition and paucity of data. A wide range of innovative state-of-the-art analytical approaches have thus been proposed to improve the accuracy of conceptual estimates, by developing deterministic or probabilistic predictive models.

The literature however provides evidence that highway agencies rarely deploy these available analytical estimating models in preliminary costing of projects, but rely on the extrapolation of the cost of future projects from historical data, with subjective adjustment made for typical factors such as ground conditions. The criticism of analytical techniques as evident in the literature, stem primarily from their complexity, high level of sophistication and time consuming nature. This trend in practice is rooted in the logic that an accurate estimate is of little use if it is not finished when required.

To achieve a balance between the trade-off between the required effort to prepare the estimate and the accuracy of the estimate, this study proposes the development of a costing prototype using engineering geological mapping which is a direct reflection of geotechnical input at the conceptual cost estimation phase of highway projects. Geotechnical definition of pavement cost would in essence constitute a Cost Estimating Relationship (CER) as a sensitivity function of structural designs in response to changing subsoil profile, within the more traditional methodology used by highway agencies in generating more accurate conceptual estimates.

## **Keywords**

Conceptual Cost, Estimating, Highway Projects: Costing Prototype, Ground Conditions

# How to Capture Risk in Financial Markets

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## **Abstract**

The repercussion of the recent global financial crisis has highlighted the importance of the interdependent nature of financial markets and the level of risk encompassed in such phenomena. This research explores the interactions between financial markets, macroprudential policy and the business cycle. Using econometrics models, the study will empirically address the distinction between assets returns and volatility spill-overs ('contagion or interdependence'); the spill-over of externalities arising in financial intermediation across financial institutions and between financial sectors; and the interaction between institutional frameworks and political, social and monetary contexts and how this could affect linkages within the financial and business cycle.

## **Keywords**

Global financial crisis, Interdependence, Contagion, Returns volatility, Volatility Spill-overs

# Investigating applicability of gold as a proxy of risk free rate in asset pricing

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## **Abstract**

Considering the downgrade of the credit rating of treasury securities in the US after financial crisis, treasury bills may not be regarded as risk free asset. This paper investigates the applicability of using return on gold as a proxy of risk free rate in asset pricing models to predict market boom or crisis. This research is an application of Barro and Misra (2015) findings in asset pricing, who report that return on treasury bills is close to return on gold from 1836 to 2011 in the US. We test CAPM with return on treasury bills and gold by using Jensen, Black, and Scholes (1972) and Fama and MacBeth (1973) methodology from 1999 to 2013 in the US and UK stock markets. The results indicate that G-CAPM outperforms standard CAPM in the US market in estimating stock returns before and after financial crisis. In the UK market, however, G-CAPM accurately estimates stock returns before and during financial crisis but its empirical performance decline after financial recovery. We also further investigate findings of Wang, Wei, and Wu (2011) that long term fluctuations of gold market are consistent in developed markets through using gold in Arbitrage Pricing Theory and forecasting simulation models. Findings prove that gold can be used to obtain better forecast of stock returns. GARCH and VECM models are implemented to support findings. Results suggest that gold can be used in asset pricing to predict financial crisis in the US and UK market.

## **Keywords**

Asset Pricing, CAPM, Gold, APT, Financial crisis

# **An Analysis of the effect of IFRS adoption in Nigeria on the Quality of Published Financial Information**

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## **Abstract**

The main objective of the study is to examine the effects of the adoption of International Financial Reporting Standards (IFRS) on the quality of published financial statements in Nigeria. The study used data gathered from all 134 non-financial firms, of the total of 191 firms, quoted on the Nigerian Stock Exchange as at 2015. Content analysis was used to determine the level of compliance of the firms with IFRS. The study modified the Müller (2014) model to determine whether the adoption of IFRS has increased the value relevance of accounting information in the sampled firms. The Müller (2014) model is an econometric model which measures the degree of relation between the accounting information supplied in financial statement and the share price of firms. The model is used for pre-IFRS data (2007-2011) and the post-IFRS data (2012-2016) separately to ascertain whether there is a difference in the effect of accounting numbers on share prices of sampled firms. Researcher expects that accounting information should be more value relevant in the post-IFRS period (2012-2016) than in the pre-IFRS period. The regression models are applied in order to analyse the content analysis, also the adjusted R-square will be computed and used to measure incremental value relevance. At last, in order to measure the quality of financial information published under IFRS, researcher measures the level of earnings management using the modified Jones Model.

## **Keywords**

IFRS, accounting information, value relevant, accounting data

## Interactive installation and performance

### **Symbiosis: Persistent Interactions Between Art Forms and Practitioners**

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#### **Abstract**

This research aims to explore the properties emerging from interdisciplinary artistic collaboration, and invent a set of methods by which practitioners of different art forms can jointly develop live performance works involving sound and motion. The research is founded on identifying collaborative practices as fusions rather than juxtaposition of disciplines, followed by the development of interdependent systems of interaction facilitated through the use of music and gestural technologies. Overarching concept for the collaborative practice is the biological phenomenon of symbiosis, describing the close and persistent interactions between organisms of different species, with manifestations of such interactions ranging from mutualistic to parasitic type relationships. A similar spectrum is utilised when approaching the interaction between artists of different disciplines and the principle elements of their respective practices by determining which of the interacting parties, or symbionts, are harmed or benefited as a result of their role within the relationship. Much of this work is based on a balance between research and practice, with the theoretical frame drawing on the totality of the interdisciplinary artworks created through Richard Wagner's notion of gesamtkunstwerk and the collaborative nature of the Fluxus movement, and a phenomenological approach in analyzing collaborative and interdisciplinary practices of artists such as Marco Donnarumma and Stratofyzika. The developed methodologies are then used to swiftly produce live works with actors, dancers, performance artists, and instrumentalists, followed by presentations at diverse events such as new music concerts, physical performances, and gallery installations.

#### **Keywords**

Interdisciplinarity, collaboration, sound, motion, symbiosis

# Pop-up Research Unit (PUPRU) – Interaction installation

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## **Abstract**

The Pop-up Research Unit (PUPRU) is a bespoke robust mobile display space intended for regular ad-hoc installation. It can pop-up in a range of public spaces including the high street, inside shopping malls, in the foyer of business premises, and at education institutions (primary schools, high schools, universities etc.)

The digital revolution has significantly impacted business. The Unit provides Salford Business School and particularly members of the Centre for Digital Business with a creative platform to support research projects. Some of the research areas could be 4G Retailing, Digital Marketing and Digital High Street, with a focus on business exploitation, implementation and integration of a range of digital technologies, tools and methods.

There are a number of things you can see and engage with in our PUPRU:

- 3D scanners
- 3D printers
- Beacons
- Camera
- Tablets
- Raspberry Pi

Through these technologies, the Unit will enable the data capture in relation to, for example, social media, digital marketing, retailing practice, personal digital footprint and e-supply chain, and keep pace with consumers in terms of:

- Big data and personalisation: e.g. tracking digital interactions and use data about people, their preferences and behaviours to better meet customer's needs.
- In-store experiences: e.g. sending personalised notification to each shopper's mobile through beacon technologies
- New marketing technologies: e.g. using 3D scanner and 3D printer to produce rapid and unique prototypes.

PuPru can be set up in the MediaCityUK foyer as a demonstration to show the range of technologies and start conversations with PG students and staff with regard to potential collaborations. In addition, we intend to give a demonstration of our FootyFit.co.uk project, encouraging people to install and try the app and give us their feedback. This may also include a competition on the day to see who can clock up the most steps during the duration of SPARC.

## **Keywords**

3D scanner, beacons, Big Data, installation, prototypes, digital fitness

## **Organisations and Management**

### **Professional Voluntarism and Impact: The Critical Role of Leadership and Human Resource Management**

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#### **Abstract**

The field of international voluntarism is expansive, growing, diverse and, indeed, complex. It concerns wide range of mobilities and contexts. This paper considers highly skilled and internationally mobile professional volunteers operating in low income settings. The research this paper draws on is embedded in the principle of ‘co-presence’. With its origin in research on highly skilled migration (Williams and Balatz, 2008), the principle of co-presence, in its simplest terms, refers to working together to share knowledge and ideas (Ackers, 2013). It acknowledges that different types of knowledge and skills can move between different individuals and institutions, and in multiple directions (skills transfer is not a one-way process). Much of co-presence is centred on ‘impact’, and yet we know very little about the impact of voluntarism for various stakeholders. In particular, host experiences in low income settings remain largely unexplored. Drawing on participant observations and semi-structured interviews on the experiences of Uganda health workers engaging with professional volunteers, the paper has identified the critical role of ‘Leadership’ in supporting or hindering knowledge exchange processes. By recognising the importance of ‘Human Resource Management’ to successful knowledge exchange, the paper raises important questions for international development interventions focused on the provision of professional volunteers in capacity building in low income settings.

#### **Keywords**

Voluntarism, Co-presence, Impact, Leadership, Human Resources Management

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# **A Qualitative Study on the Implications of Social and Knowledge Capital on Innovation: Multiple Cases of UK Digital Marketing Agencies**

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## **Abstract**

The concept of social, structural and knowledge capital has been extensively studied in recent years and their contribution to innovation has been evidenced. Whilst research in service innovation has been increasingly undertaken, very few studies have examined this particular contribution within a service context. This qualitative research aims to explore the implications of social, structural and knowledge capital on innovation adoption in UK digital marketing agencies. A multiple case study approach is used to enable comparison; different sized agencies are selected to provide maximum diversity between cases. Findings will be used to develop a model intended to strengthen innovation activities within agencies.

## **Keywords**

Services, innovation, social capital, knowledge, structural capital

# Maximising the potential of built environment knowledge workers: An exploration of the effectiveness of coaching interventions for graduates and early to mid-career practitioners in an evolving and challenging workplace

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## **Abstract**

The knowledge based worker will be central to the success of organisations, economies and society, as we move beyond the information age into a conceptual age. A capability to envision future scenarios will be required, taking account of past and future complexities in considering how these may impact on built environment professionals. A need will exist for the knowledge worker to secure and continually adapt skills, whilst also developing creative modes of thinking. As a consequence, capacity and expertise will be required to motivate individuals, flowing from a need to maximise the value of human talent. Significantly, knowledge workers will continue to seek fulfilment, within competitive, ever changing and challenging markets for individuals and firms, in search for meaningful contributions, which reinforces the research need. This issue is one which affects the lives of individuals, the performance of firms, economies and society as a whole, with the solutions having the potential to make positive impacts. Questions have been posed regarding the extent that individuals and companies are prepared for such change and it is contended coaching interventions may form part of a response. The particular problem under consideration concerns how surveying practitioners in such circumstances can reach their full potential and deal with associated career challenge. This research will make use of case studies to examine the implications for the early career quantity surveying practitioner and consider potential influences of coaching interventions, at key stages, in a field of study presently recognised to be ripe for solid evidential research. The paper will focus on the career challenge of future working environments in the construction sector, over the next 10 to 20 years and consider potential coaching interventions as a central feature to promote critical thought.

## **Keywords**

Futures, motivation, careers, coaching theory

# Branding universities: an exploration of internal branding in the Higher Education context

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## Abstract

Increasing competition in the Higher Education market and diminishing government funding have driven universities toward the need to define and develop their brands. However, brand management in Higher Education is a complex concept due to the complex nature of the Institutions themselves, representing a challenge that goes beyond the traditional branding activities (Kapferer, 2001). The development of a strong university brand requires commitment of employees and alignment of their values to the institutional ones (Whisman, 2009; Hemsley-Brown and Goonawardana, 2007). Internal branding is important for organisations to promote the brand to employees with the aim of developing a correspondence between internal and external brand messages and thereby facilitating the transformation of brand promises into reality. But existing research in the context of Higher Education is limited, and has identified some difficulties as well as resistance in the application of internal branding strategies (Naidoo et al., 2014; Chapleo, 2007), possibly due to the fact that employees, rather than management, play an important role in developing and delivering the brand, representing the touching point between universities and external audiences. This study explores the concept of internal branding in Higher Education with the aim of enriching the available research in this field.

## Keywords

Branding, Higher Education, Corporate Branding, Brand Development, Internal Branding

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# Utilising Cross-Functional Teams to achieve Marketing and Operations Integration for Delivery Priority

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## **Abstract**

In today's manufacturing environment, due to the complexity of products, and the progress of technology, companies are forced to be more responsive to the pressure of the dynamic market by developing, producing and delivering products quickly and before competitors (Gattiker, 2007; Bendoly et al., 2012). As a result, the integration between marketing and operations as core functions of a manufacturing company (Slack et al., 2013) has increasingly received attention from many academics and practitioners (e.g., Prabhaker, 2001; O'Leary-Kelly & Flores, 2002; Hausman et al., 2002; Swink & Song, 2007; Tang, 2010). This is because of the importance of the marketing and operations interface to achieve more rapid responsiveness to market demand through the fit between market requirements and operations capabilities (Slack et al., 2009). Despite the importance of this work, empirical research on how to achieve and develop the integration is still limited in comparison with conceptual work (Song et al., 2010; Paiva, 2010, Felekoglu et al., 2013; Sharma, 2013). Therefore, this study is an attempt to narrow this gap by investigating why and how to manage the marketing and operations functional relationship effectively in order to become more market oriented. The research consists of four phases namely; the need (reasons for integration), the method (cross-functional teams), the development (potential problems), and the achievement (delivery priority). This framework represents a strategic imperative for developing a firm's performance because of the fit between strategy (time-based strategy), structure (cross-functional integration), and environment (the competitive priority) (Lenz, 1980; Miller, 1988; Venkatraman, 1989). Empirically, due to the need to develop the performance of Iraqi public industry sector, two Iraqi public textile companies were chosen as case studies to conduct this project by using semi-structured interviews and direct observation to gather data. According to the findings of this research, it can be argued that study would be an approach to implement market orientation in the Iraqi context albeit one which is difficult to execute.

## **Keywords**

Cross-functional teams, marketing and operations integration, demand and supply, market orientation, competitive priorities

# Issues teachers face using ICT in the classroom

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## **Abstract**

Technology is an integral part of 21st century education; however, there can be day-to-day issues teachers might come across when using Information & Communication Technology (ICT) within the classroom. In line with the UK Government's decision not to dictate on how teachers should respond to the transformative opportunities offered by ICT in education, it is important to give attention to the 'Down-to-Earth' (DTE) issues teachers face in ICT use.

It is these DTE issues that affect the success and quality use of ICT and are meaningful to teachers, in contrast to the issues discussed in literatures, most of which are of interest to management, IT suppliers and policy makers (Ertmer 1999; Kinstantinos 2013; Woo 2016).

This study aims to develop a unique understanding that will give particular attention to the everyday 'Down-to-Earth' (DTE) issues occurring in the classroom (for example technology disappointments, stress, thinking up another option every time, and so on).

In achieving the aim of this research, an empirical study was carried out. A total of twenty teachers selected from three primary schools in the Salford area were interviewed. The data collected from the semi-structured face-to-face interviews were analysed using Dooyeweerd's fifteen aspects based on the philosophy of everyday life.

Several findings emerged from this analysis, such as, a unique way of, handling the diversity of issues; revealing deep issues; uncovering assumptions; identifying values and the classification of these issues. Dooyeweerd aspects were also identified as a useful analytical tool.

## **Keywords**

ICT, Dooyeweerd Aspects, ICT in Education, Teachers, Analysis

# The ambiguity of media role in Jos ethno-religious conflict: Towards a new journalism model

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## **Abstract**

There is a strong consensus that the media play a significant role in intrastate, interstate and global conflicts, and their capacity to escalate or de-escalate these conflicts has received adequate attention in media studies (e.g., Backholm & Björkqvist, 2010; Fahmy & Johnson, 2005; Gilboa, 2002; Novak & Davidson, 2013; Rodgers, 2012; Seib, 2013). While recent scholarship on this role points to the direction that media efforts should be geared toward preventing and managing conflict or promoting peaceful coexistence among individuals and social groups to minimise human suffering (Saleem & Hanan, 2014), it has not produced enough clarity on what constitutes the ideal media role. What many societies have frequently advocated is the need for a responsible media system in which journalists are required to combine 'patriotic spirit' with their professional ethics when reporting conflict. In-depth semi-structured interviews were conducted among journalists reporting the ongoing conflict in Jos between Muslim dominated 'settlers' and Christian dominated 'indigenes' to understand their role in the conflict and the brand of journalism they have adopted in carrying out this role. Also, an analysis of their application of journalistic standard of objectivity to news coverage was undertaken as this tradition is believed to be the guiding principle of most Nigerian journalists. Drawn from 4 newspapers, 2 of which have tended to chart a religious cause and 2 others serving ethnic interests, the participants' role in the conflicts is defined beyond objectivity. The study establishes that a journalism model that builds on existing effort of understanding the role of the media in conflict is evolving.

## **Keywords**

Media role, conflict, settlers, indigenes, objectivity, journalism model

## **Engineering and Environment: Monitoring**

### **Measuring Norwegian reindeer external radiation exposure under field conditions**

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#### **Abstract**

Models and approaches have been developed to predict radiation exposure of wildlife under field conditions. However, there have been few attempts to directly measure radiation exposure of wildlife and confirm the doses predicted by models. This is a potential issue for stakeholder acceptance of modelling based assessments. Therefore, direct dosimetry measurements of wild organisms in the field are desirable to validate prediction of external dose rates.

Norway is one of the European countries that was most affected by radioactive contamination from the Chernobyl accident. Reindeer have continuingly high levels of Chernobyl-derived Cs-137. To provide a total dose estimate for the reindeer, the external exposure measurement is needed. A reindeer herd in Vågå, Norway offered the opportunity to more directly determine external dose rate (in collaboration with the Norwegian Radiation Protection Authority (NRPA) and the Vågå herders). Four types of dosimeters, thermoluminescence dosimeter or TLD (LiF:Mg, Cu, P), optical stimulated luminescence dosimeter (Al<sub>2</sub>O<sub>3</sub>:C), radiophotoluminescence dosimeter (phosphate glass) and direct ion storage dosimeter (Instadose 2), have been fitted to GPS collared reindeer; dosimeters were housed in an aluminium box. In total, fifteen reindeer had dosimeter boxes mounted onto their collars in January 2016. The results of this experiment will allow us to compare data from four dosimeters collected over a year (and hence assess dosimeter performance and suitability for environmental use) and also to validate external absorbed dose rates predicted by computer models.

This presentation will describe the experimental site and the Vågå reindeer herd, aspects of dosimetry technologies, and research plans.

#### **Keywords**

External radiation exposure, direct dose measurement, dosimetry technologies, Norwegian reindeer

# Dye Removal in Experimental Vertical-Flow Constructed Wetlands Treating Textile Wastewater

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## **Abstract**

Wetlands have long played an important role as a natural purification system. Textile industry processes are among the most environmentally unsustainable practices, because they produce coloured effluents in large quantities polluting water resources. In this study, two different azo dyes (Acid Blue 113 (AB113) and Basic Red 46 (BR46)) have been fed as part a of synthetic wastewater recipes to a laboratory-scale vertical-flow construction wetland set-up, comprising wetlands with gravel media as controls and wetlands planted with *Phragmites australis* (Cav.) Trin. ex Steud. (common reed) for each dye. Two different concentrations (5 mg/l and 200 mg/l) were used for each dye at two different hydraulic retention times (48 h and 96 h). According to initial results for the low concentration of BR46, there is no significant ( $p>0.05$ ) difference between wetlands in terms of dye removal. For chemical oxygen demand (COD) removals of 50%, 59% and 67% for the control and for the wetlands with short and long retention times, respectively, were significant ( $p<0.05$ ). For the high concentration of BR46, the removal percentages for this dye and COD were 94% and 82%, and 89% and 74% for the long and short retention times, respectively. For the low concentration of AB113, the percentage removals for the dye were 71%, 68% and 80% for the control, and the short and long retention times, respectively. The corresponding COD removals were 4%, 7% and 15% in that order. Finally, for the high concentration of AB113, the percentage removals for the dye and COD were 71% and 73%, and 50% and 52% for the 48-h and 96-h retention times, respectively.

## **Keywords**

Acid Blue 113, Basic Red 46, chemical oxygen demand, industrial wastewater, *Phragmites australis*, red bed filter



# Toward a protocol for UAV Surveying in environmental sciences

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## **Abstract**

The use of unmanned aerial vehicles (UAVs) has exploded in science within the last few years due to technological advances in onboard GPS technology and associated ease of post-processing using photogrammetric software. In addition, the use of aerial drone photography to generate 3D models of objects and landscapes at high resolutions has proved an easily accessible alternative to expensive, cumbersome laser scanning systems. Spatial coverage of the survey can easily be widened by increasing the altitude at which images are captured, although resolution is sacrificed. Finding a balance between these two factors is key to be producing high quality data quickly, yet to date a protocol for deployment of UAVs to establish optimal spatial coverage, flight height to resolution ratio, and ground control point spacing, remains missing in the literature. Here, we establish a simple, repeatable methodology, based on a standard DJI Phantom 3 platform, to provide users with knowledge of how to optimize flight plans according to their requirements for resolution and coverage. In addition, options in structure from motion (SfM) are investigated to generate orthomosaics and 3D digital elevation models (DEMs) at a variety of resolutions.

## **Keywords**

UAV, Photogrammetry, 3D-Model, Coverage, Resolution

# Automated Screening and Segmentation of MRI Brain Scanning Based on 3-Dimensional Active Contour without Edge

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## **Abstract**

automatic detection, classification and segmentation of brain tumours in magnetic resonance images (MRI) is generally a very complex procedure due to the tumor's shape variability, complexity of the location, size and texture. Furthermore, due to the large number of slices that are produced by medical scanners, the manual segmentation of the tumours is considered very cumbersome, a time consuming task and prone to human errors. In this paper, we present a fully automated algorithm which is able to detect slices that include tumors, identify the location of tumors and to segment the tumors in a three-dimensional way. The experimental results demonstrate the efficacy of the three-dimensional segmentation over the two-dimensional one. The experiment dataset comprises 165 patients provided by the Magnetic Resonance Imaging Unit of Al-Kadhimiya Teaching Hospital in IRAQ, eighty eight of the patients in this dataset have different brain abnormalities and the rest patients do not exhibit any detectable pathology. The maximum achieved accuracy of segmentation was 91% using the provided standard dataset by BRATS 2013 benchmark that were obtained from the international conference on medical image computing and computer assisted interventions (MICCAI).

