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Preface

Welcome to the Book of Abstracts for the 2024 SPARC conference. Our conference this year was called "Celebrating your research and growing your networks", with a focus theme of sustainability. Sustainability is important for us all, sustaining the ecological and physical environments we depend on, but also to sustaining the economies and communities in which we live. For postgraduate researcher sustainability is also about managing work life balance and sustaining energy for and during the journey. The support, encouragement and constructive challenge peers provide each other is a truly invaluable part of sustaining and getting the most out of journey. There is no better place to see the value of the PGR community and peer support than at SPARC, where PGRs come together to share and celebrate each other's research. SPARC is also a great networking opportunity. It's a wonderful, exciting, energising event and this year we further extended our peer network, with PGRs from both Huddersfield University and Manchester Metropolitan coming to join us and share their work.

It's fabulous to see that SPARC is growing, building on the huge value it offers the PGR community, and this was our biggest yet. We have received a tremendous contribution from our postgraduate research community; with 85 presenters, and 36 poster presentations, the conference showcases our extraordinarily vibrant, diverse PGR.

The abstracts contained here provide a taster of the diverse and impactful research in progress and contact details of authors are provided to enable you to make connections with people whose work interests you SPARC is part of a programme of personal and professional development opportunities offered to all postgraduate researchers at Salford. More information about this programme is available on our website: Doctoral School | University of Salford. Registered Salford students can access full details on the Doctoral School Hub - Home (sharepoint.com). You can follow us on Twitter and Instagram @SalfordPGRs use the #SPARC2024 to see how the conference went.

If you would like more information about studying for a PhD here at the University of Salford, your lecturers can advise, or you can contact the relevant PGR Support Officer; their details can be found at Doctoral School | University of Salford.

We hope you enjoying exploring the wonderful work our postgraduate researchers are doing.

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Contents

Session 1.1 AI & Networks

Optimizing V2X Communications: Balancing Security and Latency with Blockchain on 5G/6G Networks

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Abstract

Vehicle-to-everything (V2X) is a communication technology that allows and facilitates vehicles to interact and collaborate with each other. V2X technology aims to increase traffic efficiency, save energy and lives, and improve road safety. Due to its time-sensitive uses, data received in the form of messages in V2X communications needs to be analysed and shared as fast and effectively as possible in real time.

Blockchain is a technology that makes transportation networks traceable, consistent, and secure. Blockchain has the potential to significantly address security concerns in V2X communications. However, several challenges impact the application of blockchain in vehicular networks. Due to mobility of vehicles, higher speeds and diversity of connected devices, communication technologies and networks and the increase in number of connected cars to the network, it is difficult to provide fast authentication while maintaining short propagation times required by the vehicular networks.

AI-based approaches for task offloading in V2X communications are designed to enhance task computation efficiency and manage authentication times effectively. By leveraging deep learning and reinforcement learning techniques, these methods enable the system to learn task behaviors dynamically and make informed decisions on whether and how to offload tasks for optimal performance. This approach significantly improves the system's ability to handle time-sensitive operations, ensuring that task computations are completed promptly while maintaining a balance with the time required for authentication.

Development and implementation of Blockchain solution that can offer security without compromising the low-latency requirements essential in V2X communication systems.

Keywords

V2X; Blockchain; Security; Latency; ITS

Format

Oral presentation

Explainable Metric Loss Networks for Detecting Unwanted Bolt Rotation

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Abstract

In any industrial system, ensuring that the engineered components therein are in working order is essential for the safety of workers and for efficient and cost-effective running. However, due to factors such as stress, deformation, and corrosion, individual components degrade over time, eventually leading to failure. In this project, we consider the use of artificial intelligence (AI) to analyse maintenance video and identify degradation with the goal of developing a system that can alert the user to conditions that might present a danger to workers.

To identify these conditions – unwanted loosening of bolts, for example – we are experimenting with machine learning architectures to compare images from across a time period to analyse change. To train these models, we have compiled a novel, annotated dataset of more than 1,100 images depicting bolts and bolt rotation for use with these architectures; as far as we are aware, none other such collection exists.