## **Keywords**

Magnetic resonance imaging, Modified Gray Level Co-occurrence Matrix, Principle component analysis, Multi-layer Perceptron Neural Network, Active Contour without edge

# Inter-varietal variation in lead uptake by rice in Nigeria; implication to public health

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## **Abstract**

Lead is classified as toxic element and it has short and long term adverse effect in human. It is responsible for causing greater percentage of non-infectious diseases resulting to over 12.6million annual-deaths globally. Consumption of contaminated food has been identified as one of the primary exposure routes. Recently, research on rice reveals high level of lead accumulation in rice. Rice is consumed as a staple food across the world and people of Zamfara consumes rice more than 4 times a day. It is also used as medicine in some parts of the area. Many deaths (over 400) were recorded in this area between 2010 and 2011 as a result of lead poisoning which called for global attention. The source of lead was mining activities in the area and concentrations in environmental media including food stuff exceed the international standard limits. Plant uptake aids lead entrance into food. Studies show that appropriate varietal selection could be used to minimise transfer of lead into food which could be used to minimise the exposure of the affected population.

This study started in October, 2015 and is aimed at assessing the varieties of rice grown in Nigeria to determine variation in the lead uptake, essential element, and radioactive element then compare with the international standards.

The research will seek to identify how the lead uptake by rice has affected the essential element in rice and how this has influenced the uptake of radioactive elements and to what extent including its implication to public health.

## **Keywords**

Lead uptake, rice, inter-varietal variation, food, public health

# New detectors for live-monitoring of radionuclides in wildlife

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## **Abstract**

In 2007, the International Commission on Radiological Protection (ICRP), introduced recommendations for the need to adequately demonstrate the protection of the environment. The current methods for these assessments often involve a combination of conservative modelling and destructive measurement techniques. As many species needing assessment are protected, there is growing interest in non-lethal monitoring techniques such as live-monitoring. While live-monitoring has previously been used, it has typically focused on only a small number of radionuclides and predominantly domesticated/semi-domesticated animals.

The aim of this project is to develop new detector technology for the live-monitoring of radionuclide activity concentrations in wildlife. The primary use of such a device is targeted towards compliance monitoring for facilities that have radioactive emissions, i.e it would provide a rapid and non-destructive method of confirming that regulated radionuclide releases are not causing unacceptable harm to living organisms. Development of such a detection system involves a balance between portability, the size of the target animals, the radiological performance, and the effects of background. This presentation describes the progress so far in starting to develop a suitable system.

Funding for this research program is provided through the TREE (Transfer – Exposure – Effects; <http://www.ceh.ac.uk/tree>) project as part of the Natural Environmental Research Council (NERC) Radioactivity and the Environment (RATE; <http://www.bgs.ac.uk/rate/>) programme (co-funded by the Environment Agency and Radioactive Waste Management Ltd.).

## **Keywords**

Device development, Environmental monitoring, Radioactivity

## Interactive presentations and demonstration

### **Adelphi Experimental Instrument Ensemble**

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#### **Abstract**

A subset of the Adelphi Contemporary Music Group, the Experimental Instrument Ensemble is a group of postgraduate students using new instruments developed as research projects. Each of the instruments will be presented and demonstrated, culminating in a live ensemble performance.

The Reverse Action Piano Harp is an instrument designed, developed and patented by Phillip Brissenden, and is the topic of his recently completed PhD. The instrument is a keyboard variant of the autoharp, aiming to incorporate a set of musical compromises comparable to that of the guitar, whilst remaining adaptive to pianistic technique. New works have been commissioned for the instrument and other musicians have played and studied it.

The Leap Motion Theremin is an electronic interface developed by PhD student Adam Hart. The project started as an attempt to produce an affordable variation of the Theremin (an early electronic instrument controlled without physical contact) using a Leap Motion controller (a game controller incorporating infra-red sensors) but has developed as a control surface manipulated by hand gestures.

Electro-Udu is an audiovisual project developed by MA student Aden Peets, with the theme of emerging techniques performed on ancient instruments. The audio source is a culmination of the Nigerian clay-pot drum and two contact microphones inserted into the sound holes of the drum. These microphones primarily capture the fundamental frequency emitted from the drum when the gain levels on the microphones are exceedingly high and feedback occurs.

Alan Williams has supervised the research projects, and plays contemporary accordion in the ensemble.

#### **Keywords**

Design, Experimental, Instrumentation, Music, Performance

# The audience-as-performer

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## **Abstract**

This interactive presentation will draw from my current investigation into the ways in which the audience member as performers may affect the formation of the emerging performance ensemble, reflecting on my experience of taking task-based contemporary 'devising' from a closed laboratory to an open participatory work demonstration, drawing from other practitioners, such as, Elevator Repair Service, Goat Island and The Wooster Group.

Within the sharing of laboratory 'work' it is a known that the focus remains on the process rather than the product, however, the creation of a participatory work demonstration for a new 'audience' creates a tension. The 'work' is continually emerging and yet, there are now audience members with minimal training and preparation contributing to the work. The ensemble shifts in response to the new audience member; the identity of the ensemble changes as the work demonstration unfolds.

The aesthetic of documentation, performance, task and participation, within my practice, creates different forms of collaborative work. The participatory work demonstration requires the performers to share their work whilst also sharing their understanding of the work, blurring the lines between 'yours' and 'mine'. There is a mutual self-reflexivity between the audience trying too 'work it out' and the performer who has become self-consciously reflective. This can lead to a productive lack of fixed entities, responses and roles. I will address how the roles and relationships between the ensemble and the audience members fluctuate through this participation.

## **Keywords**

Interactive, Performance, Laboratory, Ensemble, Participation

## Digital and Creative: Communication

### **The Impact of Social Media on Consumer Behaviour: The Context of Halal Holiday Travel**

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#### **Abstract**

Social media is one of the “mega trends” that has had a significant impact on different practices of the tourism industry and the role and use of social media in the travel decision making and travel planning process have been widely discussed in the tourism and hospitality literature. However, there is a clear paucity in investigating the role of social media with regards to halal tourism. This conceptual paper attempts to explore the impact of social media in the buyer behaviour of UK Muslim tourists when planning their halal trip/holidays. Social media has been widely used within tourism marketing and planning process as various social media platforms are applied by tourism organisations to understand the tourist planning and buying behaviour. However, halal tourism providers have not yet acknowledged the benefits of social media in holiday travel planning. This study reviews and analyses existing research focusing on social media in tourism. Based on a comprehensive literature review, this paper recognizes the role of social media in tourism and encourages future research agenda on the phenomenon. Furthermore, the paper proposes that the use of social media in relation to halal tourism is still in its infancy. Therefore, a rigorous investigation into the impact and role of social media in the halal tourism industry including both the consumer and supplier perspectives are critical in understanding the factors that encourage UK Muslims to participate in this emerging type of tourism. Finally, the paper identifies the lack of a comprehensive approach to investigating the use and impact of social media during all stages of travel (before, during and after), and throughout all phases of decision process.

#### **Keywords**

halal tourism, social media, travel decision making process, tourism buying behaviour

# Impact of Social Media upon Three-Generations of Muslim Women in family purchase decision making in the UK

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## **Abstract**

Muslims now represent the 'Fourth Billion segment' worldwide after three billion segments: Chinese, Indians, and Women. Muslim consumer segment with its rapidly increasing population, is the most emerging market globally and with buying power from \$1 trillion to \$2 trillion in Turkey, Saudi Arabia, and Muslim-minority countries such as United States, France, and the United Kingdom. In addition, to increase the purchase and to satisfy the customer, it is very important to understand the belief, values, attitudes, and behaviours of Muslim consumers. Several researches showed that purchase decisions are made by women in developed, developing, and emerging world. However, men are being focused in majority marketing efforts. The role of Muslim women is becoming important for the marketers as a digital generation consumer. Brands should develop their relation with this emerging segment for long term profit. Muslim women are brand conscious and being sensible, smart, and responsible for purchase decision making in families. Furthermore, they share their view online using social media networks with their family and friends. There are several factors which effect the consumer decision making of Muslim consumers. Researcher, will be studying the Impact of social media upon three generations of Muslim women in family purchase decision making in the UK. Quantitative method will be used in this research to collect data through questionnaire survey. Finally, impact of social media upon three generation will be analysed and compared.

## **Keywords**

Social Media, Muslim Women, Family purchase decision making, UK, Islamic branding



# Exploring the role of social media in the recruitment process: To Tweet or not to Tweet!

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## **Abstract**

Following the explosion of professional and social networking media in the previous decade, there is no denying the ubiquity and importance of social media, and its penetration into almost all facets of everyday life. Anecdotally, the use of professional and social networking media as a tool in the recruitment process has become widely prevalent within businesses and Jobvite (2015) report less than four percent of employers do not use social media in their recruitment activities, confirming its continued prevalence and popularity in employers' recruitment activities. But, what does this mean for businesses' and the practice of Human Resource Management, and more definitively what is the role of social media in the recruitment process? This research seeks to explore the nature and extent to which social media is being utilised for recruitment purposes, probing how extensive it is, who carries it out, what platforms are accessed, what information is sought, how is it collated, to what use the information is put, how organisations justify their practice, and what consequences there are of such practices. Among others, an early emerging theme from this research (which also has implications in practice) has been centred on issues associated with concerns from HRM professionals regarding a perceived digital divide in applicant demographics. The presentation of the research concludes by examining the findings in more detail and suggests areas for further research.

## **Keywords**

Human Resource Management, Recruitment Process, Recruitment, Social Media

# The changing nature of political marketing in India: An investigation into the impact/role of personalization and social media in winning elections

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## **Abstract**

The concept of personalisation in politics has been well researched where candidate as an individual becomes more important to the electorate than the political party or affiliated policies. Personalisation has also been positively influenced by the social media where the candidate and the electorate can have a two-way communication.

Personalisation as a concept has always existed (e.g. charismatic leaders) but what's new is the mediation of newer technology. Henceforth, personalisation today can eclipse the political institutions and overcome party's ideology when the candidate connects directly to the electorate through the new communication and networking technologies.

Newer technologies have allowed 24X7 real time two-way political dialogue between the candidate and the electorate. The electorate was unsatisfied with unidirectional communication through traditional media that did not allow them to ask questions or to share their own opinion. Social media allows this interaction, and therefore the candidates use this available space for self-promotion.

This modern phenomenon can be clearly seen in the case of the last Indian Parliamentary election with over 280 million internet users in the country, where the elected Prime Minister used the online platforms to connect and positively influence his electorate. My research looks at the ways in which online social media affects the phenomenon of personalization by studying the last parliamentary elections in India. The data will be collected from a sample of voters who were actively engaged in the parliamentary politics on the social media. The results of my study will increase understanding of the effect of new communication technology on the parliamentary democratic institutions and processes.

## **Keywords**

Politics, social media, personalisation, election, political marketing

# What is this science communication you speak of?

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## **Abstract**

“We live in a society exquisitely dependent on science and technology, in which hardly anyone knows anything about science and technology.” Carl Sagan.

Science communication is an important aspect of any scientific career. Effective communication skills are required for scientists to write papers, grant applications, give talks, seminars, lectures and mentor students. However, communicating science with audiences outside of their discipline presents challenges and requires additional skills. Different audiences have different interests, knowledge, assumptions, backgrounds and cultures. Science communication in different social, political or cultural settings differs from the discourse within academia. The increasing emphasis on ‘research impact’, ‘democratization of science’, ‘outreach’ and ‘public engagement’ poses a challenge to scientists who need to balance their already heavy workloads with the need to develop new skills required to communicate science with various audiences, yet there isn’t any real training for scientists to learn the skills needed to communicate with different audiences. Scientists receive training in research methods, analytical skills, and the ability to communicate with other scientists in their field, but there is no explicit training in communicating scientific concepts to a lay audience. An absence of formal training in science communication can lead to a general public that is wary of scientists. In this PechaKucha presentation, I will demonstrate the importance of effective science communication in enhancing the quality of discourse between scientists and the general public. In addition, I will provide examples of how postgraduate students can develop their science communication skills during their PhD studies.

## **Keywords**

Science Communication, Festivals, Public Engagement

# The Use of Video as a Learning Tool

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## **Abstract**

The need to improve the understanding of structural engineering behavior among civil engineering students and graduates has become a debatable topic among practitioners and institutional organizations. Salford was at the forefront to address this matter, to an extent, the Institution of Structural Engineers has now awarded lecturers at the Civil Engineering Department the prize for Excellence in Teaching Structural Engineering.

Video has become an endemic medium for communication and it is increasingly becoming an alternative mode for learning. There is a profusion of material that can be accessed freely on websites such as YouTube but the quality and content is variable, which makes its use in teaching questionable. Many academics therefore produce their own custom visual learning aids, though these can be questioned in various aspects.

This paper presents the findings of a systematic assessment of video presentation in the teaching style of first year civil engineering students studying structural mechanics. Data is derived from the opinion of a cohort of students and their instructors. The outcomes are advice for the most suitable teaching style and production qualities of instructional videos which can make a significant influence, such as mode of capture and technical content.

## **Keywords**

Civil, Structural, Learning, Teaching, Education

# Exploring professionalism and sustainability within the Search Engine Optimisation Industry

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## **Abstract**

Context and characteristics of current research: In recent years, the Search Engine Optimisation (SEO) industry has displayed profound instances of digital skills gaps (Royle and Laing, 2014), deviant knowledge bases (Clarke and Clarke, 2016), industry fragmentation (Halasz, 2014) and a disquiet over poor practice (Yoon, 2014).

As one of the most widely practiced forms of digital marketing in the UK (Chaffey, 2015) SEO is a compelling area for research as it does not comply with any traditional preconditions of professionalism defined in literature: a training association (Jackson, 2010), a license to practice (Tench and Yeoman, 2009), specialised and standardised graduate study (Sriramesh and Hornaman, 2006), control over entry (Walker and Child, 1979), regulated standards of practice (Hewitt, Thomas and Wilson, 2007) and a formalised code of ethics (Barber, 1963).

The importance of the research area: A lack of explicit or formally recognised professional standards raises questions of an SEO practitioner's 'fitness to practice', ethical conduct and industry sustainability. Until further research is conducted into such areas, the SEO industry will remain at threat of disrepute, placing SEO clients at risk of maltreatment and exclusion.

How research can address the problem: The current study will develop a conceptual sustainability framework that can be used to professionalise the SEO industry. It is anticipated that the research findings will be generalisable to other digital industries, analogous to that of the SEO industry.

The SPARC presentation: The presentation highlights current issues associated with professionalism within the SEO industry and the risk this poses to its sustainability. It will call upon key ethical theories, professional identity theory (Connelley and Clandinin, 1999) and competency based theory (Kruger & Dunning, 1999), as well as insight gained from similar industries. The presentation also considers the researcher's qualitative multi-method research design.

## **Keywords**

Search Engine Optimisation, SEO Sustainability, SEO Professionalism, Ethical SEO, SEO Regulation

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## **Health and Wellbeing: Services and Management**

### **Leadership styles and their effectiveness in the national health services (NHS)**

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#### **Abstract**

Nurses make up a very high percentage of care providers in the hospitals in the developed world (Kanste et al, 2007; White, 2012; Journal of Nursing Management, 2013 (editorial).  
'...Although nurses and midwives make up the largest part of the health workforce with the greatest amount of patient/client contact... and amounts to an estimated figure of 6 million in Europe' (White, 2012, p 835).

This study aims to look at nurses' leadership and their effectiveness.

#### **RESEARCH AIM**

The aim of this research is to examine leadership styles and their effectiveness within the NHS; using Greater Manchester Hospital nurses as a case study.

The formulated objectives for addressing the research aim are:

#### **RESEARCH OBJECTIVES**

1. To identify the leadership styles within the NHS nurses in Greater Manchester Hospitals
2. To examine the effects of the leadership styles on performance/services
3. To examine the impact of gender on leadership styles (depending on the data to be collected) and its effect on NHS performance

The difference this research could make is: it will be a pioneering work in this area and at a time when the NHS is in the national spotlight; it could be a spring board for other similar researches; it will add to the body of knowledge in this very important area; also the outcome of this research could help the NHS HR in their recruitment and training exercises and policies.

#### **Keywords**

Nurses, leadership, effectiveness, styles, hospitals

# Ageing, Health and Retirement Choices in a diverse workforce: a case study of a large private sector retail organisation

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## **Abstract**

State pension age is due to rise to 68 years in the UK for both men and women by 2046 and the statutory retirement age has been removed. Organisations need to better adapt to the needs of their older employees. Research suggests that a growing number of people want to remain employed past traditional retirement age if the correct conditions are in place such as flexible working arrangements or measures to improve employees' enjoyment of their work. Health is a key predictor of retirement. Good health acts as an enabler to extending working life.

This study explores the factors that enable or inhibit people to work for longer, in a large private sector retail organisation. We present results from a qualitative study using semi-structured interviews with a purposive sample of 15 employees aged  $\geq 60$  and 15 supervisors of older workers.

The majority of workers expressed facilitators to extending their working lives were: good health, specifically the community aspects of work are beneficial for health; good team dynamics; positive self-perceptions of ageing; and a choice in shift patterns with a preference for morning shifts. The majority of females expressed that finances dictated personal choice to extend working life. Perceived barriers to extending working life included poor health, negative impacts of work and a lack of respect and support from colleagues.

Organisations should consider prioritising the health needs of older workers, for example by introducing flexible working.

## **Keywords**

Pension, flexible working, retirement, ageing, health, finances, work, employees

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# Experiences of falls in domestic settings and use of ambulance services: an ethnographic study of non-conveyed patients

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## **Abstract**

**Introduction:** Each year, 35% of people over age 65 experience falls and approximately 45% of those are aged over 85 and live in the community. Local unpublished data from the ambulance service found that of the call outs, 24-32% of the patients were non-conveyed, of this only 32-52% of these patients were referred to the local Falls Prevention Service for a specialist multifactorial assessment (NICE 2013).

**Background:** The review supported the need for falls pathways to be in place, but did not uncover the reasons for low referral rates of non-conveyed patients to falls prevention services. This presentation will outline the design of a study which aims to: a) gain an in-depth understanding of the patient journey from patients, carers, and ambulance crews' perspectives, b) generate a clear understanding of the ambulance service sub-cultures which could inform the need for improvement of the existing falls pathway or provide confirmation of an effective pathway.

**Methods:** An ethnographic approach enables interpretation within a culture and looks at themes, patterns of value, behaviours and beliefs that are explored. The target sample will be people over 50 years of age who have fallen and have been seen by the ambulance service, but have not been referred into the falls prevention service. I will also recruit ambulance crew.

**Results:** The goal of this study is to gain a deep and rich description of culture and subcultures. The findings will be presented to stakeholders, at conferences and in publications.

## **Keywords**

Falls Prevention, Non-conveyed, Ambulance service

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# Is Degree Education feasible as a requirement for Qualified Nurses? A Qualitative Case Study to inform nursing workforce planning in Saudi Arabia.

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## **Abstract**

**BACKGROUND:** Health system reconfiguration in Saudi Arabia (SA) as a response to changing demographic and related health needs is an important for the development of nurse education. The Saudi government is trying to meet international standards when it comes to nursing degrees; but a lot of issues still need addressing. In order to bridge the gap, a research study involving case study methodology was conducted to critically assess the implications of the implementation a Bachelor of Science in Nursing Education (BSN) degree as a baseline entry to the profession in order to develop a national strategy for nursing workforce planning.

**METHODS:** Semi structure interviews of 24 participants were used to collect the data on three level of organization in the MOH (macro, meso, and micro) complemented by documentary analysis.

**RESULTS:** The preliminary result of this research from participants indicate that there is a general acceptance and agreement that the minimum requirement of BSN for nursing staff will support adequate knowledge and communication requirements for quality nursing practice. Combining and analysing the conclusions of each level, the data revealed commonality across levels, demonstrating significant findings that support cross-case themes in the data. Factors affecting degree attainment included personal commitment/passion for self-improvement, private versus government institution education quality and financial factors (incentives or promotional opportunities or obstacles). The benefits of knowledge in BSN programmes supported confidence and decreased absenteeism, indicated a broader knowledge base, greater communication and language skills, enhanced nursing skills and responsibilities, and gave opportunities for advancement and increased pay, but more importantly increased the quality of nursing practice, patient safety, outcomes, and quality of care.

## **Keywords**

Degree education, nursing workforce, qualified nurse, minimum entry, Saudi Arabia

# The importance of Disasters management and Impact of it into Hospitals

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## **Abstract**

Generally hospitals and health care centers need special consideration to manage the impact of disasters. This is because of the need to continuously provide the healthcare facilities for the patients currently in the hospitals as well as to deal with unanticipated injuries of the people during the event.

Hospitals at any time have population of patients, staff visitors, and transient patients. The security and safety of all patients and occupants must be secured whilst continuing with ongoing treatments and support services. Therefore proper disaster management is highly important for hospitals and health centers. During a disaster, it may become necessary to evacuate non ambulant and ambulant patients; therefore the response to disaster including evacuation procedures should be well established.

Accordingly, this paper evaluates the importance of disaster management for hospitals and the challenge that needs to be considered during the disaster response.

## **Keywords**

Hospitals, Disasters, Mitigation, Impact

# **Working effectively in a multicultural nursing environment: barrier and solutions**

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## **Abstract**

This research examines the factors that promote or impair effective collaborative working in a highly multi-cultural healthcare setting - a large hospital in Riyadh in the Kingdom of Saudi Arabia (KSA). A methodological strategy has been devised which uses a case study mixed-method approach. Questionnaires and semi-structured interviews will be used to understand better how nurses and nurse managers perceive culture and effective and ineffective collaborative working.

A literature review has guided the development of an interview schedule, informed by the Purnell competence model (Purnell, 2002). The results of the interviews will identify focus areas for the survey phase of the study. The participants will number approximately 200 for the survey stage and approximately 10-15 for the interview stage.

Qualitative data analysis will be supported by NVivo 10. For the quantitative aspect of the study, descriptive statistical analysis will be supported using SPSS (version 16).

The results will help to inform the future nursing workforce strategies of the KSA Ministry of Health.

## **Keywords**

Multicultural, workforce, ethnic group

## Wellbeing and Society

### **‘Can’t see the wood for the trees?’ Exploring the social value of informal third sector organisations and their significance in the third sector network**

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#### **Abstract**

The idiom highlights the importance of not getting lost in the detail and missing the bigger picture. In a literal sense both the wood and the tree are important for different reasons, but if the focus is on the tree, you are at risk of ignoring that it is an integral part of a wider ecosystem.

In the third sector each organisation has its own ‘worth’ or value which can be determined through social return on investment (SROI) analysis. But all organisations are interdependent members of the wider third sector network. The complex inter organisational relationships (IORs) are vital to the success of the sector, any breakages in the network, through actions of the participants or changes in the organisational environment not only impact the local structure but have wider significance.

The third sector is at risk of progressive ‘institutionalisation’ as it is increasingly delivering what are traditionally regarded as public sector duties. Yet little is known with regards to the impact of these changes on the IORs with informal third sector organisations (ITSOs). Significantly outnumbering the formal third sector organisations it is recognised they hold a key role maintaining independence and diversity identified as being fundamental to society (The Compact 1998 – 2010).

This research explores the interdependent nature of the sector, suggesting through the number of dependency connections the potential ‘value’ of the ITSOs. This ‘value’ will be explored further through using social return on investment (SROI) with a selection of organisations who are representative of the network densities.

#### **Keywords**

Third Sector, Network, Social, Value, Impact

# The impact of welfare conditionality on Roma migrants in the UK

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## **Abstract**

The welfare arrangements in the United Kingdom (UK) is increasingly characterized by welfare conditionality. That is, the receipt of forms of social assistance being dependent upon meeting certain conditions of behavior. Not meeting the stated conditions allows sanctions to be used to withhold part or all of the social assistance (Watts et al., 2014; Etherington and Daguerre, 2015). Certain groups of people are disproportionately affected by these reforms (migrants, people with disabilities, entrenched homeless people and so on). This paper focusses on Roma migrants from Central and East European Member States. Roma have become a large minority within the UK (Brown, Scullion and Martin, 2013) who have arrived from a context of negative social representations, marginalization and stigmatization in their country of origin, the public discourse in the UK creates an increasing anxiety in mainstream society by picturing them as 'benefits tourists', within a frame of 'undeserving' migrants that overrunning the British social welfare (Fonseca, 2000; Sales, 2002; Leeming, 2011; Stewart, 2012; Sawyer, 2013). The research that this presentation is based will focus specifically on whether or not conditional welfare leads to alterations in social participation and integration in British society; whether Roma stigmatization may impact on how they experience conditional welfare arrangements; and how welfare conditionality practice and bureaucracy deals on one hand with the associated attributes of stigma that Roma migrants are carrying and on the other hand with their social vulnerability.

## **Keywords**

Welfare conditionality, Roma, Stigmatization, Migration, Underclass

# Experiences of Place Attachment and Psychological Well-being in the Context of Neighbourhood Regeneration

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## **Abstract**

Neighbourhood regeneration is an important policy focus across the EU and there are currently numerous on-going projects across the continent (Colantonio & Dixon, 2011). The current research aims to explore residents' experiences of place attachment and psychological well-being in the context of neighbourhood regeneration. Not just providing shelter and a sense of safety, the home is of emotional significance and is interrelated with identity, social networks, and enables a sense of belonging. Research has shown displacement from a place of attachment to lead to a stressful period of transition involving a sense of grief and loss, as well as a period of mourning (Brown & Perkins 1992, Fried, 2000). The current research will be conducted in the Pendleton area of Salford, which is currently undergoing a long-term, £650 million regeneration project (Salford Council, 2012). Studies of neighbourhoods and communities highlight the significance of the role that the physical environment plays in life and the perspective of the community experiencing changes to their socio-spatial environment should be taken into consideration (Bailey et al., 2012; Fried, 2000). Through employment of interviews and visual methods, the role of place attachment in adaptation to place change, and the psychological well-being of those experiencing the phenomenon will be explored. Working with the Pendleton Together team, and linking with the Public Health team within the local authority, this phenomenological study will explore experiences of regeneration in order to help to inform the development plans as they unfold over the next 15 years.

## **Keywords**

Neighbourhood regeneration, place attachment, place identity, psychological well-being, phenomenology

# Experiences of work as opportunity or obstacle to future success: Students' perspectives

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## **Abstract**

New graduates will have an average debt of £44,000 plus interest (Institute for Fiscal Studies IFS) and face strong competition in the labour market due to the record numbers of graduates. In a culture of individual agency and responsibility, education and hard work are seen as the keys to success (Mendick et al 2016). A degree is no longer enough to guarantee graduate career success (Tomlinson 2008) so work experience (internships, work placement, volunteering and other such activities) increasingly provide a way to demonstrate uniqueness. However, many such opportunities are unpaid, low paid or are not openly advertised but created by personal and family contacts which can further disadvantage individuals with less social, cultural and economic capital (Bourdieu 1986).

Whilst the new government Higher Education White Paper 'Success as a Knowledge Economy' (May 2016) and the evolving dynamic of 'student as consumer' puts students at the heart of higher education, elicitation of 'the student perspective' often takes the form of quantitative surveys (DLHE, NSS) which offer limited insight into the complexities behind the statistics. Academic research tends to present students as a homogenous group (Tomlinson 2007) and analyses of unpaid work experience tend to come from a theoretical and highly critical viewpoint (Perlin 2012, Swan 2015).

This research seeks to understand, interpret and present the lived experiences of students across four north-west universities who have undertaken unpaid work experience. It challenges the myth of the 'typical student' and illustrates the challenges and opportunities they encounter and how they make meaning of their experiences in order to navigate their transition through higher education into working life.

## **Keywords**

Graduates, debt, higher education, work experience



# **An Interpretative Phenomenological Analysis of the Perceptions, Attitudes and Experiences of Energy Vulnerability among Urban Young Adults**

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## **Abstract**

In England, fuel poverty (FP) is estimated to affect as many as 2.35 million households. ‘Young adult households’ – those where the oldest member is younger than twenty-five – are disproportionately more likely to be fuel poor than any other age group. However, research focused specifically on this demographic group, particularly among young adult, non-student households, remains almost entirely absent from the evidence base. Contributing to this gap, the present research adopted a qualitative methodological approach to explore how urban young adults construct and make sense of their relationship with domestic energy as independent household members. Using Interpretative Phenomenological Analysis, six semi-structured interviews were undertaken with young adults who were not in education and had recent or current experience of living independently within an urban context (Salford, Greater Manchester). Analytic focus was directed towards the subjective experiences of how domestic energy is used and paid for, as well as energy related challenges and vulnerabilities. Multiple experiences of and exposure to conditions typical of FP were disclosed, including: self-disconnection of energy supply, energy debts, cold homes and unrelenting challenges associated with damp and laundry practices. Detailed discussion of the findings is presented under three emergent themes: ‘establishing the independent home’, ‘threats to home comfort’ and ‘energy and coping’. Limitations and suggestions for further research are considered, including the potential to further define the homogeneity of the sample by considering certain sub-demographic groups, such as young adult migrants, lone-parents or those within specific household formations.

## **Keywords**

Fuel poverty, energy vulnerability, young adults, lived experience, Interpretative Phenomenological Analysis

# Doing well by doing good? An assessment of employee health, wellbeing and quality of work in Greater Manchester social enterprises

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## **Abstract**

This research explores the experience of working for a social enterprise – organisations with social aims that use profits for that purpose – and whether they provide good quality work conducive to employee health and wellbeing. It has been suggested that, due to their social nature, participation in social enterprise activity may be a determinant of improved health and wellbeing. The annual costs of sickness absence in the UK are high and expected to increase. Should social enterprises provide good work, their ways of working could be adopted by other organisations seeking to improve employee health and wellbeing, or the creation of social enterprises could be encouraged, thereby reducing the costs of sickness absence. 264 social enterprise employees working across Greater Manchester completed a questionnaire designed to assess employees' health, wellbeing and quality of work. The results were compared to a national dataset of employees working in non-social enterprise organisations. The findings indicated, compared with data for non-social enterprise employees, that social enterprise employees in Greater Manchester have significantly higher levels of control over their work, support at work, job satisfaction, and job-related wellbeing. This research represents a first step towards exploring the impact that working for a social enterprise has on employee health and wellbeing.

## **Keywords**

Social enterprise, quality of work, employee, health, wellbeing

# The Factors for Failure in the Implementation of Affordable Public Housing Programmes in the South-South Region of Nigeria

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## **Abstract**

The challenge arising from proper implementation of housing policies in many developing countries has increased significantly. Even though various housing policies from these countries, including Nigeria, promised that basic housing needs are met at affordable cost to the majority of the citizens, these promises have been left empty without fulfilment. As a result, governments of these countries face tremendous pressure to guide affordable housing, especially for the low-income groups. It has been noted that there were some affordable housing delivery programmes in Nigeria in the past which employed public private partnership effort through the assistance of numerous private finance initiatives but those could only provide about 3% of the demand due to poor implementation system. This therefore justifies that formulation of policies alone is not enough to solving housing problems, unless there is effective implementation of them. This, therefore, suggests the need for a study in this area, especially in the South-South region of Nigeria where the problem seems to have proven more difficult. Thus, this study aims to propose a model to guide improvement in the implementation of affordable public housing policies for an effective housing provision for the low-income groups. Furthermore, the study is a mixed methods descriptive research which will identify these factors to explain how they are limiting successful implementation of affordable housing policies in the region. However, the study will also inform the stakeholders on the depth of damage the identified factors have caused in the Nigerian public housing sector, particularly in the South-South region.

## **Keywords**

Affordable housing, low-income groups, public housing, policy implementation, South-South region, Nigeria

**An Appropriately Complex Biomechanical Model of Running**

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**Abstract**

Mathematical models of human movement have the potential to provide insight into how and why humans move the way they do. These models treat the musculoskeletal system as a series of rigid segments connected by mechanical joints. Some incorporate springs in order to model the elastic storage and return of energy. Others aim to model individual musculotendinous properties with complex equations for activation dynamics. These approaches are generally categorised as either simple or complex models. The simple models are generally used to explore the fundamental mechanics of movement. On the other hand, the complex models usually aim to model each individual component of the musculoskeletal system and hence explore the way in which the individual muscles contribute to the movement.

Previous models of running can be categorised as either simple or complex, therefore it is unclear as to what level of complexity is required when modelling running. Considering this, the aim of this study is to develop an “appropriately” complex model of running. A model that is simple, yet complex enough to accurately replicate the kinematic (motion of the body) and kinetics (forces acting on the body) of distance running. Such a model has the potential to aid in the understanding of “normal distance running”. By providing mechanical explanations for how and why people run the way they do, both researchers and clinicians could use this model to gain a further understanding of running biomechanics. Furthermore, the model could potentially identify characteristics associated with injury and/or elite performance.



**Keywords**

Modelling, Running, Gait, Biomechanics

# Second-phase lead optimisation of Emetine Dihydrochloride for repositioning as an antimalarial drug and Nanoparticles as drug carriers for targeted drug delivery

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## **Abstract**

The emergence and spread of drug resistance has prompted further initiatives to develop new antimalarial drugs to aid the control of malaria. One of the strategies to discover new drugs is to reposition or repurpose existing drugs. The singular advantage of adopting a repositioning strategy which screens patent-expired drug libraries is that the compounds screened are already known to be bioactive and safe for use in humans. This significantly reduces the time and cost involved in drug development.

Preliminary screens have identified the anti-amoebic drug Emetine dihydrochloride as a potent antimalarial option. This study focused on the second-phase optimisation of this compound and defined IC<sub>50</sub>, mechanism of action, cytotoxicity profile. HepG2 cytotoxicity data profiles in relation to single and combinatorial use. The impact of the work and its potential contribution to a disease that continuous to cause 1-2 million fatalities annually cannot be over emphasised. The study will also investigate the use of nanoparticles as a method for targeted anti-malarial drug delivery.

The poster will focus on Second phase lead optimisation of Emetine dihydrochloride for repositioning as an antimalarial in a bid to characterise IC<sub>50</sub> dosages, human HepG2 and hERG channel cytotoxicity. The poster will focus on identifying favourable combinatorial partner drugs that would minimize the toxicity effect previously experienced with emetine therapy in intestinal and hepatic amoebiasis. Conclusion that obtained from the experiments' data will be presented on the poster alongside with any references used.

## **Keywords**

Nanoparticles, lead optimisation, Emetine, drug repositioning, anti-malarial drugs

# Inter-varietal variation in lead uptake by rice in Nigeria; implication to public health

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## **Abstract**

Lead is classified as toxic element and it has short and long term adverse effect in human. It is responsible for causing greater percentage of non-infectious diseases resulting to over 12.6million annual-deaths globally. Consumption of contaminated food has been identified as one of the primary exposure routes. Recently, research on rice reveals high level of lead accumulation in rice. Rice is consumed as a staple food across the world and people of Zamfara consumes rice more than 4 times a day. It is also used as medicine in some parts of the area. Many deaths (over 400) were recorded in this area between 2010 and 2011 as a result of lead poisoning which called for global attention. The source of lead was mining activities in the area and concentrations in environmental media including food stuff exceed the international standard limits. Plant uptake aids lead entrance into food. Studies show that appropriate varietal selection could be used to minimise transfer of lead into food which could be used to minimise the exposure of the affected population.

This study started in October, 2015 and is aimed at assessing the varieties of rice grown in Nigeria to determine variation in the lead uptake, essential element, and radioactive element then compare with the international standards.

The research will seek to identify how the lead uptake by rice has affected the essential element in rice and how this has influenced the uptake of radioactive elements and to what extent including its implication to public health.

## **Keywords**

Lead uptake, rice, inter-varietal variation, food, public health

# Evolutionary History and Taxonomy of the Titi Monkey

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## **Abstract**

Titi monkeys, subfamily Callicebinae, form a highly diverse and species-rich group of Neotropical primates; over 30 species are currently recognised, five of them described since 2005. Despite the rapid advance of molecular phylogenetics, there has been no molecular genetic approach with a focus on Callicebinae and, as such, little is known of their phylogenetic relationships and divergence times. All previous taxonomic revisions were based upon variation in morphology and biogeography, and the taxonomy has yet to be evaluated using molecular evidence.

To clarify their evolutionary history, a large multi-locus molecular dataset (over 14,000bp; 20 nuclear and two mitochondrial loci) was sequenced for 15 species, including representatives of all species-groups. Results from the phylogenetic analyses show four distinct clades, for the most part concordant with morphological species-groups. Two of the major divergence events are dated to the Miocene, however sister-species divisions are very recent, estimated at c. 2-1 Ma in the Pleistocene. Considering all available evidence, a new genus-level taxonomy is proposed for titi monkeys: *Cheracebus* Byrne et al., 2016; *Callicebus* Thomas, 1903; and *Plecturocebus* Byrne et al., 2016. Species-level relationships are highly resolved and molecular evidence suggests that *dubius* should be considered a junior synonym of a polymorphic *caligatus*. This work provides a detailed account of the evolutionary history of the titis, and supports a revised taxonomy that more clearly reflects phylogenetic relationships.

## **Keywords**

Molecular phylogenetics, taxonomy, titi monkey, Callicebinae, Neotropical primates

# The Future of Resource Allocation: A Collaborative Resource Allocation Algorithm for 4G Networks and Beyond

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## **Abstract**

Cellular Networks has gone through several phases of evolutionary standards motivated by the support for higher data rate and greater quality of services demand from the ever evolving climate of computing where more and far intelligent application are deployed and many users are getting connected daily. The Third Generation Partnership Project adopted the Long Term Evolution (LTE)-Advanced as the Fourth Generation and uses the Orthogonal Frequency Division Multiple Access (OFDMA) as its air interface to enable high speed broadband. Also to support the Internet of Things (IoT), the Mobile and wireless communications Enablers for Twenty-twenty (2020) Information Society (MEITIS) is currently conceptualizing the architecture of the Fifth Generation.

Radio resources in cellular networks are very important, finite and costly for the operators to acquire from the regulators. In order to efficiently satisfy the traffic demands of connected devices, it is very important for the techniques of radio resource allocation to continue to evolve thus allowing for new approaches. In previous generations of networks and the Fourth Generation, different resource allocation algorithms have being deployed that evolved over time.

In this presentation, a novel algorithm: Collaborative Resource Allocation Algorithm (CRAA) is proposed. The CRAA is inspired by lending and welfare from the field of political economy and developed as a Market Game, enabling users to collaborate in order to enable cell edge users and users with less than the required Signal-to-Noise-plus-Interference-Ratio to transmit at satisfactory Quality of Service.

Simulations results show that the CRAA, compared with two popular LTE-Advanced algorithms performs higher than the two algorithms when evaluated using throughput, spectral efficiency, fairness and delay as evaluation metrics; where a 35.97% increase was achieved by simulating five different traffic models (File Transfer Protocol, Hyper Text Transfer Protocol, Video, Voice over IP, and Gaming) as applications run in the network.

## **Keywords**

4G, 5G, Resource Allocation, Collaboration, Algorithm



# Enhancing the energy efficiency of Ultra WideBand (UWB) based Media Access Control (MAC) protocols in Mobile Ad-Hoc Networks (MANETs) through the use of directional antenna

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## **Abstract**

Energy efficiency is a key factor that determines the lifetime of a MANET, and antennas play a vital role in achieving the successful transmission of information. Because nodes in a MANET are normally battery powered, antenna and transmission efficiency is paramount when transmitting information from a node to another. Historically, it has been shown that the use of directional antennas in wireless networks can conserve energy due to the skewed transmission towards a specific direction, and also help resolve the issue of interference from nodes in other directions. However, several concepts and algorithms have emerged that attempt to overcome the irregularities encountered in the use of directional antennas; especially from the design and implementation perspective.

This work clearly demonstrates a vivid definition of an UWB MAC protocol for MANETs, and its behaviour when running different applications. It brings to light the valued significance in the implementation of an UWB MAC in a MANET and overcomes the main issues listed in a summary of existing work. The key aim of this research is to design an improved MAC protocol for UWB systems, in order to minimise power consumption in a MANET. Using a simulated environment modelled on the IEEE 802.15.3 standard, key system design parameters for UWB MAC were identified and tested using directional antennas. As a result of this work, a proof of concept improvement via the modification of an existing MAC protocol based on a Ultra WideBand Concept for Ad Hoc Networks (UCAN) using directional antenna techniques is presented. In this paper, the use of UWB systems utilising directional antennas to overcome the problems of mobility, hidden terminals, deafness, and location, are also analysed. The final results of the analysis clearly show that the proposed UWB MAC performs better when compared to existing MAC protocols.

## **Keywords**

MANET (Mobile Ad hoc Network), UWB (Ultra WideBand), Medium Access Control (MAC), Directivity, Energy conservation

# Comparison of MFCC and GFCC as Feature Spaces for Speaker Recognition in Reverberant Conditions

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## **Abstract**

Speaker recognition developed in laboratories with clean speech samples can achieve almost 100% accuracy when tested in the same controlled conditions, providing a potential tool for critical applications for person identification. However, reverberance inevitably included in real-world speech samples in many cases compromises the reliability of recognition. Robustness is crucial for applications such as security and forensics. This paper investigates the performances of the two commonly used feature spaces in reverberant conditions, and suggests a new approach to take the full advantages of them by switching between feature spaces in an optimal manner. Performance in term of recognition rates under various reverberation times is quantified via simulation, switching mechanism is proposed based on the presence of significant reverberance. Results from the study are presented and discussed.

## **Keywords**

MFCC, GFCC, speaker recognition, reverberance, robustness

## Interactive presentations

### ***Graphick Score: Toward an Interface Design for Intuitive Musicking***

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#### **Abstract**

With the growing prevalence of touchscreen technology in the classroom and the emerging trend of bring-your-own-device in some schools, there is a need for new educational resources which reflect our modes of interaction with such technologies. This is especially true in subjects like music, for the manual actions and representations familiar to us through our use of interactive technology may facilitate creative expression as well as functionality, particularly for the digital natives of the modern classroom.

Drawing influence from Jeanne Bamberger's exploration of the musical representations employed by children, Seymour Papert's interfacing premise of 'objects-to-think-with', and the emerging relevance of 'sandbox' games in education, I have investigated the potential for intuitive modes of interaction in a virtual music-making environment. Graphick Score employs alternative modes of input and representation to facilitate exploratory music-making behaviour. The development of the programme is informed by an ongoing schools-based study, in which it is used by groups of children for simple compositional activities. The study will also assess the extent to which electroacoustic composition and sound design, seldom explored in music curricula below higher education level, can be made accessible to younger learners.

This presentation will focus on the practical use of Graphick Score. The way in which the current interface has taken shape through qualitative feedback, its potential as a creative environment, and the possible avenues for exploration in future versions will be outlined as part of a demonstration in music composition using the programme.