Using this dataset as a basis, we have experimented with triplet loss machine learning networks and find the results are inconclusive. To help determine the reasons for this, we are developing explainable AI techniques that allow us to see the features of images that are most important to a model when making a prediction. By making models more transparent, understandable, and accountable we make better, more accurate predictions and we start to address wider reaching legal and ethical implications arising through the ever more widespread use of opaque 'black box' AI in industry.

Keywords

Artificial intelligence; machine learning; explainable AI; vision; continuous maintenance

Format

Oral presentation

Improving How Wireless Devices Communicate Directly Without Involvement of Base Station in 5G/B5G Networks by Choosing the Best Route Between Source and Destination Wireless Devices

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Abstract

The Optimized Link State Routing version 2 (OLSRv2) routing protocol is widely utilised to route data in Device-to-Device (D2D) communication scenarios, where direct communication between wireless devices is essential. One critical aspect in OLSRv2 is an efficient Multi-Point Relays (MPR) device selection, a key mechanism for efficient message dissemination within the network. However, the existing MPR wireless device selection process in OLSRv2 encountered challenges of unmanageable link quality, rapid energy depletion and high processor loads, leading to suboptimal performance in D2D environments. This research addresses the MPR problem in the OLSRv2 routing protocol for D2D communication, aiming to enhance energy efficiency and reliability of message routing to destination. The proposed approach involves a comprehensive analysis of the current MPR selection algorithm, identifying its limitations and areas for improvement. Building upon these insights, a novel and optimised MPR selection mechanism is introduced to mitigate the identified shortcomings. The proposed solution incorporates advanced algorithms to intelligently select MPR wireless devices, considering factors such as device density and battery energy level, mobility patterns, and network topology. Through extensive simulations and evaluations, the performance of the enhanced OLSRv2 with the refined MPR selection mechanism is compared against the standard OLSRv2. The results demonstrate notable improvements in terms of efficient energy consumption, reduced routing overhead, enhanced network stability, and increased packet delivery ratio.

Keywords

OLSRv2; D2D; Multi-Point Relay; Energy; Routing Protocol

Format

Oral presentation

A Decentralised Peer-to-Peer Energy Trading Platform for Residential Homes

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Abstract

Innovative solutions are essential to revolutionize household energy consumption in the pursuit of a low-carbon and sustainable energy future. This study propose electric vehicles (EVs), microgrids, and residences with solar photovoltaic (PV) systems as major participants in a decentralized energy market. Remarkably, the majority of blockchain-related research to date focuses on broad corporate use cases and administration, with little understanding of the renewable market's technical viability, competitive bidding, and practical benefit.

Therefore, in this research, SolarChain, a proposed blockchain model for storing and accessing P2P transaction in a secured manner. Operating on the Ethereum network, SolarChain is an experimental blockchain that facilitates the exchange of electricity. The presentation simulates a peer-to-peer (P2P) network that includes vehicle-to-grid (V2G) user nodes, microgrids, and solar-powered residences. P2P trading use cases, smart contracts, buyer-seller exchange tracking, and exhaustive implementation procedures are all covered in detail. A realistic user interface that provides default smart contract buttons for simulation in the Ethereum Virtual Machine (EVM) environment of the Ropten Test Network serves as validation for the suggested design.

The study also looks at Ethereum's limitations in relation to the application, highlighting the fact that P2P platforms can lower infrastructure and transmission costs, helping local energy communities become more self-sufficient and cost-effective. SolarChain opens the door for a more efficient and sustainable energy landscape by offering a comprehensive framework for blockchain-based renewable energy transactions.