#### **Keywords**

Composition, Constructivism, Education, Interface, Pedagogy

# Towards the realisation of a fully integrated Interactive Computer Music System (ICMS), adopting transformative expressive dimensions.

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## **Abstract**

Is it possible to conceive of an interactive computer music system (ICMS) that achieves in its functionality what has not yet been accomplished by current and pre-existing systems, such as Reactable, NodeBeat and Incredibox, among many others, through the encapsulation and evolution of the fundamental principles behind these systems, including sequenced, transformative and generative approaches to design, and the introduction of new ones, in the form of a topic-theory-inspired transformative algorithmic framework?

*ScreenPlay* is a screen-based ICMS that has been developed as a fundamental part of my research into the field of human-computer interaction (HCI) in music, with the intention that it should facilitate the inception of innovative and exciting ideas relating to the conceptual and aesthetic values and characteristics associated with ICMS design, development and implementation. By bringing together aspects of many prominent, pre-existing system design models with the novel inclusion of a topic-theory-inspired transformative algorithm, *ScreenPlay* manages to offer user(s)/performer(s) a significantly more engaging, intuitive and complete interactive musical experience than that afforded by any currently-available system; the vast majority of which tend to focus (sometimes almost exclusively) on providing the best possible experience to the user(s)/performer(s) only with regards to a single parameter/characteristic of the musical output at the expense of providing depth-in-control at a meaningful level over some or any of the many other parameters/characteristics available.

## **Keywords**

Human-computer interaction (HCI), interactive computer music system (ICMS), screen-based interfacing

# G.A.M.E: Gamification for Activation, Motivation and Engagement

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## **Abstract**

Up to 20% of adults annually seek healthcare for musculoskeletal problems. The prevalence of shoulder problems in this population is approximately 2.5%. Musculoskeletal problems are managed with different modalities of treatment including pharmacological interventions, physiotherapy and surgery. Physiotherapy is applied either in isolation or in conjunction with the other methods. Studies have shown that physiotherapy outcome is dependent on patient engagement. Patient's engagement plays an important role in determining the outcome of therapy and it is estimated that up to 65% of patients are either non or partially adherent to their rehabilitation program.

Physiotherapy exergames were created using a combination of commercially available hardware, the Microsoft Kinect, and bespoke software incorporating games which are based on expertise from specialist clinicians. The exergames use validated physiotherapy techniques and apply principles of gamification to them.

A randomised prospective controlled trial will investigate the use of exergames on patients with Shoulder Impingement Syndrome who undergo Arthroscopic Subacromial Decompression. The intervention group [n=45] will receive physiotherapy aided by automated sensor-based technology, allowing them to perform exergames and track their rehabilitation progress. The control group [n=45] will be treated by standard physiotherapy protocols. Both groups will be compared using patient reported outcome measures and assessment of shoulder range of movement pre and post operatively. Data will be collected on patient experience, engagement with the rehabilitation process and usability of exergames. This will guide development of methods to quantify patient engagement.

Further work is required to validate exergames and how this will provide improved clinical outcomes.

## **Keywords**

Physiotherapy, Rehabilitation

## Health and Wellbeing: Patient Experience 2

### **What is the potential for the use of experimental writing techniques for working therapeutically with people with a diagnosis of dementia?**

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#### **Abstract**

Therapeutic writing is becoming increasingly widespread in healthcare and community settings. Current approaches to therapeutic writing often emphasise working with difficult memories, reframed through the act of writing and therefore enabling a positive transformation in the participant. However for people diagnosed with dementia the ability to access such memories is impaired, bringing into question the suitability of such an approach for this group.

The research comprises two interrelated elements: a critical thesis considering the therapeutic use of experimental writing techniques for people with a diagnosis of dementia, and an innovative autobiography.

The critical thesis will explore the status of therapeutic writing, reflecting critically on guidance manuals and clinical trials, analysed in relation to contemporary practice in therapeutic writing. This will also be explored by interviewing relevant practitioners and observing relevant projects.

The creative project will be formed from linked sequences of poems and text-based textile pieces. The basis of the pieces will be material which is found, curated and collated using techniques such as found poetry, flarf, cut-up, collage and conceptual writing, rather than memoir, in order to investigate the potential of experimental writing techniques to construct and transform notions of identity and self, and to challenge the assumption that it is necessary to access difficult thoughts and feelings in order for the writing process to be beneficial to the writer.

#### **Keywords**

Dementia, writing therapy, experimental writing

# **An ethnographic exploration of women's, midwives' and obstetricians' beliefs around maternal movement during birth**

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## **Abstract**

The majority of births in the UK occur in hospital (Office for National Statistics 2014) placing birth within a medical paradigm. Most maternity units are obstetric-led units governed by a medical model of care. Maternal movement during birth is an aspect available to most women (Jowitt 2014).

Research outcomes form the basis for evidence-informed professional practice and national guidelines (National Institute for Clinical Excellence 2014, Lawrence et al 2014) and recognise a lack of high-level evidence to support or restrict maternal movement during childbirth. Other sources around maternal movement exist, but do not form part of this authoritative knowledge base.

This study explores women's, midwives' and obstetricians' beliefs and knowledge acquisition around maternal movement during birth. This is explored in relation to the culture of childbirth within this unit and within the wider culture of birth as experienced by the participants.

Using feminist discourse, focussed ethnography (FE) was selected as it explores sub-cultures within a specific context, accessing the participants' specific knowledge about an identified problem (Higginbottom et al 2013).

During birth the midwife uses her academic, experiential, shared midwifery knowledge and knowledge of the environment in which she is working on an individual basis. When birth occurs in an obstetric governed environment, intervention takes priority and midwives' knowledge and women's physiological, psychological and emotional needs associated with movement are rarely implemented. Midwives provide a bridge between knowledge of women and birth and that of the system in which they work.

## **Keywords**

Women, birth, midwifery, movement, culture

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# Stories of recovery and recuperating among South Asians

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## Abstract

Coronary heart disease is the biggest killer in the country<sup>1</sup>. South Asians carrying the burden of increased incidence and prevalence and poorer outcomes after a MI than the general UK population<sup>2</sup>. Effective lifestyle self-management as part of secondary prevention of heart attacks is known to reduce the occurrence of adverse coronary events and mortality<sup>3</sup>. Reviews have shown indisputably that lifestyle modification including physical activity, healthy diet and smoking cessation, alters the course of heart disease and reduces recurrences<sup>4</sup> crystallising its significance as a cost-effective public health strategy to reduce the rising burden of this disease.

For South Asians, these lifestyle changes advocated by NICE guidelines<sup>5</sup> and advised by health professionals after a heart attack is not easy to accomplish as they are embedded in cultural practices and rituals. In addition, these patients are not consulted about what social and emotional support they would prefer to receive to guarantee a therapeutic lifestyle modification, thereby weakening their ability to choose and prioritise, maintain and sustain lifestyle changes for better health outcomes.

One way to conceptualise the necessary knowledge and their reflective application for effective lifestyle change was to explore self-management experience of South Asians after a heart attack. Pioneering of its kind, this study used a grounded theory approach to elucidate how South Asians navigate these lifestyle changes. The findings highlight the need for Ethno Sensitivity rather than an ethnocentric approach. Moreover the findings recommend the development of supporting negotiating strategies by capturing broad concepts of cultural sensitivity and competency in self-management programmes.

## Keywords

Lifestyle, South Asians, Culture, Grounded theory, heart attack

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# Positive Psychological Change in people with Rheumatoid Arthritis

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## **Abstract**

**Introduction:** The aim of this study was to explore whether Positive Psychological Change (PPC) occurs in a UK population of people with Rheumatoid Arthritis (RA). Psychological Growth research has expanded in the last 20 years, but various constructs with diverse meanings have emerged in distinct research fields (Tedeschi and Calhoun, 1996; Blore, 2011). There are unanswered questions regarding the definition for PPC; it has not been measured in RA previously and it is unclear which are the best measures to use to examine what might be positive consequences of living with RA. A survey was therefore conducted to identify whether PPC occurs in people with RA and what factors may influence its occurrence.

**Methods:** People with RA, with a minimum disease duration of 2 years, were mailed the Silver Lining Questionnaire with 38 items (SLQ-38, Sodergren, 2000), which has good reliability (.93) and validity.

**Results:** 210 people with RA participated, with a mean age of 62 (SD, 11.01). Most participants were female, (n=166; 79%) and the majority had established disease i.e. duration of RA >10 years (n=112; 53.3%). The largest number reported that they had other health problems in addition to RA.

The average SLQ score was 95.09 and higher scores were associated with age; disease duration; psychological well-being; coping strategy; less fatigue and social support.

**Discussion:** The key finding was that PPC does occur in RA, and it is positively associated with age and number of years post diagnosis. A bio-psychosocial model was developed to explain the findings.

## **Keywords**

Positive Psychological Change, Rheumatoid Arthritis, Post-traumatic growth, & Benefit finding

# Examining the impact of Osteoarthritis in employed people

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## **Abstract**

Background: Osteoarthritis (OA) is a chronic joint disease and can lead to functional disability in activities of daily living and work. Studies suggest around 20% OA patients are still working and that almost 2/3 of them report OA affects their work performance. Regrettably, there is a paucity of research on the effect of OA on work participation and provision of rehabilitative strategies to help them return to or stay at work.

Aim: This study aims to understand work disability in people with OA to provide target for interventions to prevent or reduce work loss.

Methods: A systematic review is underway examining the impact of OA in employed people and assessing the effectiveness of current work rehabilitation interventions. 13 databases were searched including observational studies, RCTs and qualitative studies. This will be followed by a secondary analysis of a large longitudinal dataset measuring work participation over 18-months to provide a trajectory of health problems in working people with OA, complemented by a qualitative study exploring the views of employed people with OA to develop a better understanding of the facilitators and barriers to work participation.

Conclusion: Preliminary results of the systematic review indicate a gap in the existing literature of the impact of OA at work, the lack of qualitative studies on OA patients' perception of work-related problems and the presence of an effective work rehabilitation intervention. This Arthritis Research UK and Medical Research Council funded PhD will focus on this issues in the next three years to answer these questions.

## **Keywords**

Osteoarthritis, work disability, work participation, work loss, work rehabilitation

# Managing peripheral arterial disease using rocker sole shoes

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## **Abstract**

Context: Peripheral Arterial Disease (PAD) is a vascular condition that is estimated to affect 20 million people in Europe, 10% of individuals over 65 years of age and 20% of individuals over 80. The condition is progressive and can lead to amputation and death. The most common symptom of PAD is intermittent claudication (IC) which is pain at the calf and sometimes buttocks after walking short distances. This limits one's ability to be active and sometimes independent which reduces quality of life.

Invasive procedures, such as angioplasty, stenting and bypass surgery carry significant risk and cannot guarantee permanent results. It is therefore important that a non-invasive, patient-friendly form of management is developed to assist in the treatment of PAD alongside other interventions.

Research: Since the underlying cause of calf pain is insufficient blood supply to muscles during physical activity, one possible conservative approach is to design footwear or orthotics that reduce the mechanical workload of the calf muscles while walking. This may allow for the increase in pain-free walking distance and daily activity of affected individuals hence increasing their quality of life.

The aim of this research is to design, test and optimise footwear, based on biomechanical concepts, which will assist in the management of PAD/IC.

The presentation will address the following points:

- What is PAD/IC, why it's so crippling
- How can we use biomechanical principles and footwear to help manage a vascular condition
- Results in my research so far & next stages
- Benefit to patients and the NHS

## **Keywords**

Rocker soles, gait, peripheral arterial disease

## **Engineering and Environment**

### **Towards Building Resilience against Impacts of Climate Change in Agrarian Communities: A Literature Review**

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#### **Abstract**

Agriculture in Sub-Saharan Africa is done on a subsistent level and faced with multiple risks from mode of agricultural operations, state of infrastructure, increasing populations and rapid urbanization among others. Climate change is expected to further impact farmers and agricultural production due to the sectors overdependence on weather and climate for its productivity. However, there is limited information on the vulnerability and current coping status of farmers to impacts of climate change. This paper aims to investigate the cascading impacts of climate change on agricultural production in Nigeria with a view of helping small scale farmers to build resilience against impacts of climate change. A literature review highlighting critical vulnerability characteristics of small scale farmers that make them susceptible. It found out that small scale farmers are particularly vulnerable to the slightest form of shock due to their overdependence on agriculture for their livelihoods. Increase in temperature and sporadic rainfall patterns expose farmers to frequent pests and diseases outbreaks accounting for agricultural loss, loss of income, loss of livelihoods and exacerbating food insecurity. Farmers coping strategies are found to be local and insufficient. An immediate need for stakeholder involvement in infrastructure appropriation is recommended for capacity building of farmers and farming communities towards sustainable agriculture and building resilience against impacts of climate change.

#### **Keywords**

Agriculture, Climate Change, Vulnerability, Resilience and Infrastructure

# Future Scenarios for Estuarine Conservation in the Upper Mersey Estuary

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## **Abstract**

Understanding better the consequence of anthropogenic pressure and environmental change is a substantial area of research for modern conservation and ecology. It is vital that conservation managers plan for environmental uncertainty in order to develop appropriate mitigation strategies for future biodiversity, whilst maintaining the derived ecosystem services on which humanity depends.

This research aims to investigate and quantify the impact of future environmental change on the avian communities of saltmarsh and reed bed habitats. This research will incorporate methods utilised in environmental modelling to fulfil three objectives: to monitor and classify saltmarsh vegetation quality using remotely sensed data; to develop a habitat suitability model based on breeding bird field data; and to test the response of these models under scenarios of future climate change, sea level rise and storm events. The research will focus on the Upper Mersey Estuary (UME), a highly urban estuary, constrained at its boundary by the towns of Widnes, Runcorn and Warrington. The UME is representative of estuaries globally. Hence studying this system establishes the UME as a case study to understand the impact of future environmental change on a constrained estuary, with potential for transferability to similarly restricted estuaries in the UK and elsewhere.

This presentation will communicate the current importance and context of the research, as found during the literature review, focusing on the impacts of climate change on ecological systems. Methodology, and a discussion of the constraints, for data collection and model construction will then be presented in the context of the research objectives.

## **Keywords**

Climate change, modelling, conservation, estuaries

# Modelling Electricity Distribution Networks with Geospatial Big Data

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## **Abstract**

Big Data refers to technologies that involve data that is too diverse, fast changing and very big for conventional technologies, skills and infrastructure to address efficiently. Geospatial big data refers to spatial data sets exceeding capacity of traditional computing systems. Geospatial data has always been big data; size of such data is growing rapidly every year. Along with this exponential increase of geospatial big data, the capability of high performance computing is being required greatly than ever, for modelling and simulation of geospatially enabled contents. The increasing volume and varying format of collected geospatial big data presents challenges in storing, managing, processing, analysing, visualising and verifying the quality of data.

Recently Geospatial big data is becoming a popular in the utilities industry as it plays a significant role in the operational capacity of the various energy distribution networks. Specially electricity Distribution Network Operators (DNOs) often collect and process vast amounts of geospatial data in order to support the day-to-day operation of their networks but they do not use those collected data efficiently. The main objective of this study is to find a systematic approach to overcoming the operational issues currently faced by DNOs using geospatial big data and advanced geospatial big data mining techniques.

The study aims to identify how geospatial big data has been used in existing electricity distribution networks. Also indent to investigate current challenges are of applying the latest and most advanced geospatial big data mining techniques to electricity distribution network modelling. Ultimate goal is to find how geospatial big data can be used to model future electricity distribution networks and provide recommendations to improve the operational effectiveness.

New geospatial data mining techniques and algorithms, theoretical analysis and experimental results on synthetic data sets and real world datasets will be presented, analyse and discussed in this research.

## **Keywords**

Big data, Geospatial big data, Spatial Data Mining, Electricity Distribution Network

# **An analysis of driver behaviour following the onset of amber at traffic signalised intersections**

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## **Abstract**

Red light violation has become a major road safety problem and affects the performance of signalised junctions. Some drivers hesitate in their decisions in a dilemma zone when the traffic light signal changes from amber to red. Either they fail to comply with the red light resulting in serious collisions with other road users, or there is tailgating with other vehicles due to sudden stopping or deceleration during the amber onset. For this purpose, driver speeds and acceleration/deceleration rates have been investigated along one approach to a signal junction in Greater Manchester using a video recording method. Observations have been made during the amber and red periods of the signal cycle and include: red light violations, vehicle type, lane position, distance from stop bar, speeds of preceding and following vehicles, and finally headway times with the preceding and following vehicles in the same lane. This presentation reports on the analysis of the data for drivers in the dilemma zone and reveals typical behaviours which can be incorporated into traffic simulation models. These models can then be developed to investigate the impact of traffic safety interventions at traffic signals.

## **Keywords**

Red light running behaviour, Signalised intersection accidents, Driver speed, Signal change, Dilemma zone

# Micro-simulation model for motorway roadwork sections

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## **Abstract**

This paper presents a newly developed micro-simulation model for motorway roadwork sections to evaluate the efficiency of different traffic management schemes (i.e. narrow lanes and lane closures) and to test the effect of various parameters (i.e. HGVs% and speed limits) on traffic performance (i.e. capacity and delay). The reason for building this model from scratch is the lack of ability of the S-Paramics software model (which is made available to the authors and is a software which is used widely in industry) to appropriately model drivers' behaviour at motorway roadwork sections. The new model was built using the FORTRAN programming language. It was developed based on car-following, lane changing, gap acceptance, lane closure and narrow lanes rules. Data from four sources (taken from different sets of data from UK motorways sites) were collected and analysed. The data was used in developing, verifying, calibrating and validating the model. Observations from roadworks with narrow lanes show certain prominent drivers' behaviours, namely avoiding passing HGVs on adjacent lanes and lane repositioning before passing an HGV. The simulation results revealed that, under high traffic demand associated with high HGVs% over (i.e.  $\geq 25\%$ ), the use of offside lane closure scheme seems to perform better in terms of capacity and delay than narrow lanes scheme. Also, the results showed that the presence of HGVs has a large impact on reducing site capacity. Furthermore, the model suggests that to maintain site capacity and to reduce delay, stricter speed limits should be imposed.

## **Keywords**

Motorway roadwork sections, traffic management schemes, modelling, driving behaviours, traffic performance



## **Poster Presentations**

### **Public Relations' Communications in Public Diplomacy A field study to be conducted on Libyan institutions in Egypt and the UK**

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#### **Abstract**

At the present time, there is an increasing concern about the potential role of public relations in the international field, especially, with the wake of increasing globalization and massive technological advancements which have eliminated geographical borders.

In addition, the vast majority of studies indicate that there are significant challenges face Arab's public relations and public diplomacy. One of these challenges is the negative image of Arabs abroad, and Libya is one of those countries that needs to reflect seriously on its public diplomacy with the aim of repairing its nation brand abroad, in response to many reasons; First, its dark past of 42 years under the most authoritarian undemocratic regime in the world 'Gaddafi regime', second, following the Libyan revolution 2011, there is an urgent need to communicate and establish close relationships with international community which can contribute to rebuilding Libya.

The current study examines the communication efforts being made by the Libyan institutions abroad 'Egypt and the UK' through investigating public relations practices being executed for communicating with foreign public in order to promote Libya's nation brand abroad.

This poster will outline the key research areas and ideas to be pursued in a PhD project at the University of Salford.

#### **Keywords**

Public relations, diplomacy, Libya, Egypt, Arabs, international community, nation brand

# **Our bird didn't fly home: How Malaysia Airlines used social media for the missing MH370 crisis**

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## **Abstract**

The effectiveness of an organisation's crisis communication strategy when faced with a crisis is a major determinant of what becomes of the crisis and how it impacts on its reputation. However, the advancement in the use of social media in times of crisis both by the organisation and its stakeholders has altered the traditional paradigm of crisis communication from a one-way to a fully bi-directional communication process with a platform that allows both the organisation and its stakeholders to inform and be informed in real-time.

Using observation and content analysis methods, the crisis response messages released by Malaysia Airlines (MA) in response to the missing MH370 plane on 8th march, 2014 is analysed to determine how MA used their social media channels in crisis communication. Messages released to the public in response to the crisis on the organisation website, official twitter handle and Facebook page were compared. Findings show that similar crisis response messages were posted on all these channels.

This suggests that airline companies accepts Twitter and Facebook as a primary crisis communication channel and adopts a mixed motive approach by releasing messages concurrently through the traditional media, organisation website and their social media channels for crisis communication.

## **Keywords**

Crisis communication, Malaysia Airlines MH370, Social media, Twitter, Facebook

# **A Qualitative and Quantitative Evaluation of Antimalarial Chemotherapeutic Practices and Outcomes in the Southwest Region of Nigeria**

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## **Abstract**

The project proposes to qualitatively and quantitatively analyse chemotherapeutic practices and outcomes at an individual and community level in two selected states (Lagos and Osun) in the South West Region of Nigeria in a bid to define barriers to effective case management. Comparative data from hospital records and regional pharmacies will be accessed and related to community level data, to explore the relationship between disease awareness, self-medication practices, socio-economic backgrounds and treatments practices for malaria.

A major factor that affects the effective treatment of malaria is the lack of standardised protocols to routinely decipher the quality of the available drugs in the regions. The existence of counterfeit or substandard drugs does not only put patients at risk of developing the disease, but also promotes drug-resistant malaria infections. This study will define active component ratios of randomly sampled drugs in the region using FTIR, HPLC and NMR spectroscopy. The data will be related back to prescription practices in the hospital and pharmacy setting. Creating a platform for effective case management of malaria infections will require collaboration across organizational/and national boundaries, bringing together intervention programs and influencing health policy. The data generated in this study will be a useful resource that would contribute towards this aim.

## **Keywords**

Nigeria, chemotherapeutic practices, malaria, FTIR, HPLC, NMR spectroscopy, health policy

# Deep belief spiking neural network for source localization with HRTFs

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## **Abstract**

Many localization methods have been proposed, but just slight models have searched binaural localization and HRTF when two microphones are used to define the three-dimensional location of sound sources, and go ahead to satisfy real-time localization in different acoustical environments. This work suggests a technique for binaural sound source localization which will be employed by developing the artificial intelligent aural mechanism that emulates the human hearing system and its abilities in determining different types of sounds emitting from multiple sources in diverse directions. Regarding sound source localization various cues and for the best understanding and evaluating, the proposed algorithm based on analyzing and investigating the different types of localization cues that embedded in the Head Related Transfer function (HRTF) component. There is always urgent desired in understanding the mechanisms or metrics followed by the human brain in processing, classifying and receiving various audio and visual cues. This project aims to utilize the full realistic advantages of the spiking neural network (SNN) for perfect understanding to the auditory nerves activities it currently focuses on developing deep belief spiking neural framework can be used to mimic human hearing system to solve many sound sources localisation problems.

## **Keywords**

SNN, HRTF, Binaural Hearing, Sound Sources Localization

# News as Brands: Branding Television News Channels in the Arab World

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## **Abstract**

This research is an attempt to examine the use of news programmes as a means of branding television news channels in the Arab World. The researcher is going to use a quantitative content analysis of the news programmes as well as semi-structured interviews with officials in the newsroom to explore their strategies in branding their television news channels via news programmes. News of the four selected Arabian television news channels (Aljazeera broadcasts from Qatar and Al-Arabiya broadcasts from UAE as Pan-Arab television news channels and the Nile News broadcasts from Egypt and AlEkhbariya broadcasts from Saudi Arabia as government supported television news channels representing their regions) will be analysed to test how they were used as a means of branding television news channels to compete in the Arab media landscape which is described as a saturated media environment.

The study aims, specifically, at testing the differences among the selected television news channels on utilising elements of branding via their news programmes. The other aim of the study is to clarify the relationships between media branding, news selection and processing. Moreover, it will predict the variables that significantly explain the variance in the dimensions of media branding used by the selected channels, and establish a theoretical and practical perspectives based on the specific results of the study regarding to branding television news channels via their news programmes. The study should contribute to the knowledge about the use of news as brands by television news channels in the Arab World.

## **Keywords**

Branding, news branding, television news channels, brand identity, Arab World

# Adaptive Control of Functional Electrical Stimulation for Upper Limb Rehabilitation

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## **Abstract**

Functional electrical stimulation (FES) is the use of electrical pulses to produce contraction of muscles in such a way as to support performance of functional tasks. Stroke patients may use FES to support practice of functional tasks. However, current FES systems generally offer only crude control, greatly limiting its usefulness. The Salford team have produced a flexible system, which enables therapists to set up patient and task-specific FES state machine controllers. However, significant therapist input is still required to setup and adapt the controller as the patient status changes.

This PhD extends the Salford system by combining the state-machine-based control with adaptive control thereby reducing the need for therapist input. The work has begun with the development of a method using segment mounted Magnetic Inertial Measurement Unit sensors (MIMUs) to track upper-limb joint angles. First, sensor-to-segment calibration procedure is required to align the coordinate frames of each sensor with its anatomical reference frame. Two reference vectors are defined, using static alignment (the subject holds a defined static position and the measured gravity vector is used to establish an anatomical reference vector) and dynamic calibration (the subject performs a uni-axial rotation to determine a vector representing the functional axis of rotation). These two are combined to define a rotation matrix, the columns of which are the unit vectors describing the local coordinate system expressed in the sensor coordinate system. Finally, the joint rotation matrix is found using the orientation matrix of distal segment with respect to its adjacent proximal segment.

## **Keywords**

Functional electrical stimulation, upper-limb, finite-state machine control, iterative learning control, Magnetic and inertial measurement unit sensor

# Coupling Ontology with Reference Architectures to Facilitate the Instantiation Process of Software System Architectures

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## **Abstract**

A reference architecture can be used by many developers to instantiate software system architectures' instances that best fit their costumers' requirements. Furthermore, software architectures play a considerable role in defining the achievement of software systems. Therefore, the software system architecture can be derived efficiently from a well-structured reference architecture.

There is a lack of any well-defined methodology that converts reference architecture knowledge to a clear and customized software system architecture. Consequently, the instantiation process of the software system architecture from the reference architecture is a difficult task because reference architectures comprise a variety of knowledge elements and artefacts, usually contained in a number of documents. However, this knowledge is always, almost non-structured and non-organized, which makes it hard to understand and use by a variety of stakeholders

To cope with this issue, our approach will focus on developing an architectural development methodology to facilitate the instantiation process of software system architectures from a pre-defined reference architecture. In this research, we propose to use ontology as a tool to represent the artefacts of the reference architecture, which will facilitate the instantiation process of the software system architecture. Specifically, we are aim to define a common well-established vocabulary for the reference architecture, which can be useful to facilitate the development of software system architectures.

## **Keywords**

Reference Architecture, Software System Architecture, Ontology, Methodology

# Expression and purification of active recombinant human NEIL3 from *Escherichia coli*

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## **Abstract**

The DNA glycosylase NEIL3 is one of a family of proteins that are responsible for the release of oxidized bases from DNA, thereby initiating base excision repair (BER). NEIL3 is normally expressed only in rapidly dividing cells such as those in the developing neonatal brain, however, NEIL3 is also highly expressed in cells from metastatic tumours. The biochemical characterization of NEIL3 has been hampered by the difficulty of expressing enzymatically active recombinant human NEIL3 (hNEIL3) in *Escherichia coli*. One reason for this is that the sequence of amino acids at the N-terminus prevents the removal of the N-terminal methionine by the *E. coli* methionine amino peptidase. As N-terminal methionine processing is essential for DNA glycosylase activity, a novel bicistronic expression vector (pET-Duet2) has been developed to express active hNEIL3. This vector combines an engineered version of the *E. coli* amino peptidase to improve N-terminal processing and a short leader sequence (ORF6) to improve translation efficiency, in front of the coding sequence of hNEIL3. In addition to full length hNEIL3, four truncations of the cDNA have been made, each containing the N-terminal Fpg/Nei and H2tH domains but lacking at least one of four additional motifs at C-terminal end of hNeil3. To date, all but one of the cDNA truncations have been cloned into the pET-Duet2 vector and expressed in *E. coli* and hNEIL3 expression confirmed by SDS-PAGE and western blotting. The His-tagged proteins were then purified in preparation for enzyme assays to be performed to determine the effect of the C-terminal domains on protein function.

## **Keywords**

DNA glycosylase, NEIL3, Base excision repair, *E. coli* expression vector



# 5G Mobile Network Planning and Optimisation In Millimetre Wave Frequency Band

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## **Abstract**

Recently, there has been a substantial growth in mobile data traffic due to the widespread of data hungry devices such as smart handsets and laptops. This has encouraged researchers and system designers to develop a further efficient network design.

The fifth Generation (5G) mobile network will provide services with extreme data rate and latency demands compared to current cellular network. Therefore, it is important to utilize all network resources to provide the 5G vision. In our work, performance evaluations and impact of higher order horizontal sectorisation on next generation 5G mobile access are presented. The study has been focused on busy urban areas with dense deployment of smallcells in high carrier frequency. Millimetre wave band has precious wide unexploited bandwidth that can be harnessed for mobile communication. The results for these scenarios show that higher-order horizontal sectorisation in millimetre wave based smallcell deployment can significantly increase the network capacity to meet the future requirement of 5G network, and provide high speed data rate and connectivity to huge devices to enable the Internet-of-Things (IoT). However, there will be degradation in Signal to Noise plus Interference Ratio (SNIR) due to the increase in interference from new sectors, and therefore, a trade off should be carefully considered between increasing sectorisation order and maintain a reliable SNIR. Massive MIMO and beamforming can greatly improve SNIR & Data rate motivated by the small wavelength at millimetre wave band that make massive MIMO a credible solution with small physical architecture and huge number of antennas.

## **Keywords**

5G network, millimetre wave, higher order sectorisation, massive MIMO, Beamforming

# Impact of Diesel Spills on Water Quality Outflow Parameters of Reed Beds Treating Urban Wastewater

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## **Abstract**

Application of vertical-flow constructed wetlands for hydrocarbon treatment is now gaining acceptance worldwide as a result of a sharp increase in urbanisation. Growing industrial and agricultural land use has resulted in a tremendous increase in discharge of a wide range of pollutants including hydrocarbons to receiving water courses. The aim of this study was to compare the impact of different design (aggregate size) and operational (contact time, empty time and chemical oxygen demand (COD) loading) variables on the performance of mature vertical-flow constructed wetland filters operated in tidal-flow mode (between June 2011 and December 2015) and contaminated by two diesel spills (20 g/l and 150 g/l) on September 2013 and September 2014, respectively. Ten different laboratory-scale vertical-flow constructed wetlands were used to assess the treatment efficiency as a function of hydraulic and organic loading rates, media size as well as contact and rest time. The objectives were to assess (i) the performance of wetland filters with and without hydrocarbon contamination; and (ii) the impact of design and operational variables on the removal of diesel and other water quality variables. For the first dosage of diesel contamination, all wetland filters showed high diesel removal efficiencies ( $\geq 90\%$ ). Compliance with secondary wastewater treatment standards was achieved by all wetlands regarding ammonia-nitrogen, nitrate-nitrogen and suspended solids, and non-compliance concerning ortho-phosphate-phosphorus. While for the second period of diesel contamination, wetland filters showed a high variation in the hydrocarbon component removal efficiency over time. Moreover, filters contaminated by diesel performed worse in terms of COD, but considerably better regarding nitrate-nitrogen removal.

## **Keywords**

Domestic wastewater, hydrocarbon, suspended solids, water quality, wetland

# The effect of corporate social responsibility disclosure on financial performance: The Moderation effect of Disclosure Quality

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## **Abstract**

This study explores the impact of Corporate Social Responsibility Disclosure (CSR D) on corporate financial performance (CFP). The study also examines factors that influence CSR disclosure, such as corporate characteristics (industry type, size, and profitability) and corporate governance (ownership structure, number of board meeting, number of female directors, non-executive directors, and the type of audit firm). It is been argued that CSR D enhances the financial performance, however, some researchers are claiming that adopting such behavior will increase the cost, and will have an opposite effect on the company's performance. The data is drawn from the annual reports and websites of 120 Jordanian companies over the period of 2009-2014. This study uses content analysis as a research technique to assess the extent and quality of disclosure. A CSR index is constructed, and includes the disclosures of the following categories; Environmental, Human resources, Product and consumers, and Community involvement. A scale from 0-3 is adopted to examine the quality of disclosure, where 0 is given for general statement, 1 for general non-monetary disclosures, 2 for quantitative description, and 3 for quantitative and numeric disclosures. The moderating effect of disclosure quality will be tested on the relationship between corporate social responsibility disclosure and financial performance.

## **Keywords**

Corporate social responsibility disclosure, financial performance, content analysis, disclosure quality, developing countries

**Evaluating Interactivity Traits on Social Media from a Public Relations  
Perspective:  
The Case of Saudi Ministry of Commerce and Industry and Saudi  
Telecommunications Company**

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**Abstract**

Social media such as Facebook and Twitter are causing significant changes in communication patterns making it necessary for Public Relations' practitioners to adjust to the new and unpredictable dynamics of engaging with the public. This study investigated the factors surrounding increased public participation and engagement through use of Facebook and Twitter in Saudi Arabia's Saudi Telecommunications (STC) and the Ministry of Commerce and Industry (MCI). Guided by the interpretivist research philosophy, the researcher archived Facebook posts and tweets by STC and MCI for one month. The archiving entailed documentation of the posting and tweeting time, number of likes, comments, shares, retweets, replies and favourites for each Facebook post and Tweet.

The findings showed that STC posted more frequently and had a higher number of likes than MCI. In terms of interactivity, the Saudi Facebook audience interacted most with MCI when the posts were about government action, especially against businesses engaged in malpractices. On the other hand, the STC Facebook audience interacted more with the organisation when the posts were about promotions, publicising of CSR events, and religious information. In both cases, interaction was highest when the organisations posted on Fridays. The results for Twitter showed that STC tweeted more than MCI. STC and MCI tweets posted between Friday and Monday recorded the highest interaction rates with the public. It also emerged that both public and private organisations in Saudi Arabia are likely to engage more effectively with their publics through Twitter than through Facebook, especially over the weekends during daytime.

**Keywords**

New Media, Twitter, Facebook, PR

# **Iraqi Land Tenure Administrations**

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## **Abstract**

A brief outline of Iraq's legal roots of land tenure is required for any complete discussion of Land Tenure Security (LTS). This poster was carried out in Iraq, it represents an attempt to evaluate the essential features and roles of land sector agencies in facilitating access to Iraqi urban lands. It seeks to understand the recent factors that contribute to the partial success of the Iraqi Land Authorities (ILAs) to achieve the effective LTA in Iraq. The topic of this poster is studying the Crisis of the Land tenure administration in Iraq through ILAs strategies. Also, this poster examines the LTS through looking at a historical review of Iraq's Land tenure, legal practices parallel to ILAs administrative strategies to understand the nation's current Land tenure crisis. Following the historical review, this poster screens current crisis to evaluate the viability of ILAs policies and influence of the recent situations. Therefore, the research makes a contribution to knowledge by evaluating Iraqi current LTS issues and policy options, focusing on tenure security situations, and using Al-Nassiriya city as the case study.

## **Keywords**

Iraq, Land Tenure Security, LTS, ILAs, strategy

# Employment Status, Work Productivity and Activity Impairment Of Chronic Kidney Disease Patients Undergoing Haemodialysis

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## Abstract

Unemployment rate and reduced work capacity among CKD patients is a serious issue that requires deeper investigation and an understanding of strategies that may help retain people with CKD in the labour market. This research examined the impact of CKD on HD patients' health and employment status, work productivity and activity impairment (in the Kingdom of Saudi Arabia, KSA). Using a mixed-methods design the WPAIv2 and the SF-12v2 were administered across two study sites in Riyadh province, targeting patients of working age (18-65 years) and receiving HD. 130 questionnaires were completed, 51 % were male with a mean age 42 years. There was an unemployment rate of 75% (male 37%, female 63%). Women were significantly ( $p < 0.001$ ) more activity impaired than men due to their health condition. The results show a significant negative relationship between total physical component score, and the overall work productivity loss for employed participants ( $r = -0.33$ ,  $p < 0.05$ ) and the total activity impairment for unemployed participants ( $r = -0.57$ ,  $p < 0.0001$ ).

**Table1: WPAI scale results**

Scale	Mean	SD	Min-Max	
Work time missed (%)	62.28	28.14	0-100	
Impairment at work (%)	42.50	33.41	0-100	
Overall work productivity loss (%)	74.12	26.58	0-100	
Activity impairment (%)	<i>Employed</i>	43.13	33.93	0-100
	<i>Unemployed</i>	61.53	33.75	0-100

CKD was associated with low physical health condition, low employment rate, and high work productivity loss and activity impairment. This study helps identify those people whose productivity is reduced, their activity impaired, with deteriorating health and allow early interventions to facilitate sustained employment among HD patients.

## Keywords

CKD, Haemodialysis, Employment, Work productivity, Activity impairments, HRQoL

# Improving the Energy Efficiency for a WBSN Based on a Coordinated Duty Cycle and Network Coding

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## **Abstract**

The most important challenges in the design of a Wireless Body Sensor Network (WBSN) are the successful delivery of data and the reduction of energy consumption. In general, a WBAN topology comprises a set of sensor nodes, relay nodes and a sink node. The sensor nodes near the Sink deplete their energy quickly due to heavy traffic, which limits the network lifetime. Large amounts of data flow near the sink, so the closer nodes consume more energy than the other nodes, causing a bottleneck zone. The sensor nodes in the bottleneck zone run out of energy very quickly, which is called the energy hole problem in WSNs. Failure of sensor nodes in the bottleneck area leads to wastage of network energy and reduction of network reliability and bandwidth.

Wireless body area networks are classified into two types: sparse wireless body sensor network (SWBSN) and dense wireless body sensor network (DWBSN), depending on the number of sensor nodes used and the type of topology. This work proposes two energy efficient models: Energy efficient sparse wireless body sensor network (ESWBSN) design model and Energy efficiency dense wireless body sensor network (EDWBSN) design model. ESWBSN and EDWBSN adopt XOR network coding and a coordinated duty cycle to reduce energy consumption in single-hop and multi-hop approaches. This research combines a coordinated duty cycle and network coding to enhance the WBSN lifetime. To improve energy efficiency and packet delivery ratio, a coordinated duty cycle which is implemented on the event-centric monitoring application is used.

## **Keywords**

Wireless Body Sensor Network, Energy Efficiency, Duty Cycle, Network Coding

# Effects of cadmium and antibiotics on food intake and colour change in the brown shrimp, *Crangon crangon*

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## **Abstract**

Heavy metal contamination due to human activity is affecting terrestrial and aquatic environments. In addition, the increase of incorrect use of antibiotics (clinical and agricultural overuse) may lead to the spread of drug resistant bacteria. The effects of heavy metals on marine organisms have been investigated but little is known about the combined effects of heavy metals and antibiotics. Here, we use the brown shrimp, *Crangon crangon* as our study system. This is an ecologically and commercially important species, widely consumed. The aims of this study are to evaluate the effects of cadmium and the antibiotic furazolidone on physiological and behavioural responses (food intake and colour change) in *C. crangon*. Locally collected shrimp (n=48) were individually placed in separated aquaria with black sediment and divided into 4 groups, 3 of which were treated for 21 days with: 1) cadmium; 2) furazolidone; 3) cadmium and furazolidone plus a control group. Shrimp were fed every other day for two hours in separate beakers with clean seawater and white sediment. The wet weight of the shrimp and the food were measured before and after the feeding trial to assess food intake. Pictures of the tail of each shrimp were taken before and after changing the substrate to determine colour change (following the protocol of Siegenthaler et al). This is a multidisciplinary project, which combines ecotoxicological, microbiological and behavioural aspects. The results will be fundamental to understand the combined effects of contaminants and antibiotics in marine organisms.

## **Keywords**

Cadmium, brown shrimp, furazolidone, food intake, colour change



# Characterising the microbial communities associated with the water distribution system of a poultry farm and their role in *Campylobacter jejuni* infection

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## **Abstract**

*Campylobacter jejuni* is the most common bacterial pathogen responsible for infectious intestinal disease in the UK and worldwide. The role of poultry as a main vehicle for transmission to humans is well established and retail poultry meat has repeatedly been found to be contaminated with high frequencies. Under commercial conditions chicken are rarely colonized before two weeks of age and poultry infection is not generally associated with clinical illness. The source of chicken colonization remains unidentified in spite of the numerous source attribution studies but it is quite accepted that horizontal transmission from the farm environment is the most common route. The fastidious and microaerophilic nature of *C. jejuni* along with the low infectious dose make the source of infection identification in the farm environment very challenging. We hypothesize that it is possible that the survival of *C. jejuni* is supported by polymicrobial communities within the broiler house water distribution systems (DWDS). However there is little information about the members of these communities. We have conducted a pilot longitudinal study across a 7-week rearing cycle in a broiler farm to study the dynamics of the key microbial communities associated with the DWDS (biofilm and planktonic) and investigate their role in *C. jejuni* transmission.

## **Keywords**

Campylobacter, polymicrobial communities, poultry, water distribution systems

# Crosstalk of TTC5 cofactor and the estrogen receptor in breast cancer cells

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## **Abstract**

Estrogen receptors (ER) is a transcription factor that activates or inhibits the expression of a wide array of genes. ER's transcriptional activity is regulated at several levels including the interaction with cofactors, which modulate its transcriptional activity and target gene selectivity. Cofactors can also regulate the timing and the duration of ER's transcriptional activity thereby tailoring its function to diverse microenvironmental and stress conditions. Cofactors interact with ER through L-X-X-L-L motif where L is Leucin and X is any amino acid). To further our understanding of how regulation of ER contributes to cellular response, we investigated the role of Tetratricopeptide Repeat Domain 5 (TTC5) in regulation of ER function. TTC5 has similar organization of TPR motifs to the chaperone Hop, and has previously been shown to regulate p53, HSF1 and glucocorticoid receptor activity in response to cellular stress.

We monitored TTC5 protein levels in presence or absence of estrogen hormone (E2) and Tamoxifen, on MCF-7, T47D and MDA-MB-468 breast cancer cells. In all three cell lines TTC5 presence was confirmed by western blotting. Also to monitor transcriptional activity of ER on estrogen response element (ERE) promoter luciferase assays were performed in MCF-7 and T47D breast cancer cells, and the result indicates that TTC5 effects ER's transcriptional activity in a cell specific manner. Furthermore our results show that TTC5 interacts with ER in MCF-7 and T47D cells, but the role of TTC5 in ER regulation is yet to be studied.

## **Keywords**

Breast cancer, Estrogen receptor, Tetratricopeptide Repeat Domain 5 (TTC5)

# The effects of in-socket air-pressure on short term changes in residuum volume, static pistoning, gait parameters, and comfort: A comparison between active and passive systems

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## **Abstract**

**Context:** Reduction in residuum volume is a common problem in lower limb amputees during upright mobility, leading to pistoning and associated tissue and gait problems. A pump can be fitted to the socket to reduce the in-socket air pressure. This “active” approach has been shown to conserve the residuum volume, but is expensive and unlikely to be widely available. An alternative approach, based on Boyles’ Law, is to introduce an air reservoir within the socket and hence reduce the relative change in pressure for a given change in volume (during gait the limb will move relative to the socket). We term this design to be “passive”. **Objectives:** To compare the performance between conventional, passive and active prostheses in terms of: Maintenance of residuum volume, gait, pistoning, and comfort. **Design:** Repeated measures experiment with three conditions. **Participants:** 10 unilateral trans-tibial amputees. **Main outcomes:** Residuum volume, gait kinematics and kinetics, pistoning, and comfort. **Methods:** Each participant will be fitted with a bespoke test-prosthesis that can be adapted to perform as a passive, active, or conventional system. Residuum volume and pistoning will be measured before and after walking with each type (presented in a random order). Gait data will be collected during walking trials. Suitable time will be given between test-conditions for residuum volume to reach steady-state. Comfort will be assessed after each test-condition. **Results:** Repeated measures ANOVA will be used to analyse the residuum volume, gait and pistoning data and comfort will be analysed using the Friedman test.