Keywords

Blockchain; Prosumers; Energy trading; Peer-to-peer(P2P); Smart Micro-grid

Format

Oral presentation, Poster

Towards a Unified Understanding of AI Readiness: A research and assessment framework

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Abstract

The benefits and challenges of adopting artificial intelligence (AI) have received attention from researchers. To analyse AI adoption, some researchers draw upon broader Information Systems literature and employ theoretical frameworks that are centred on employee acceptance of new enterprise technology. Arguably, AI tools are not the same as enterprise IT systems. There are many "off the shelf" AI tools or AI features in other applications which could be rolled out immediately. This study, therefore, adopts a broader view of AI adoption. By focusing on the maturity level or readiness of an organisation to adopt AI, the evaluation is extended beyond perspectives on employee acceptance. There is consensus that understanding AI readiness requires an evaluation of technical, organisational and cultural factors. This research seeks to extend current research on organisational AI readiness with the aim of creating an updated AI readiness framework. Data will be gathered using qualitative interviews with businesses, practitioners and policy makers. To then enable researchers and practitioners to assess organisational AI readiness, the research also aims at developing a comprehensive survey instrument i.e., the outcomes from the research will include a research questionnaire. This research aims to contribute to the literature on organisational AI readiness. By providing a research instrument that could be adopted and/or adapted by other researchers, the outcomes of this study will also make practical and methodological contributions.

Keywords

Artificial intelligence; organisational factors; AI readiness; evaluation; readiness research

Format

Oral presentation

Dynamic Pricing Optimization Strategies and Fairness Enhancement Using Mean Penalty Reduction Method

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Abstract

Dynamic pricing refers to the process of setting prices for products or services that have a fixed or infinite supply, but whose demand varies. This study explores the domain of dynamic pricing, a strategic approach that adjusts prices based on the fluctuating demand for products or services with a constant or infinite supply. Despite the prevalent use of pricing methods, there exists a notable gap in addressing bias and ensuring fairness within these models. The paper introduces an innovative pre-processing methodology aimed at mitigating bias in pricing models while maintaining profitability. Illustrated through the resolution of gender bias in a dataset, the new method, called Mean Penalty Reduction, proves effective in reducing bias without compromising profitability. The resulting dynamic pricing model not only navigates uncertain demand and market conditions but also steadfastly upholds principles of fairness. Commencing with a thorough survey of dynamic pricing problems in diverse business sectors, the research identifies challenges associated with constructing models resilient to unpredictable demand conditions. The distinctive contribution of this PhD thesis lies in the integration of the Multi-Armed Bandit (MAB) framework with pre-processing for fairness, providing a robust solution to address bias in data. This integrated approach ensures that dynamic pricing models remain both effective and profitable in real-world scenarios.

Keywords

Dynamic Pricing; Fair Pricing; Bias Reduction; Pricing Models; Multi-Armed Bandit

Format

Oral presentation, Poster

Session 1.2 The Animal Kingdom

Investigating How Human Influence on Diet Impacts the Gut Microbiome of Amazonian Primates Living in an Urban Park

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Abstract

An emerging method of wildlife conservation is to monitor the microbiome of wildlife populations. The microbiome can be described as a community of microorganisms comprised of bacteria, fungi, viruses and other taxa in varying abundances. Revealing which microorganisms are shaping the microbiome can be used to infer the health status of a population, especially determining the presence or absence of certain taxa such as those that are considered pathogenic. Microbiome analyses can be non-invasive (e.g., faecal analysis), avoiding stress of the study subjects. Primate populations are decreasing rapidly worldwide, with remarkable declines within the Amazon region. In the city of Sinop, (Mato Grosso, Brazil (Amazon)), due to urbanisation, five species of primate are isolated in an urban park: the white-cheeked spider monkey (*Ateles marginatus*), tufted capuchin (*Sapajus apella*), Vieira's titi monkey (*Plecturocebus vieirai*), Emilia's marmoset (*Mico emiliae*), and the white-nosed saki (*Chiropotes albinasus*). An average of 10,000 people visit the park each month, which leads to frequent human to non-human primate interactions e.g., people feeding the primates. In this study, we aim to explore the microbiome of these primates, investigating bacterial shifts that are associated with urbanisation. To achieve this, we will collect faecal samples from the primates inhabiting this park and then conduct shotgun metagenomics sequencing to characterise each species' microbiome. Subsequently, the presence and absence of significant microbial taxa will be explored. Here I will present: the aims of this study, geographical region and study species, methodological approaches, and how the results could support environmental education initiatives.

Keywords

Amazon; bacterial communities; diet; metagenomics; health

Format

Oral presentation

Detection Dogs, A Viable Method to Locate Great Crested Newts (*Triturus cristatus*) Terrestrially?