## **Keywords**

Socket, suspension, air-pressure, volume, gait

# Multiphoton Activation of Anti-cancer Agents

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## Abstract

There is a clear need for novel anticancer therapies that avoid or reduce damage to normal, healthy tissue. A functional vascular network is essential for the survival, growth and spread of tumours making blood vessels a key target for therapeutic studies. The antivascular agent Combretastatin A-4 acts very similarly to colchicine in its interactions with tubulin. Z-Combretastatins are effective chemotherapeutic agents but their overall use has been limited owing to associated toxicity in normal tissues. As an answer to this need, we are developing and testing a novel family of non-toxic E-combretastatins with large two photon cross sections which can be activated at the tumour site by multiphoton irradiation to provide the active Z-isomers.

A series of substituted combretastatins have been designed and synthesised in a multistep process using palladium-catalysed methodologies and employing Wittig Chemistry. The molecules were designed to possess a large two photon cross-section making them more suitable for irradiation. These molecules have an electron-donating methoxylation pattern on the A-ring and an electron-withdrawing group on the B-ring (fig. 1).

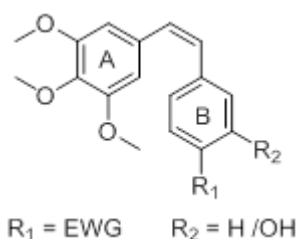


Figure 1. General structure of combretastatin derivatives tested for cytotoxicity.

The cytotoxicity of the substituted stilbenes is currently being tested in breast cancer and leukemia cell lines using the MTT and MTS assays. Further to cytotoxicity studies, two photon cross-section values and uptake in cells using 3D *in vitro* reconstructed models will be determined at wavelengths of 600-1100 nm using the multi-photon microscope at the STFC-Rutherford Appleton Laboratories (RAL) using fluorescence lifetime imaging microscopy (FLIM).

## Keywords

Cancer, Tubulin, Synthesis, Photoisomerisation

# Tools for learning: exploring the impact of open disclosure

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## **Abstract**

In *To Err is Human* (2000) stated that approximately 44,000 people in America each year as a result of medical errors, “more people die in a given year as a result of medical errors than from motor vehicles accidents (43,458), breast cancer (42,297), or AIDS (16,516)”. Kohn, L.T., Corrigan, J.M. and Donaldson, M.S. (2000: 26). In the UK there have been a number of key public inquiries which have highlighted clear issues in relation to culture, leadership, systems and processes impacting on patient safety. In some cases these issues have led to devastating and tragic events for patients and families using healthcare services; these were the findings of the investigation of Mid Staffordshire NHS Trust as detailed in the Francis Inquiry (2013). One of the recommendations from the Francis Inquiry was the development and implementation of open disclosure with patients and or families when a patient safety incident has occurred, in England this is known as the Duty of Candour.

The purpose of this study is to explore the impact of open disclosure from a patient perspective, using interviews to capture patient stories. I will explore the experiences of patients and families who have experienced a patient safety incident to understand what the impact of open disclosure discussions has had on their recovery or in fact grieving process and whether this legislation is leading to improvement in practice, to ensure lessons are learnt from incidents.

## **Keywords**

Patient safety, Open disclosure

# Deformed Wing Virus: Are honey bee declines just the tip of the iceberg?

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## **Abstract**

Deformed Wing Virus (DWV) is currently accepted as being the most important factor in the decline of honeybees around the world, however little is known about how far this deadly virus might be spreading into other species and whether the effects of its spread may be wider reaching than we know. Samples of non-honeybee insect species were collected both from within apiaries and away from managed honey bees and qRT-PCR amplification of DWV fragments was used to assess whether DWV was present in other species and whether there were differences in virus load or prevalence between species which live in close proximity to bees infected with DWV and those which do not. The qRT-PCR data revealed DWV to be a general insect virus present in species which would have not come into contact with managed bees, but which as a result of viral spillback has increased in load in the species which have come into contact with infected bees. Furthermore initial bioinformatic analysis of RNAseq data has revealed that the DWV populations infecting non-honey bee hosts vary between species indicating that some variants have an increased ability to infect particular species hosts. As such we have revealed DWV to be of significant importance not only to honey bees but beyond to their wider insect communities.

## **Keywords**

Honey bee, deformed wing virus, insects, spillback, bioinformatics, qRT-PCR

# Using Matlab to strengthen indicators in Miradi results chains for conservation programmes

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## **Abstract**

Miradi is a software developed for use in conservation projects, allowing for strategic conceptual models to be constructed with the aim of aiding in planning, visualization, managing, monitoring and restructuring of conservation programs the world over. A large part of the conceptual models lie in the creation of results chains that with the help of indicators show the intended progress from implementation of a strategy through to the conservation goal for the scope of interest.

This presentation shows how to use logistic models to determine the likelihood of the success of a time dependent indicator such as a population increase of 10% by the year of 2030. For this, we have implemented the software Matlab – a high-level computing language commonly used for scientific simulations. Through this software, we created graphs showing the calculated effect on population growth for each step in four different results chains produced from a conceptual model aimed at increasing the Mountain Gorilla population residing in The Virunga massif and Bwindi impenetrable national park. This visualization technique will help in the presentation of projects to conservation agencies and international governments alike and can be applied to almost any conservation program.

## **Keywords**

Conservation planning, Miradi software, Matlab logistic models, Conservation indicators

# Gene Silencing of Human NEIL3 in Colon and Mesothelioma Cancer Cell lines

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## **Abstract**

Endonuclease VIII-Like 3 (Neil3) is the largest of the three mammalian Nei-like DNA glycosylases that remove oxidized bases from DNA in base excision repair (BER). While the function of Neil3 in mammalian cells is still not fully understood, the over expression of the gene in primary tumour cells leads to the hypothesis that Neil3 is required for the survival of highly proliferating cells. This study continues initial work which showed: (i) that Neil3 is highly expressed in HCT116 colorectal cancer cells, (ii) that its expression could be substantially reduced by siRNA knockdown, and (iii) that a reduction in Neil3 sensitizes cells to oxaliplatin. This study will also expand the scope of the research to include cell lines from malignant mesothelioma (Mero-25) and normal lung cell lines (BEAS 2B), as mesothelioma cells are resistant to cisplatin. Cells were grown in culture and pellets prepared for RNA extraction. Complementary DNA was synthesised and real-time PCR used to determine the expression of human Neil3 using Gapdh for normalization. The siRNA knockdown was carried out successfully, with preliminary results confirming the previous findings. Further work is underway to test individual siRNAs rather than the pool initially tested, to test different chemical agents with different mechanisms of action and to test cell lines with mutations in known resistance genes. As Neil3 is known to act on oxidised bases in DNA, experiments will also be carried out on MTH1, an enzyme that degrades oxidised nucleotides. It is proposed that knockdown of Neil3 together with MTH1 may represent a novel targeting strategy for difficult-to-treat tumours that display high levels of oxidative damage.

## **Keywords**

Endonuclease VIII-Like 3 (Neil3), chemoresistance, siRNA knockdown, colon cancer, platinum drugs



# What represents meaningful provision for wheelchair users in English sports stadia?

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## **Abstract**

The aim of this PhD. research is to examine what represents meaningful provision for wheelchair users in English sports stadia, identifying features that can act as barriers to limit accessibility, or which can enhance accessibility and promote inclusion. Various bodies of knowledge are brought together and applied to football stadia. The objectives are to:

1. Appraise how society views disability and how society is including and excluding wheelchair users;
2. Assess the design process, the legislation, the underpinning regulations, the guidance and how this meets the needs of wheelchair users;
3. Explore the accessibility of spectator sports and appraise the design guidance for stadia that can facilitate access to it;
4. Investigate the everyday user experience when attending football matches;
5. Understand how provision at football stadia is determined in practice;
6. Provide a critical synthesis of the extent to which the needs of wheelchair users are being met;
7. Recommend the changes and improvements that need to be made so that wheelchair users are better accommodated in football stadia.

This qualitative research adopts an open-ended inductive approach, with some deductive aspects (namely, the critical literature review that initially led to the research). Semi-structured, in-depth interviews will be conducted to capture (i) the everyday experiences of disabled supporters who are wheelchair users and (ii) the perspectives of key stakeholders involved in stadia design and management. The findings will be applied to inform design guidance and to provide a fuller understanding of what represents inclusive stadia provision for wheelchair users.

## **Keywords**

Accessibility, Disability, Inclusive design, Sports stadia, Wheelchair user

# Assessing the Environmental Impact of Radionuclides Release from Shale Gas Extraction

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## **Abstract**

Rapid global expansion of shale gas extraction (fracking) and natural gas development has raised environmental health concerns internationally. Whilst studies have focused on the assessment of environmental impacts from chemical pollution associated with these resource extraction activities, environmental contamination and also risk assessment, little research has focused on the release of radionuclides and their potential human and environmental impact. Over the next 3 years, this PhD research project will develop the science to underpin assessment of the ecological impact of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) releases from fracking

The PhD research project began in January 2016, so the presentation will briefly outline the main findings of a systematic review on the radionuclide releases from fracking activity, the environmental behavior of these radionuclides, bio-availability in foods and other media and their potential impacts on human and the environment. The research will seek to identify eukaryote for radionuclide bio-decontamination and inorganic compounds for TENORM absorption. The specific research gap that this PhD is focusing on will then be introduced and the planned methodological approach described. As the PhD project planning is still in the early stage, feedback and contribution from the audience may be of help for further development of this PhD research.

## **Keywords**

Shale Gas Extraction (Hydraulic Fracturing- Fracking), Radionuclides, Bio-availability, Remobilization, Dose concentration and Impact Assessment (Human and Environment) and Remediation

# CSR in a Saudi Arabian Context: Social Development Centres as the Bridge Between the Private Sector and Community Needs

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## **Abstract**

This study explores how Corporate Social Responsibility (CSR) can be better implemented in Saudi Arabia, by bridging the gap between the social development centres and Ngo's through the policies and guidelines of the Ministry of Social Affairs. The research has been conducted via interviews with key personnel. The fieldwork allows the author to explore the views and concerns of several managerial level workers in all the key organizations involved in implementing CSR within businesses. Organisations are key players in the community and they hold a huge role to support economic development. Companies also use CSR to create public images and this can improve their sales and customer awareness. The SDCs are important in the proposed model of CSR for Saudi Arabia in this study; they are already established centres within local communities, are aware of local needs and have vital local knowledge.

The main findings are that there is not a clear fixed understanding within Saudi firms of exactly what benefits can be reaped through CSR implementations although many are ready to participate in projects lack of transparency is always an issue; practical goals and solutions to the lack of collaboration are further discussed. The problems and barriers to partnerships are identified and explored within the findings.

Only with the understanding of the gaps in the current system and the proper development of sustainable methods can CSR be incorporated in businesses for long-term goals to be achieved. This Paper provides sufficient recommendations for frameworks and policies that can help to bridge the gap between public and private sectors. This paper discusses ways in that local communities can benefit from CSR implementation within private sectors and business models with the formation of a clear and easy pathway between social development centres and managers of CSR in private corporations.

## **Keywords**

Corporate Social Responsibility, Saudi Arabia, Islam, Social Development Centres, and stakeholders

# Project risk management practices in the oil and gas industry in Libya

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## **Abstract**

The continued increase in the world's population means that the world energy demands will increase. Hydrocarbons will be the main contributor to meet these energy needs. However, the oil and gas industry is linked with significant risks such as geopolitical, geological, technical, environmental, operational risks, regulatory and economic risks. The literature shows that many projects in the industry fail as a result of improper risk management practices in place.

Libya is an important oil and gas player in the world in fulfilling the world's energy demands. The country holds the largest quantity of proved crude oil reserves in Africa and is ranked 9th worldwide. In addition, the oil and gas sector plays an important role to the country's economy as it contributes to approximately 96% of the total government revenue. The country is currently facing political and security problems as a result of the civil war in 2011 adding to the complexity of managing its massive hydrocarbon reserves. With the existing risky and unsecured situations in Libya, appropriate risk management for the oil and gas industry needs to be prioritised.

The extensive literature review conducted to examine the current project risk management in the oil and gas industry showed that limited studies have been carried out within the Libyan context. Therefore, the current research is undertaken with the aim of investigating the project risk management in the oil and gas companies in Libya to enhance the current practices. This research follows a case study strategy and data will be gathered in the form of in depth semi-structured interviews of project managers, document and archival records.

## **Keywords**

Libya, oil and gas, project management, risk management

# Automatic detection of retinal vessels by using watershed

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## **Abstract**

Early ophthalmic detection can prevent the impairment or loss of vision. The Computer analysis of retinal images involves several operations; one of them is vessel segmentation.

This study investigates computer vision and artificial intelligence techniques to analyse retinal images to automatically detect the vessel network that is in a retina. Such findings will be used in further works for any study on vessels, for example to calculate a vessel thickness, to distinguish between arteries and veins, or to identify any abnormal cases in vascular structure. Therefore, it will be used by the ophthalmologists as an aided tool in their diagnosis.

This analysis of retinal images can be classified to three stages: pre-processing, vessel location detection, and vessel segmentation. The first stage, pre-processing, is to improve the clearness of the image; it includes many processes such as an image enhancement, resizing and ROI detection. Then a detection of the location of vessels is achieved by using the skeletonization, image thinning algorithm. Finally the watershed algorithm is used for vessel segmentation.

## **Keywords**

Ophthalmic detection, vessel segmentation, ROI

# Cloning and Expression of Mollusc Cellulases from a Gut Metagenomic Library

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## **Abstract**

Lignocellulosic biomass is proposed as an alternative renewable raw material for the production of bioethanol and biobutanol meant to substitute fast diminishing and non-renewable fossil fuels. However, the bioconversion of lignocellulosic biomass to biofuels on the industrial scale production is constrained by the performance and slow discovery of potential cellulolytic enzymes. Highly active and efficient enzymes would decrease biofuel production costs and enhance biofuel output quality and efficiency. To arrive at this target, the number of studies on novel enzymes for biofuel production has greatly increased in recent times, utilizing various approaches, including Metagenomics, to uncover numerous cellulolytic enzymes of biotechnological importance. Previous studies at Salford University using a metagenomics approach to investigate the microbiota of the black slug (*Arion ater*) gut revealed repertoire of ~2,500 genes of cellulase enzymes whose activity is suspected to correspond to the activity of those enzymes belonging to glycoside hydrolase (GH) families. Of these predicted GH genes, we report the cloning of individual GH sequences from the metagenomic library for expression in *E. coli* to demonstrate biological activity. The data generated so far has identified novel GH<sub>43</sub> enzymes similar to that from an important plant pathogen *Pectobacterium atrosepticum* and this has been successfully cloned into a pCR2.1 vector in preparation for Gateway™ cloning and expression.

## **Keywords**

Biofuels, Lignocellulosic biomass, Cellulases, Metagenomics, Black slug, *Arion ater*

# Towards Realization of Spectrum Sharing of Centralized Cognitive Radio Networks

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## **Abstract**

The success of Cognitive Radio Networks' (CRNs) utilizations of unused spectrum bands depends on avoiding a harmful interference to Primary Networks (PNs) (incumbent coexistence) and among CRNs themselves (self-coexistence). So far, however, crucial issues in CRNs spectrum sharing are needed to be avoided instead of mitigating their impact. This paper seeks on how to prevent the following self-coexistence issues: Collision among overlapped CRNs due to misdetection probabilities; Inter-cell Interference; and Primary User Emulation Attack (PUEA). This paper comprises two major contributions; firstly, develop CRN core architecture to consist of two engines: Modified Cognitive Engine (MCE), Monitor and Coordinator Engine (MNCE). MCE aims to devise reliable models for spectrum behaviour and characteristics. The architecture comprises three components: PUs Activity Modeller, SUs Activity Modeller, and Spectrum Modeller Coordinator. On the other hand, MNCE aims to improve CRNs performance and ensure a reliable spectrum sharing. MNCE architecture consists of five components: Cells Monitoring Manager, PUEA Identifier, Spectrum Sensing Supporter, Inter-Cell Interference Coordinator, and Network Extending Planner. Secondly, proposes a PUEA Detection (PUED) algorithm capable of determining the attack details and identifying the attacker CRN. Consequently, PUED will contribute to preventing PUEA among overlapped CRNs. Numerical tests showed by decreasing PUEA rate may lead to improving network performance.

## **Keywords**

CRNs, Spectrum sharing, Self-coexistence issues, PUEA, Collision

# Isolation of antibiotics from streptomycetes isolated from terrestrial invertebrates

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## **Abstract**

*Streptomyces spp.* have long been of interest due to their diversity of chemical constituents and biological activities. *Streptomyces* is considered to be the largest antibiotic-producing genus in the microbial world and several well-known antibiotics, for example, chloramphenicol, streptomycin and tetracycline are produced. Development of antibiotic resistance among pathogenic microorganisms makes research programs looking for new antibiotics that are effective against drug resistant pathogenic bacteria extremely important. Because soil streptomycetes have been extensively studied, attention has focused on unusual sources for the organisms. In this study terrestrial and freshwater invertebrates were screened for streptomycetes. Sixty strains were isolated from 35 different invertebrates. Forty-five isolates (75%) showed considerable antagonistic properties against 13 pathogenic organisms including *Escherichia coli*, *Staphylococcus aureus* (MSSA and MRSA), *Bacillus cereus*, *Pseudomonas fluorescens*. Out of these 45, 3 isolates, *Streptomyces* La1a, M1 11 and Es1 were found to possess substantial growth inhibitory effects on all test organisms. Different broth and solid media have been compared for antibiotic yield and the highest biological activities were obtained when Actinomycete Isolation Agar (AIA) was used. The antibiotic was extracted after incubation of the *Streptomyces* strains for 21 days on AIA with ethyl acetate by sonication for 1 h, the agar was filtered off and the solvent evaporated to dryness. The crude residues obtained were dissolved in methanol and the antibiotics fractionated by high pressure liquid chromatography (HPLC) and the activity of the different fractions determined.

## **Keywords**

Antibiotics, invertebrates, screening, streptomycetes



# The Association Between Hop Performance and Various Tests of Strength Production in Anterior Cruciate Ligament Reconstructed (ACLR) Patients

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## **Abstract**

Lower extremity muscular strength is often assumed to reflect and affect hop test scores. It has been reported in the literature that there is a positive relationship between isokinetic muscle strength and performance (distance hopped) in single-leg hop tests. Although hop tests are considered to be reliable functional tests, especially in weight-bearing activities, some participants may not be able to perform these tests after injury. It has been found that 40 per cent of non-copers, who were not able to return to normal activity, were unwilling to perform and complete the hop tests for time and distance, fearing that injury or pain would occur/recur. However, there is lack of literature exploring the relationship of lower limb muscles strength with hop tests which might have a role in hop performance.

## **Participants**

16 ACLR patients, 9 males and 7 females (age  $22.31 \pm 3.37$  years; height  $179 \pm 9.71$  cm; mass  $78.31 \pm 11.83$  kg).

## **Interventions**

Two tests were undertaken on both legs:

- 1- Hop tests: single-leg horizontal and crossover hop for distance tests.
- 2- Isokinetic muscle strength tests: of quadriceps and hamstring muscles.

## **Outcome Measurements**

- 1- Hop: maximum distance when undertaking single/crossover hop.
- 2- Isokinetic muscle strength: peak torque, peak torque to body weight, and the total work to body weight using Biodex System 4.

## **Results & Conclusion**

Performance of single hop test would appear to be related to strength of both quadriceps and hamstring in ACLR limbs, whilst only hamstring strength in uninjured limbs. This finding might have implications for ACLR rehabilitation and outcome measurement.

## **Keywords**

Single hop test, crossover hop test, isokinetic muscle test, quadriceps muscle test, & hamstring muscle test

# The effects of TBQ on cardiac intracellular ATP levels

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## **Abstract**

In a recent study, 2,5-Di-(tert-butyl)-1,4-benzohydroquinone (TBQ) produced a concentration dependent and fully reversible inhibition of the sarcoplasmic reticulum Ca<sup>2+</sup> ATPase (SERCA) in rat ventricular myocytes<sup>1</sup>. While TBQ is a potentially a useful research tool to study SERCA inhibition in cardiac cells, many additional effects were observed including production of an outward current consistent with activation of an ATP dependent potassium channel. The current study aims to determine the mechanisms underlying these effects.

Ventricular myocytes from rats and sheep were isolated by enzymatic digestion. Intracellular ATP levels were measured using a ViaLight Plus Cell Proliferation Kit (Lonza). Mitochondrial oxygen consumption was measured using an Oxygraph-2k high resolution respirometer (Oroboros Instruments).

In rat and sheep ventricular myocytes TBQ produced a concentration dependent decrease of intracellular ATP where 100 µM TBQ decreased ATP levels to approximately 60 % of control. Removal of glucose from the experimental solutions had no effect on the magnitude of effect. In rat fibres, TBQ produced a concentration dependent decrease of mitochondrial oxygen uptake with 100 µM TBQ decreasing rate to 45 % of control.

The current findings suggest TBQ decreases intracellular ATP, a phenomenon which may account for many of the effects observed previously, including activation of an ATP dependent potassium channel. The reduction in ATP appears to be associated with an effect on oxidative phosphorylation rather than glycolysis, a process we intend to investigate further.

## **Keywords**

TBQ, ventricular myocytes, potassium channels, oxidative phosphorylation

## **References**

Miller L, Greensmith DJ, Sankaranarayanan R, O'Neill SC, Eisner DA. The effect of 2,5-di-(tert-butyl)-1,4-benzohydroquinone (tbq) on intracellular ca<sup>2+</sup> handling in rat ventricular myocytes. *Cell calcium*. 2015;58:208-214

# The temporal and spatial dynamics of tick borne infections in Cumbria

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## **Abstract**

*Borrelia burgdorferi* sensu lato (s.l.) group of spirochetes are the causative agents of Lyme borreliosis, of which an estimated 3000 cases occur annually in the UK. Another group of spirochetes known as relapsing fever-like borreliae can cause disease in humans. Recently *Borrelia miyamotoi*, a relapsing fever-like borreliae, has been reported in the south of England. *Ixodes ricinus* is the principal vector of both of these spirochetes in the UK, and this tick species is widely distributed across the country.

The aims of this project were to investigate the temporal and spatial dynamics of *B. burgdorferi* s.l. populations and to test for the presence of *B. miyamotoi* at three sites in southern Cumbria.

Questing *I. ricinus* ticks were collected between June 2013 and January 2016 and tested for the presence of *B. burgdorferi* s.l. and *B. miyamotoi* using realtime PCR and conventional PCR. The prevalence of *B. burgdorferi* s.l. infections in ticks at each site ranged from 0.5% to 15.8%. Four genospecies, *B. afzelii*, *B. burgdorferi* sensu stricto, *B. garinii* and *B. valaisiana*, were detected across the three sites although the contribution that each genospecies made to the borrelial population at each site varied markedly. A temporal change was observed in the overall prevalence of *B. burgdorferi* s.l. at each site. *B. miyamotoi* was detected at one of the three sites.

*B. burgdorferi* s.l. infection prevalence in ticks varies spatially and temporally thus reliance on single cross-sectional surveys to estimate local Lyme borreliosis risk could be misleading. More work is needed to understand the ecological determinants of the observed variation.

## **Keywords**

Microbiology, Ecology

# Women's experiences of Transactional Analysis Psychotherapy for the treatment of perinatal psychological distress

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## **Abstract**

**AIM:** The primary aim of this qualitative research project is to gain insight into how women experience and perceive the Transactional Analysis psychotherapy treatment for perinatal psychological distress (stress, anxiety and/or depression). Do women experience this type of psychotherapy as helpful or unhelpful for this particular condition and why/why not?

## **METHODS:**

I) Semi-structured interview

II) Participant photographic diary as an additional method for women to describe their psychotherapy and 'voice' what may be unvoiceable through conventional data collection

III) Hermeneutic Single Case Efficacy Design (HSCED) study on one participant using a mixture of quantitative and qualitative data collection tools. The systematic case study formed will then be adjudicated by an independent panel of judges using a cross-examination of data, developing an argument for the change in that one participant, due to their psychotherapy treatment.

**RESULTS:** This research commences in Spring 2016.

**DISCUSSION:** There is very little qualitative research evidence on psychotherapy for psychological distress in the perinatal period, and no research on Transactional Analysis psychotherapy with this condition. Research to date has concentrated primarily on the postnatal period and mainly on depression alone. Yet it is known that women suffer from all three conditions throughout the entire perinatal period. By targeting women over the whole period, and by gaining their insight into their treatment and its success, the knowledge gained will be used to help structure and inform a Transactional Analysis psychotherapy protocol enlarging the narrow base of treatment possibilities offered for perinatal mental health disorders in the UK.

## **Keywords**

Perinatal, psychological distress, psychotherapy, Transactional Analysis

# Alterations in Autophagy in Frontotemporal Lobar Degeneration

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## **Abstract**

Frontotemporal Dementia (FTD) refers to a group of neurodegenerative diseases characterised by personality and behavioural changes, as well as cognitive impairment. FTD has a mean onset age of 58 years and affects about 16,000 people in the UK. There are three main clinical manifestations of this disease: behavioural variant FTD, progressive non-fluent aphasia and semantic dementia, which are differentially related to genetic and environmental factors. Importantly, FTD can be pathologically characterised by the accumulation of either FUS protein, Tau protein or TDP-43 protein as well as the death of brain cells in the frontal and temporal cortex of the brain. The mechanisms by which these proteins accumulate are unclear.

In healthy cells, abnormal proteins and organelles are marked and degraded in a process called autophagy, which can be further divided into subtypes: macroautophagy, chaperone-mediated autophagy and microautophagy. In other neurodegenerative disorders such as Alzheimer's disease, macroautophagy has been reported to be impaired. This project aims to explore the relationship between protein degradation pathway activity in relation to pathological protein accumulation in different subtypes of FTD. Immunohistological techniques will be used to investigate macroautophagy and chaperone-mediated autophagy and the accumulation of disease associated proteins: Tau, TDP-43 and FUS in formalin-fixed post mortem human brain tissue from the Manchester Brain Bank. By identifying specific changes in protein degradation pathway recruitment, novel targets for therapeutic intervention can be identified, which is significant since there are currently no disease altering therapies for FTD.

The preliminary data from this project will be presented and discussed.

## **Keywords**

Frontotemporal Dementia, FTD, cognitive impairment, Alzheimer's disease, macroautophagy, chaperone-mediated autophagy, microautophagy

# Effect of Softwood Pellet Biochar (550oC and 700oC) on Heavy Metal Immobilization in Single and Multi-Metal Systems

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## **Abstract**

Biochar can help remediate heavy metal-contaminated soils. Recent research suggests that metal sorption changes with pyrolysis temperature, affecting biochar's physical and chemical structure. Research replication and progression has been delayed due to the numerous production parameters available. Moreover, research has focused on single contaminants rather than multi-contaminated systems that are more frequently encountered in real world scenarios. To explore biochar's efficacy for multi-contaminated soil remediation, improved understanding of sorption mechanisms in biochar amended soils is required as they are poorly understood. This study aims to determine the effects of softwood pellet (SWP) biochar (550oC and 700oC) on immobilizing heavy metals via sorption. Biochar was purchased from the UK Biochar Research Centre (UKBRC). These materials are reproducible and readily available in the UK. Batch experiments will be conducted at high and low metal concentrations to determine sorption capacity and the rate of metal sorption in single-metal aqueous systems. This research will also assess competitive sorption in multi-metal systems. Biochar contains non-carbonized and carbonized fractions, the latter increasing with pyrolysis temperature. Theoretically, sorption onto the carbonized fractions is characterized by non-linear Langmuir L-type isotherms and competition exists. It is expected that SWP700 will be more effective in terms of metal sorption possibly due to its larger surface area but more competition will exist due to the larger carbonized fraction, as compared to SWP550. The results generated from these experiments will allow new insights to be obtained into the differential effects of different biochar types on biogeochemical processes in multi-contaminated soil systems.

## **Keywords**

Biochar, Sorption, Competition, Metals, Temperature

# Data Mining of Effluent Water from Vertical-Flow Constructed Wetlands Treating Domestic Wastewater

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## **Abstract**

The application of statistical modelling of constructed wetlands gained popularity over the past decade. Wetlands are complex natural systems in which varied seasonal physical, chemical and biological processes such as sedimentation, filtration, precipitation, sorption, plant uptake, macrophyte degradation, microbial decomposition and nitrogen transformations take place. This study presents data mining (using R-language) predictions of experimental constructed wetland performances. Considering that all water quality variables are linked with each other, the actual analysis of multiple water quality variables is important to understand the overall role of constructed wetlands in treating various pollutants and the development of corresponding assessment techniques. The data for ten different laboratory-scale vertical-flow constructed wetlands were used in this study. These wetland filters were originally used to compare the impact of different design (aggregate size) and operational (contact time, empty time and chemical oxygen demand (COD) loading) variables on the performance of vertical-flow constructed wetland filters operated in tidal-flow mode (between June 2011 and March 2016). Findings showed a high efficiency of the model to predict COD concentrations of effluents for most wetland filters. Furthermore, the prediction performances of COD concentrations are encouraging and support the potential for future use of this model as a management tool for other water quality parameters.

## **Keywords**

Chemical oxygen demand, data mining, reed bed, statistical analysis, urban wastewater, water quality

# Validation of shell fish isolates for development as a novel anti-tumour therapy for children: GAG action on lymphocytes

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## **Abstract**

Introduction: Leukaemia is cancer of white blood cells and is a devastating diagnosis for children. Current chemotherapies are effective but have harsh side effects. Ongoing kidscan research has identified potent anti-tumour effects of novel compounds extracted from shellfish.

T-regulatory cells regulate inflammatory responses, but in cancer raised levels of T-regulatory cells have been linked with tumour progression. Understanding chemotherapy effects on T-regs is key to predicting therapy effectiveness.

Aims: To assess T-cell (families) and B-cell responses to doses of shellfish isolates over time to validate their future therapeutic uses.

Methods: Isolates were prepared from cockles and whelks and PBMCs were isolated from whole blood. Extracts were tested for activity on cell growth using the MTT assay on PBMCs and three cancer cell lines (U936, Molt-4 and k562). Findings will determine conditions used for flow cytometry apoptosis assays.

Results: MTT assays show both cockle and whelk extracts profoundly inhibit cancer cell (lymphocyte) growth; (up to 90% inhibition and  $IC_{50}$  values ranging between 0.7 $\mu$ g/ml and 12 $\mu$ g/ml). Control anti-tumour drugs had similar effects at the following doses: 0.5-59 $\mu$ g/ml etoposide, 0.5-15 $\mu$ g/ml cisplatin 0.5-15.698 $\mu$ g/ml dexamethasone. Initial studies also show the shellfish extracts have little effect on the growth of the healthy lymphocytes (PBMCs) hence  $IC_{50}$  values were not reached.

Clinical Significance: As shellfish isolates exhibit potent and specific action on tumour cells they may have potential as a therapeutic treatment for cancer. Further studies to expand healthy lymphocyte data, show mechanisms of action of the isolates, and identify their active components are planned.

## **Keywords**

Leukaemia, T-regulatory cells, Glycosaminoglycans, PBMCs, Apoptosis



# An Elliptical Cost-Sensitive Decision Tree Algorithm Using Optimization Methods (ECSDT)

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## **Abstract**

Cost-sensitive multi-class classification problems, in which the task of assessing the impact of the costs associated with different misclassification errors, continues to be one of the major challenging areas for data mining and machine learning.

The literature reviews in this area show that many of the current cost-sensitive algorithms aim to solve binary classification problems, where an example from the dataset will be classified into only one of two available classes, and in addition, most of them focus on inducing linear decision trees that adopt axis-parallel regions to split the classes. The literature shows that linear decision trees are not adequate for non-linearly separable classes, and can lead to large decision trees that difficult to visualize.

Inducing nonlinear multi-class cost-sensitive decision trees is still in its early stages and further research may result in improvements over the current state of the art. Hence, a major question towards solving this problem is:

*How can non-linear regions be identified for multi-class problems so as to maximize the accuracy of classification, minimize costs, and result in a better visualization?*

My Ph.D. aims to develop a new cost-sensitive algorithm that induces non-linear (elliptical) decision trees using evolutionary optimization methods such as particle swarm optimization (PSO) and Genetic Algorithms (GA) to further improve classification accuracy, minimize total cost involved in the classification, and enhancing the way of visualizing decision trees.

My participation in SPARC will include explanations of the idea of the new algorithm, as well as presenting some preliminary results obtained for the initial implementation of the new algorithm.

## **Keywords**

Data mining, machine learning, linear decision trees, elliptical decision trees, PSO, GA

# **Varroa destructor resistant populations of European Honey bees (*Apis mellifera*) and the effect of Deformed wing virus in colony survivorship**

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## **Abstract**

The European Honey bee (*Apis mellifera*) has been in decline since the world wide spread of *Varroa destructor*. This is of huge economic and environmental concern, as the pollination services provided by *A. mellifera* are estimated to contribute 35% to global crop production. *V. destructor* is a parasitic mite of *A. mellifera* and infests both Honey bee adults and larvae, where it feeds upon the hemolymph of the bee. In this way *V. destructor* acts as a vector for harmful Honey bee pathogens. One pathogen, deformed wing virus (DWV) has been evidenced to be implicated in both overwinter losses of *A. mellifera* but also colony survivorship.

DWV was detectable in populations of *A. mellifera* prior to the arrival of *V. destructor*, however it was present in low viral titres and was not considered a major threat. Recent research has revealed that in the presence of *V. destructor*, viral titres of DWV increase 10 fold and this has been linked to colony losses across the UK, Hawaii and New Zealand. Three master variants of DWV have been detected in *A. mellifera*. Type A is considered to be lethal in high titres, type B is believed to be linked to colony survivorship and type C has recently been discovered and is relatively unknown. Therefore, the detection of all three master variants is required to monitor the effects of DWV upon colony survivorship. A standard was created using a new primer set which allowed for the detection of variant type A, B, and C. The primers were tested by conducting gradient and competitive PCR and a number of serial dilutions used to ascertain a standard using RT-qPCR. Honey bee samples of seemingly resistant bees were tested for type A, B and C of DWV using RT-qPCR. Preliminary data has revealed that these resistant populations are infected with *V. destructor* and DWV. All three master variants were detected in samples, the ongoing effects of which are still under investigation.

## **Keywords**

Deformed wing virus, RT-qPCR, Resistance, European Honey bees, *Varroa destructor*

# Users' Needs, and Benefits of Exercising in Urban Public Open Spaces in Jeddah, Saudi Arabia

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## **Abstract**

This research explores women's physical activities in urban public open spaces in Saudi Arabia. Physical inactivity is a growing health concern, and research has begun to address the physical environment, a subset of which looks particularly at the role of the environment for women. With a population of 4.1 million, Jeddah is the second largest city in Saudi Arabia. According to the World Health Organization (ref), 36.5% of Saudi Arabians are obese and around 31% of the population suffers from hypertension. Women have the larger proportion of this statistics being 39.1% total. The current physical space provision is less than the world health organization's recommendation of 9 m<sup>2</sup> per person. Currently, the lack amount of provision open spaces in Jeddah are not covering the resident's needs. The objectives of this study are to:

- 1- Determine the types of the urban public spaces that are frequently used by the residents in groups and individuals.
- 2- Record activities and use across demographic factors at different times of year and day as well as in diverse locations.
- 3- Record and critique current professional practice regarding the planning, design and management of urban public open spaces in Saudi Arabia, with specific focus on social and cultural requirements.
- 4- Identify the diversity of the use and preferences for open spaces, and especially in those neighbourhoods that reflect migration, religion, gender, age and economic factors.
- 5- Propose new urban public open space forms to improve the urban health by resolving current urban and environmental issues that affect negatively on residents quality of life and physical.

## **Keywords**

Health, urban, public open spaces, users, needs

# The Journey of Channel State Information in Cloud-RAN

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## **Abstract**

Cloud Radio Access Network (C-RAN) was introduced as a revolutionary architecture to meet the expected growth in mobile data traffic for present and future (e.g. 5G) networks. However, with the evolution of the centralised configuration of C-RAN brings many challenges to the mobile network. One of the key questions is to find out how the channel state information (CSI) accurately acquires in the C-RAN for numerous access points and users. CSI is control information, and it has a major role in the decision-making in mobile networks. This information is measured by the terminal and transmitted to a scheduler at virtual base stations to assign resources mobile terminals. Hence the imperfection of this information can result in performance degradation in the entire mobile network. For the purpose of highlighting the key role of CSI in C-RAN, the aim of this research study is to examine the potential reasons for the imperfection of CSI with its impact on network performance besides current solutions to this problem. This research study contains a simulation test which illustrates the negative effect of inaccurate channel information on the throughput of mobile network. The results show that the throughput of the perfect channel system estimation increased to reach approximately 90%, whereas with imperfect estimation, the final value of throughput is 25%.

## **Keywords**

C-RAN, Channel State Information, Virtual Base stations, Channel Estimation Algorithms

# Expression and purification of native human NEIL3

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## **Abstract**

Neil3 is the largest and least characterised member of the fpg/nei family of DNA repair proteins. These DNA glycosylases initiate repair of DNA damage arising from both endogenous and exogenous oxidizing agents through the base excision repair pathway. Attempts to express and purify catalytically active human Neil3 (hNeil3) in *Escherichia coli* have been described previously but were only partially successful. Using an overlap extension PCR method of cloning, small ubiquitin modifier (SUMO)-hNeil3 fusion expression vectors were prepared. The constructs were designed to delete the hNeil3 ATG start codon as the initiator methionine must normally be removed to yield a catalytically active protein. Initial purification of the recombinant fusion protein was achieved using a HisTrap column and the pooled elute was digested with SUMO hydrolase (dtUD1). The product was then loaded on an additional HisTrap column. Subsequently, histidine rich proteins and histidine tagged SUMO bound to the column, resulting in the collection of native protein in the flow-through. The purification of both native hNeil3 proteins and dtUD1 SUMO hydrolase for the removal of N-terminal 6x histidine tagged SUMO will be presented. Purification of native hNeil3 was confirmed through proteomic analysis using mass spectrophotometry. This system provides a platform for the purification of hNeil3 for further biochemical analysis and its role in cancer cell division, potentially identifying this DNA glycosylase as a therapeutic target. This system ought to be applicable for the production of most proteins with the benefit of increased solubility through sumolation.

## **Keywords**

DNA Repair, Cancer, Human Neil3, Protein purification

# G4-quadruplex DNA as a target for novel therapeutics

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## **Abstract**

Resistance to clinically used anti-microbial and cancer drugs is a global issue leading to increased mortality and morbidity. While pathogens and diseases have evolved over generations to become resistant to prescribed therapeutics, novel drug development has not kept pace leaving the humanity without protection from future pandemics. For this reason the search for new drugs is essential to ensure the global population is protected.

Nature has provided us with some of the most potent therapeutics and gives us with an exceptional starting point when developing new treatments. One novel therapeutic base is a family of compounds known as flavonoids which are multi-ringed aromatic chromophores that exhibit anti-cancer, anti-microbial and anti-inflammatory properties. We have developed an efficient synthesis of a flavonoid skeleton structure which allows successive modifications of the pharmacophore providing us with the ability to link two modified flavonoids together through click chemistry. This has enabled the synthesis of a novel family of therapeutic agents that are currently being evaluated in vitro.

These bis-flavonoid dimers are designed to target specific sequences of DNA such as the secondary DNA structure the G4-quadruplex. Quadruplex DNA exists in areas of high guanine concentration and is believed to be involved in the regulation of many cellular pathways such as those controlling proto-oncogenes in mammalian cells. Through the addition of small synthetic molecules, such as the bis-flavonoid dimers, stabilisation of these DNA structures can be achieved leading to down regulation or elimination of specific cellular pathways which are the cause of many diseases. Through analysis using a variety of techniques including CD, DSC, UV spectroscopy and the FRET assay a number of potentially interesting dimers have been identified which cause a notable concentration dependent stabilizing effect leading to  $T_m$  shifts of 2-30C on specific single oligonucleotide sequences. These compounds have been taken forward for further investigation in microbial and cancer models.

## **Keywords**

DNA, Quadruplex, Novel Therapeutics, Drug Design, Click Chemistry, Intercalators

# A Framework for Culture-Led Urban Development through Creative Hub Concept

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## **Abstract**

The purpose of this research is to investigate the concept of the creative hub, both in theory and in practice, in order to develop a contextualised framework for the development of a creative hub as an effective and sustainable tool for urban development.

Culture is the set of distinctive spiritual, material, emotional and intellectual features of a society that covers art and literature, lifestyles, value systems, traditions and beliefs. Urban culture thus covers the notions of culture within an urban setting, from both a functional and anthropological aspect.

Cultural and creative industries are those sectors of activities that have as their main objective the creation, production, distribution and consumption of goods, services and activities that have cultural and artistic content. They are characterized by being at the intersection of economy and culture, and having creativity at the core of their activities. Therefore, the creative cities can be defined as urban complexes where cultural activities are an integral component of the city's economic and social functioning. The cultural industries contribute to local economy and employment and need to be taken into account in making sustainable urban development framework.

For purpose of making contextualised framework for this research, we need to have conceptual background and also evolutionary adaption of relevant existing resources. In addition, moving the complex social-cultural dynamics towards a new territorial thinking for culture-led development can make the social and economic restructuring, and so considering some new issues related to this new thinking for purpose of urban development are essential.

## **Keywords**

Creative hub, urban development, culture, creative industries

# New insights of Mutant Calreticulin in Myeloproliferative Neoplasms

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## **Abstract**

Calreticulin (CALR) is an endoplasmic reticulum (ER) protein mutation of which has recently been associated with myeloproliferative neoplasms (MPNs). Mutations in exon 9 of CALR gene have been shown to be the only genetic anomaly in about 40% of essential thrombocythemia (ET) and primary myelofibrosis (PMF) without JAK2 mutations. However, the cellular behaviour of this mutated protein is still unclear. Here we address this issue by employing a combination of computational and molecular techniques.

Analysis of CALR mutant secondary structure by using S2D server as a protein structure prediction tool showed that CALR intrinsic disordered C-terminal domain decreases the disorder probability in CALR mutants and these mutations lead to changes in the secondary structure of CALR C-terminal domain. Further insight of mutant CALR cellular localization was addressed by fluorescent microscopy showing that CALR mutant is localized out of ER in vesicles within the cytoplasm. Additionally, analysis of the cell cycle of CALR mutant cells by flow cytometry revealed no significant changes in the division capacity of these cells, suggesting a slow oncogenic process produced by CALR mutations. Finally, preliminary experiments using Real-time polymerase chain reaction showed changes in expression of JAK/STAT pathway target genes in CALR mutant expressing cells revealing a possible dysregulation of this signalling pathway in MPNs positive for CALR mutations.