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Abstract

Endangered wildlife is often difficult to detect in natural habitats, and wildlife detection dogs have recently become increasingly deployed in the United Kingdom to record and detect individuals of rare species. The presentation focuses on two wildlife detection dogs that have specifically been trained to locate great crested newt (*Triturus cristatus*), a tailed amphibian which in recent decades has become an important case study for wildlife species management and conservation in the UK. Controlled field trials have been undertaken to determine whether dogs are able to discriminate between great crested newts and three other common British amphibian species as well as other distraction scents, the distance at which a dog can detect great crested newts, and whether dogs can detect great crested newts through soil and how different soil types influence scent movement. A comparative assessment between an experienced hand-searcher and the detection dog team was also undertaken in varying grass lengths (15 cm and 5 cm lengths).

The detection dogs were able to accurately discriminate between different amphibian species and detected individual great crested newts at channelled distances of up to a minimum of 2m with no substrate interference. Individual newts located in sandy-soil substrate were harder to detect in comparison to clay soil. The detection dogs were also more effective at locating great crested newts than the experienced hand-searcher. The studies generally highlight the potential of detection dogs for great crested newt management, and more specifically how factors such as temperature, wind, humidity, and weather conditions can influence operational success.

Keywords

Wildlife detection dogs; great crested newt; innovative; research; conservation

Format

Oral presentation

Revealing the Diversities of Nigerian Shrimp

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Abstract

The genus *Macrobrachium* comprise ~256 species of ecologically and commercially important shrimp, found across tropical regions. They are known for a long history of taxonomic challenges attributed to their wide distribution and similar morphological characteristics. Only 25 species are reported for the whole African continent. Taxonomic identification is often based on morphological data and molecular analyses. While the former method requires taxonomic expertise, the latter maybe be expensive to undertake in low-income countries. The present study will use morphological and molecular methods to unmask the identity of 149 specimens collected in Nigerian fish landing sites and nearby markets of Lagos, Ogun, and Oyo states to assess what species are targeted by local fisheries. The fresh and processed shrimp samples were preserved in 90% ethanol and kept in the freezer before extraction. Molecular DNAs was extracted from the pleopods and telson region using E.Z.N.A.® tissue DNA extraction kit (Omega BIO-TEK). The polymerase chain reaction was performed on an ABI Veriti Thermo cycler using primers COI A and COI F to be sent Erofins for species identification. Moreover, the complete mitochondrial genome (mitogenome) of three selected species, *M. equidens* (an invasive species in Nigeria, originally from Indo West-Pacific region), *M. dux* and *M. vollenhoveni* was sequenced using state of the art machine (PromethION). Ultimately, the outcome of these sequence results will be used to identify available species in the locations and recover deeper taxonomy and relationships through phylogenetic reconstruction to ensure sustainability and conservation of the shrimp fishery.

Keywords

Diversity; *Macrobrachium*; Mitogenome; Nigeria; Taxonomy

Format

Oral presentation

Representations of Non-Human Animals on BBC Radio Four's *The Archers*

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Abstract

Speciesism is the assumption of human superiority leading to the exploitation of non-human animals (NHAs). The way in which the media represent non-human animals can influence the way they are perceived and consequently treated. The inclusion of NHAs perspectives within the media is vital, as to be included is to be considered and shown moral value. *The Archers* is the longest running radio drama in the world, first airing on the BBC light programme in 1951 and is now broadcast on BBC Radio Four. *The Archers* heavily focuses on non-human animal agriculture. It could be argued that the way in which *The Archers* represents non-human animals will have an influence due to the longevity of the radio soap-opera and the dedicated fans of the programme. As a fictional radio drama focusing on animal agriculture, non-human animals are consistently commodified within the narrative. Although *The Archers* is fiction, the soap has included real-life agricultural issues such as foot and mouth disease and Bovine TB, however these particular storylines have been from the perspective of the farmers, and not the NHA's. This oral presentation will identify certain narratives on *The Archers* that could be viewed as speciesist and then suggest ways in which non-human animals can be respectfully represented on this long-standing radio soap opera.