Altogether, our findings demonstrate that CALR mutations found in MPNs lead to changes in the cellular behaviour of CALR. Understanding CALR behaviour and its links with JAK/STAT pathway could unmask mechanisms of MPNs development and new therapeutic targets.

## **Keywords**

Calreticulin, Myeloproliferative neoplasms, JAK/STAT pathway



# Performance of Pulse Position Modulation for Ultra Wide Band System Using Time-Hopping Techniques in Multiple Access Environments

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## **Abstract**

A major challenge when designing Ultra-Wide Band (UWB) systems is choosing a suitable modulation technique. This is because the data rate, transceiver complexity, and Bit Error Rate (BER) performance of the transmitted signal are all related to the modulation scheme employed.

The research presented in this paper considers the performance of a Pulse Position Modulation (PPM) system, combined with Time Hopping Spread Spectrum (THSS) multiple access, which is then evaluated in an asynchronous multiple access free space environment. The multiple access interference is first assumed to be a zero mean Gaussian random process in order to simulate a multi user environment. An exact BER calculation is then evaluated based on the characteristic function (CF) method, for TH-PPM UWB systems with Multiple Access Interference (MAI) in an Additive White Gaussian Noise (AWGN) environment. The resulting analytical expression is then used to determine the accuracy of the MAI Gaussian Approximation (GA) first assumed. The GA is also shown to be inaccurate for predicting BERs for medium and large signal-to-noise ratio (SNR) values. Furthermore, the analysis of TH-PPM system is further extended to evaluate the influence of the system and how it is sensitive to variations in certain signal parameters, such as the pulse shape, the time-shift parameter associated with PPM, and the pulse length. In addition, the system performance can be greatly improved by optimising other system parameters such as the number of pulses per bit ( $N_s$ ), and the number of time slots per frame ( $N_h$ ). All the analysis presented in this paper are addressed through numerical examples.

In conclusion, it is proposed that by improving certain signals or system parameters, the BER performance of the system is greatly enhanced. This is achieved without imposing additional complexity to the transceiver and with only moderate computational calculations.

## **Keywords**

UWB, THSS, TH-PPM, UWB Modulation

# Gene Expression of DNA Repair Proteins in Colon Cancer Tissue Samples

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## **Abstract**

Cancer is a disease that is manifested by abnormal, uncontrolled cell growth. DNA repair plays a critical role in maintaining the integrity of the genome and its malfunction is associated with cancer predisposition and progression. This work will compare the level of gene expression of the DNA repair genes NEIL1, NEIL2, NEIL3, ERCC1, OGG1, NTHL1, MLH1, ERCC1 and MTH1 with the house keeping gene GAPDH in human colon tumour tissue and matched normal colon tissue. As a prelude to this work, RNA extraction was carried out from pellets of a colorectal cancer cell line (HCT116) and a human mesothelioma cell line (Mero-25). Specific PCR primers for the target genes of interest were designed or obtained from the literature and analysed by reverse-transcription PCR and agarose gel electrophoresis. Primer sets that yielded a single amplicon were then used in quantitative RT-PCR. Initial results suggest that NTH1, MLH1, ERCC1, OGG1, NEIL2 and NEIL3 are highly expressed in both HCT116 and Mero25 cells. The role of DNA repair proteins in rapidly proliferating cancer cells needs further evaluation since they have been implicated in the chemoresistance of colorectal tumours to oxaliplatin and other chemotherapeutic DNA damaging agents.

## **Keywords**

DNA repair genes, Gene expression, colorectal cancer

# Fast tracking drug discovery through molecular modelling and repositioning. Lead optimisation of Dehydroemetine as a potent anti-malarial drug

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## **Abstract**

Malaria is a life threatening infectious disease characterised by a febrile illness and caused by a parasitic protozoan belonging to the genus Plasmodium. There were 198 million malaria cases globally in 2013 with an estimated 584,000 deaths mostly among the African children.

With resistance reported in all categories of anti-malarial drugs, the need for a new class of affordable anti-malarial is an urgent priority if recent gains in malaria control are to be sustained. Previous studies have identified a protein translation inhibitor, Emetine as a potent anti-malarial drug but it also has cardio-toxic side effects.

The current study focuses on identifying the binding site of Emetine and its analogue, Dehydroemetine on the 40S small subunit of 80S Ribosome through molecular modelling, predicting the polarity of the binding pocket and employing in-silico methods for de novo drug design to identify compounds capable of retaining the anti-malarial potency but with markedly reduced or no toxic side-effects.

Experimental high throughput screening requires huge investment of time and resources. Thus in-silico virtual screening provides an inexpensive alternative which only requires computer resources to filter through large libraries of compounds. The project includes virtual screening of FDA approved library of drugs against the ribosomal binding site of Dehydroemetine to fast-track drug discovery. The results will be used to identify synergies and propose anti-malarial combination therapy between these drugs and Dehydroemetine. The project can be expanded further to screen these compounds against various other diseases.

## **Keywords**

Molecular modelling, ligand-receptor docking, virtual screening, drug discovery, malaria

# Compounding effects of fetal alcohol spectrum disorders and early childhood trauma: A systematic review

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## **Abstract**

**Background:** Fetal alcohol spectrum disorder (FASD), the range of conditions which result from prenatal exposure to alcohol, and childhood experiences of trauma are characterised by similar cognitive and behavioural deficits. The rate of these issues presenting together is thought to be high (Coggins et al., 2007), but this combination has not been well studied. The question remains to what extent these factors compound each other and lead to more severe deficits, and in which domains these deficits might present.

**Method:** A systematic review across eight databases (retrieved records: 463). Screening revealed six relevant articles, two of which were descriptive, leaving four which featured comparisons. Two studies were the work of a team in the United States who compared patients (aged 6-16years) with history of trauma and FASD, to patients with just trauma. The two remaining studies were the product of a team in Finland, who compared patients (aged 1-15 years) with FASD and trauma, to patients with just FASD.

**Results:** The American studies focused on speech and language, but also assessed memory, attention, motor skills, and behavioural issues. Both studies found that FASD and trauma together were associated with greater deficits than trauma alone. The Finnish studies found that behavioural and emotional problems were more strongly associated with FASD and trauma, than with just FASD.

**Conclusions:** These findings suggest that trauma and FASD have compounding effects in multiple areas, and more research is urgently required to investigate the full range of deficits, especially in the domains of executive functioning, social cognition and peer interaction.

## **Keywords**

FASD, trauma, cognitive deficit, behaviour, systematic review

# Investigating Ca<sup>2+</sup> channel blockers as anti-malarials

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## **Abstract**

The importance of calcium in the Plasmodium falciparum parasite's life cycle has been widely reported. Studies have shown that interfering with calcium signaling can lead to degeneration and eventually parasite death. Likewise calmodulin is thought to play a major role in the parasite's life cycle, particularly in the invasion of RBCs, with research showing that infected RBCs have higher levels of calmodulin than non-infected ones. This supports results of a repositioning study carried out at the University of Salford where 700 patent expired drugs were screened against the multidrug resistant K1 P. falciparum strain. The results showed several calcium channel blockers and calmodulin inhibitors to have antimalarial activity.

The work presented here shows the synthesis of a calcium channel blocker and calmodulin inhibitor fendiline and a number of synthetic analogues. The results also include the in vitro phenotypic screens of these compounds on the multidrug resistant K1 P. falciparum strain and the HepG2 cytotoxicity assay, in addition to the hERG safety test and stage specificity analysis on one of the lead compounds. The results thus far support further SAR studies on these compounds.

## **Keywords**

Malaria, calcium channel blockers, calmodulin, fendiline, drugs

# Use of social network analyses to evaluate the factors influencing the success of captive breeding programmes

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## **Abstract**

The success of captive breeding programmes demand planning and communication between zoos, parks, organizations and political institutions. To avoid inbreeding and enhance the likelihood of finding suitable partners, target individuals may need to be transported from one institution to another to allow genetic matching. The collaboration among institutions involved with the reproduction and reintroduction of threatened species in their natural environment can be mapped and analysed throughout social network analyses. The cheetah (*Acinonyx jubatus*), considered as vulnerable by the IUCN Red List, is a species which have been participating in captive breeding programmes due the low wild population density. Data available online were extracted from the International Cheetah Studbook (2013), processed and analysed to investigate the relationship between the transfers of individuals and the position of captive breeding institutions in the social network. Using R, measures of centralities from the collaborative network were calculated and a graph expressing the transfers between institutions was created using UCINET and Netdraw. Preliminary results showed that four groups were formed regarding the exchange of animals; the two main ones were highly connected as geographical regions in the world. Future research will consider factors that can influence the links between institutions such as economic and political factors related to the conservation of species. In addition to cheetahs, other species with historically complex demographic and genetic situations will be considered for analyses. Finally, simulations will allow the exploration of the relationships between institutions with the intention of improving the management of the captive breeding collaborative network.

## **Keywords**

Social network analysis, captive breeding, cheetah, *Acinonyx jubatus*

# Assessment of the Potential Impact of Climate Variability Linked to Drought on the Temporal Hydrologic Alterations Shared River Basins

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## **Abstract**

Climate change and drought phenomena impacts linked with anthropogenic pressure have become a growing concern for water resources managers and decision-makers. Current practice presents a comprehensive but simple methodology for predicting the annual river flow alteration based on drought indices and hydrological alteration indicators. This can be achieved depending on the evaluation of the impact of drought severity and climate variability during the human intervention period to isolate the influence of climatic abnormality and measure the hydrologic deviations as a result of streamflow regulation configurations. As a representative case study, the Lower Zab River basin in northern Iraq has been selected. In order to analyse the natural flow regime, 34 hydrological years (1931–1965) of streamflow prior to main dam construction were assessed. The indicators of hydrologic alteration method has been applied to quantify the hydrological alterations of various flow characteristics. In addition, a simple methodology for predicting hydrological drought in relatively small basins based on meteorological variables during the early months of the hydrological year has been presented. The prediction was accomplished by adopting the one-dimensional analysis of drought and the reconnaissance drought index for evaluating the severity of meteorological drought. The proposed methodology is based on linear regression relationships linking the reconnaissance drought index of 3, 6 and 12 months and the streamflow drought index. The outcome is critical for cases where an early investigation of meteorological drought is available. Findings benefit water resources managers, engineers and decision-makers responsible for mitigating climate change impacts.

## **Keywords**

Hydrological alteration indicator, Climate change, Decision-making, Reconnaissance drought index, Streamflow drought index, Water resources management

# Laser scanning of forest structure and composition

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## **Abstract**

The development of a dual-wavelength full-waveform terrestrial laser scanner (TLS) has provided an affordable, easy-to-use technique to capture images of forest and woodland environments with a high level of detail. Data on the three-dimensional structure and reflectance properties of forest canopies can now be obtained with the Salford Advanced Laser Canopy Analyser (SALCA) using two infrared laser wavelengths (1063 nm and 1545 nm). While some studies have used SALCA to study and measure structural characteristics of forest canopies, in this research we will investigate the application of SALCA to characterise trees species and forest structure in order to (a) explore the relationships between overstorey and understorey vegetation, (b) test the ability of SALCA to capture 3D images of leaves of different species and to assess whether measured leaf shape can be used to classify forest species, and (c) classify tree species using measurements of leaf and bark reflectance. This paper presents the framework for the research and the early results from a series of field experiments.

## **Keywords**

Terrestrial laser scanner, SALCA, structural characteristics, overstorey, and understorey ecosystems



# Into The Night: Are We Taking Nocturnality In Zoos For Granted?

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## **Abstract**

Currently, more than half of mammals species held in zoos are considered to have nocturnal habits. In contrast, zoos opening hours comprise only the day time period, when these animals are expected to be asleep. It is not known if the time period of activities, visitors, and management practices have an influence on the behaviour, and especially, on the welfare of these animals. Studies in humans have shown that lack of sleep compromises the health of individuals, causing heart attacks, strokes, diabetes, and even cancer. Likewise, research conducted with shift workers demonstrated they are not only more likely to develop such diseases, but are more susceptible to psychological conditions such as depression. Considering that mammals and humans have very similar physiology and sleeping patterns, disturbances in their natural behaviour during the day and lack of proper rest could have similar outcomes. In addition, many of these nocturnal species participate in breeding and conservation programs, confirming the need for a better quality of life and well-being of these individuals. Therefore, this study focuses on validating sleeping behaviour as a reliable welfare tool, using a non-invasive approach, and aims to understand how these species are affected by changes in their activities patterns and monitor their quality of sleep. The research is expected to provide a better insight on the welfare of these animals that will lead to better management practices for nocturnal species in captivity.

## **Keywords**

Animal welfare, zoos, nocturnal species, sleep

# Alterations in autophagy in Alzheimer's disease using post-mortem brain tissue

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## **Abstract**

Alzheimer's disease (AD) is pathologically characterised by the accumulation of abnormal proteins and the formation of neurofibrillary tangles and senile plaques. Autophagy is a normal intracellular mechanism that functions to degrade damaged cellular proteins. Recent studies have shown a link between macroautophagy dysfunction and AD. However, it is unclear how the different autophagic pathway activity (such as macroautophagy and chaperone mediated autophagy) changes during disease progression and how this relates to the accumulation of abnormal protein deposits.

This study aimed to explore autophagy alterations in AD and investigate the relationship between autophagy related proteins and AD related protein deposits (tau and b-amyloid proteins) with disease progression. Immunohistochemical analysis of formalin-fixed sections of human brain tissue obtained from the Manchester Brain Bank was performed. 45 cases (15 Braak stage 0-II, 15 Braak stage III-IV, 15 Braak stage V-VI) from the hippocampus were assessed for markers of macroautophagy (LC3), chaperone mediated autophagy (LAMP2A) and AD protein accumulations of hyperphosphorylated tau protein (AT8) and beta-amyloid.

LAMP2A immunoreactivity was found to be increased in areas of the hippocampus which only demonstrate tau pathology in late stage AD, such as DG and CA4. Immunoreactivity was also lower in CA1 and CA2 which are earlier sites of tau deposition. LC3 immunoreactivity however was consistent across all hippocampal areas investigated. These preliminary findings suggest impaired chaperone mediated autophagy in neurones harbouring hyperphosphorylated tau. These results will be validated by double labelling immunofluorescence studies to explore the relationship of autophagy markers in individual neurons at different Braak stages.

## **Keywords**

Alzheimer's disease, AD, autophagy

# Simulated Soundscape as an Approach to Analyse the Relationship between Sound Objects and Soundscape Perception

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## **Abstract**

The relationship between sound objects and soundscape perception has been analysed by identified the sound objects that considered as relaxing and unrelaxing sound objects using soundscape recording or soundwalk in situ. Although the classification is well-defined, the relationship between sound objects and the overall soundscape perception has not been explained clearly. A different approach is implemented to explain the relationship between sound objects and soundscape perception based on soundscape dimensions (Relaxation, Dynamic, and Communication) using simulated soundscape.

In this study, 25 simulated soundscapes, composed from six sound objects with sound level variations, were used to identify the relationship between sound objects and the soundscape perception. Analysis using logistic regression indicates several interesting result. The perception of soundscape seems to be measured better using a dichotomous scale rather than using an ordinal scale. The perception related to the dimension of relaxation has a strong correlation with the sound of string music, traffic noise, and construction noise. The dimension of dynamic (simple-varied) has strong relation with the sound of people talking in the background, the event sounds, and traffic noise. The dimension of communication (communal-private) has a strong relation with the sound of people in the background. This study shows that the simulated soundscape could be an alternative to understanding the relationship between soundscape perception and the sound objects in the soundscape.

## **Keywords**

Simulated Soundscape, Sound Objects, Soundscape Perception

# Origins of invertebrate gut microbiomes; harnessing microbial CAZymes for improved 2nd Generation Biofuels

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## **Abstract**

A previous metagenome study on the black slugs (*Arion ater*) showed the gut to harbour economically important plant pathogens including *Dickeya dadantii*, *Pectobacterium carotovorum* and *Erwinia amylovora*. In this study, we aim to understand the similarities in the gut microbiomes of overwintered slugs and also to elucidate the presence of the plant pathogens especially *Dickeya dadantii*, it is one of the top 10 plant pathogens in Europe. A spatial and temporal study on slugs collected over 2015 and 2016 from North England and Scotland; the gut microbiome samples will be sequenced with Illumina's Mi Sequencing based on V3-V4 chemistry. The previous metagenome study based on functional analysis also revealed a rich repertoire of 5,635 carbohydrate active proteins and 2,510 genes corresponding to GH enzymes, 560 carbohydrate binding modules with 312 from groups involved in lignin breakdown. We here aim to harness and express putative recombinant glycosyl hydrolase enzymes; GH family 8 (putative cellulase) and GH family 15 (putative 1-4 beta xylanase). The candidate genes coding for putative GH enzymes are expressed with pET Gateway Technology, a combination of pET-TOPO/SD/D entry vector and the c-terminal His tagged pET-42 destination vector.

## **Keywords**

Slugs (*Arion ater*), *Dickeya dadantii*, Mi Sequencing, CAZymes (Carbohydrate Active Enzymes), GH (Glycosyl Hydrolase), Gateway Technology

# The Spread of Internet Rumour: Perceived Threat of Rumour-monger during the Social Movement of Umbrella Revolution

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## **Abstract**

Advanced information technology provided the participative platform for individuals to transmit information rapidly and communicate interactively. There is increasing focus on how new media affects social movement around the world. In the last quarter of 2014, Hong Kong experienced the influential social movement named Umbrella Revolution. News, together with rumours, spread timely across social media during the social movement. Szeto, Poon and Tang's (2016) finding of rumours categorisation into Unfavourable to Pro-democracy Protesters and Unfavourable to Anti-protest Protesters was argued. Since the source of Internet rumours was difficult to trace, it may not be able to identify rumour-monger's motivation to spread rumour based on their favourable or unfavourable political parties. Therefore, based on the outcome of triggered emotion, the current study employed thematic content analysis to analyse webpage contents using Chinese equivalent for 'rumour' and 'Umbrella Revolution' as search terms to search on Yahoo Hong Kong. Nine Chinese webpages particularly addressed, listed and depicted rumours during the period of Umbrella Revolution, 22nd September 2014 to 15th December 2014 were constituted and a total of 22 rumours incidents were found. The current finding shows inconsistent with previous study that two new categories, namely Perceived Threat to Protesters and Perceived Threat to Anti-protesters, were recognised containing 6 and 16 rumour incidents respectively. As social movement could provoke perceived threat of individuals who tended to reduce stress by spreading rumours, the discussion and implication of rumour-monger's emotion were discussed.

## **Keywords**

Rumour, Emotion, Social Media, Social Movement, Umbrella Revolution

# Nutritional composition, biochemical characteristics and antimicrobial potentials of seed and nut oils against a food and human pathogen

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## **Abstract**

*Staphylococcus aureus* is a well adapted human commensal capable of causing mild and chronic human infections. Biofilm formation on abiotic and biotic surfaces affords *S. aureus* innate protection from phagocytosis and antimicrobial agents and complicates the eradication of infection from human and hospital devices. Infections caused by *S. aureus*, particularly by antibiotic resistant species are of great concern and calls for urgent attention. Molecular methods can be used to determine the role of biofilm in antibiotic resistance. In this study, polymerase chain reaction (PCR) was used for the identification of 12 biofilm related genes of an *S. aureus* subspecies, (*Staphylococcus aureus* subsp. *aureus* Rosenbach-ATCC 6538). Using PCR for biofilm specific genes, bands were obtained after visualization by electrophoresis and results obtained indicate that the microbial surface components which recognize adhesive matrix molecule (MSCRAMMs) such as fibronectin binding protein A and B (*fnbA/fnbB*), clumping factors A and B (*clfA/clfB*), elastin (*ebps*), laminin (*eno*), collagen (*cna*) which are involved in initial attachment were all identified at different growth phases of planktonic cells and biofilm cells. The *ica* genes (*icaADBC* operon) are, essential for the synthesis of polysaccharide intercellular adhesin (PIA) and capsular polysaccharide/adhesion (PS/A) in staphylococcal species, again PCR was positive for these genes at the different phases of growth (planktonic and biofilm). The aim of this study is to investigate the role of these genes in biofilm formation, having now confirmed that we can (a) successfully grow biofilm, (b) can extract sufficient quantities of nucleic acid from different growth phases and (c) confirmed a single PCR band of the genes of interest, the next step will be to use quantitative PCR to determine any changes in expression of the genes over our time points. Ultimately we will study the role of these genes in biofilm formation and following biofilm treatment with antimicrobial natural products.

## **Keywords**

*S. aureus*, biofilm related genes, growth phases, PCR and antimicrobial products

# Barriers to Social Inclusion of Physically Disabled People in Kingdom of Saudi Arabia's Higher Education

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## **Abstract**

In a global context, disabled people face several challenges in accessing higher education, while disabled people in developed countries have received more attention in the past decade, the struggle continues for those in developing countries. The oil wealth in Arab nations has often masked the plight of more disadvantaged members of the society. In the Kingdom of Saudi Arabia (KSA), the number of disabled people continues to grow in, and current estimate suggests that the population of disabled people is around 4% of the total population. However, the past two decades, little or no disability legislation has been proposed in the aspect of legal, social, and economic status of disabled people in the Kingdom. This reluctance to propose comprehensive support framework for disabled people has left a significant gap between the qualities of support for disabled people compared to non-disabled people. Access to higher education by young people in KSA is recognised as such an area that needs improvement. The identification of the difficulties faced by young disabled people when accessing higher education within KSA might help in the development of better social policies and support services to improve the rights of disabled people. Therefore, the current study is aimed at identifying and characterising the barriers to social inclusion in higher education, which will provide initial evidence for future educational policies targeted at disabled people and non-disabled people alike. The research will utilize qualitative approaches to characterise the challenges faced by young disabled people when accessing higher education within KSA.

## **Keywords**

Disability, Access to Higher education, Disability Policies, Kingdom of Saudi Arabia, Social inclusion