Keywords

Animals; radio; soap-opera; agriculture; speciesism

Format

Oral presentation

Session 1.3 Language & Communication

The Title of This Abstract Cannot Be Displayed: How Can We Explore Meaning and Communication When Writing Without Language?

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Abstract

Asemic writing is writing that creates the impression of written text without there being any words, letters, or symbols of any language. Visually, it can take on many forms, appearing like calligraphy written in an unknown language, illegible handwriting, or digitally distorted writing that is no longer readable.

All written language is delivered visually, yet the visuality of text is often overlooked in favour of its linguistic components. One form of writing of which this is not true is asemic writing. You will need to make use of your imagination here as I am not able to include asemic writing in this abstract.

This presentation will explore how asemic writing provides a tool to read beyond language and captures modes of communication and thoughts that written language cannot contain. Specifically, this talk will consider what it means to explore writing without language from a creative translation perspective. In this context, I understand the concept of creative translation to be concerned with the process of translation offering multiple interpretations of the same source text.

All written translations will necessarily be visually different than their source text, yet this is seldom acknowledged. This talk will explore why discussing the visual nature of translation is important in dismantling the prevailing monolingual discourse and criticism that surrounds multilingual texts and translation. I also aim to highlight how asemic writing can be used to unearth the in/visible choices the creative translator makes.

Keywords

Asemic; post-literacy; handwriting; visual poetry; creative translation

Format

Oral presentation

How to Understand Your Research Domain Quickly: Power BI Visualisation Dashboard to the Rescue

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Abstract

105 years! That's how long it has been since the first UK PhD degree was awarded at Oxford University, yet the method of conducting a literature review has remained largely unchanged. Put simply, this is 2024, yet researchers must still navigate complex hurdles to deconstruct tons of published works stored in physical libraries and digital databases. As a result, novice researchers spend weeks sifting through a wide variety of authors and publications from diverse eras and regions to understand their desired research domain. The challenge is exacerbated by the rapid influx of newly published papers into electronic databases, leaving many rookie researchers even more confused, thanks to the sheer volume of data and lack of clarity about their value. With the exponential volume of research data available, grasping the intricate details of a domain becomes increasingly challenging. Microsoft's Power BI (Business Intelligence) offers a solution. It empowers new and experienced researchers by providing intuitive, interactive, dynamic, and informative visualisations. These dashboards offer a comprehensive overview of the research landscape at a glance, thereby helping the researcher know where to begin, as well as a means of quickly identifying the intrinsic value of respective publications. By bridging the gap between complexity and clarity, these made-in-Salford-University purpose-built Power BI dashboards enable researchers to unlock the potential of vast troves of research data. With quick and efficient visualisation of virtually any research landscape, researchers can confidently navigate their domain and make informed decisions. The dashboards will significantly improve researchers' database search user experience.

Keywords

Literature Review; Power BI; Business Intelligence Dashboards; PhD Research Domain; Big Data

Format

Oral presentation, Poster

Perception as Instrument of Creativity: A Phenomenological Interpretation of Aesthetics in Fashion Creation

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Abstract

This study explores a phenomenological view of aesthetics in fashion creation, highlighting the vigorous role of the human body which is intertwined with the mind discussed in phenomenology, connecting to the senses and perception. In a research-led practice manner, this study first examines the visual presentations of seasoned fashion designers, including their representative runway shows as well as innovative storytelling presentations (e.g. fashion film, fashion exhibition), to analyse how the visual sense, other senses, and perception – as a bodily aesthetic notion – work synergistically in the process of designing, making, and producing artistic fashion works. Subsequently, a series of practical workshops based on the analysis are designed and implemented amongst fashion design students from the university. The workshops test and refine the bodily notion of aesthetics by transforming the analysis into a set of "aesthetic tactics" to enhance the creative and artistic ability of fashion design beginners in educational scenarios.

This study presents a body-centric notion of aesthetics in fashion creation, closely bonded to human senses and perception. This study contributes to the ground knowledge of fashion with an emphasis on the creative and artistic nature of fashion creation. In a practical sense, the outcome of the study nourishes new perspectives and pragmatic methods for the practice, research, and development of fashion education.

Keywords

Bodily aesthetics in fashion; Sense and perception; Phenomenology; Art and creativity; Fashion design in Higher Education

Format

Oral presentation

Session 1.4 Social Media

A Multi-Disciplinary Approach to Developing a Machine Learning Model for Detecting Fake News and Hate Speech on Social Media

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Abstract

The ubiquitous nature of information disorder which manifests through fake news and hate speech on social media poses a significant threat to the development of the harmonious existence within societies. In pluralistic societies, the prevalence of fake news and hate speech exacerbates divisions and increases these negative reactions. This necessitates a nuanced understanding of fake news and hate speech. The complex relationship between fake news exposure and subsequent hate speech expression using psychological theories has rarely been applied to extract high-level features to build machine learning classification models able to detect fake news and hate speech automatically.

In this study, a conceptual model was derived from constructs within psychology theories such as Social Identity, De-individualisation model, moral disengagement, and confirmation bias. After that exploratory data analysis will be done on fake news and hate speech datasets which will be curated from YouTube and Twitter(X) using Twitter API and YouTube Scraper with a case study being the Nigerian Election 2023.

The expected contributions of this research are to provide a deep insight into the problem of information disorder from different online social networks through developing a conceptual framework, creating a unique dataset, and developing a machine learning classification model to identify fake news and hate speech accordingly. Through these contributions, the research aims to provide actionable steps to address the challenges posed by information disorder in online environments.

Keywords

Fake News; Hate Speech; natural language processing; psychosocial features

Format

Oral presentation

Bumble-ing through the Scruff-y Guys on Grindr: A Literature Review of Current Understandings of 'Risk Taking' on Dating Apps

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Abstract

Background: Dating apps have often been studied as important sites where masculine-identified people under the LGBTQ+ umbrella – or 'queer masculinities' – engage in relationships, intimacies and 'risk taking'. This paper positions the term 'risk taking', or similar phrases, as problematic. These risks are often associated with STI transmission. It will begin by providing examples of how these phrases are used. It will then consider the context and culture of dating apps and their importance. It will be argued that without this context, queer masculinities are presented at naïve, uninformed, or incapable of making rational decisions, where bodily autonomy – the level of control someone has in making decisions about their own body - is therefore questioned.

Research Gap: There is limited scholarship on dating apps and risk-taking that accounts for the cultural importance of dating apps. An analysis of how health science literature on queer masculinities and dating apps itself will be undertaken, which has positioned these cultures as risky is. In order to encourage more disparate interdisciplinary research, humanities and social science research will be compared with health sciences data.

Implications: The research hopes to provide an interdisciplinary bridge between social sciences and humanities and health sciences as to direct new ways of interpreting data, and questioning why data exists beyond intervention strategies. Due to the need for more interdisciplinary work that sits in the middle, it hopes to provide a balance of how dating apps involve risk whilst still being vital for queer masculinities.

Keywords

Queer; masculinities; digital; dating apps; STI Health

Format

Oral presentation

A Netnography of Chronic Pancreatitis Patients in the UK

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Abstract

Chronic pancreatitis is a painful debilitating illness. A recent James Lind Alliance research priority setting partnership highlights how little is known about the experience of pancreatitis patients. Research is needed to help clinicians to support patients. Pancreatitis Facebook communities present new opportunities for such research.

Investigative, interactive, and immersive methods of Netnography (online ethnography) were used to collect data from social media. Netnographic analytical interpretive data operations derived meaning from the data. The results reveal pancreatitis patients experience physical, psychological, and social suffering. Debilitating symptoms lead to depression, isolation, unemployment, and financial insecurity. Tensions between patients and clinicians cause distress and barriers to care. Patients feel they must battle to access diagnosis and treatment. However, there are relieving strategies. Access to specialist care, lifestyle adaptions and home remedies help to reduce the symptom burden. To cope, patients use humour and hobbies as distraction. They draw on family, friends, healthcare professionals, charities, and social media support groups to find information, understanding and support.

This netnography provides new knowledge on the impact of pancreatitis and useful supportive strategies. Better clinician awareness of the patient's challenges, and available supportive resources will drive improvements in care, patient experience, and outcomes. Furthermore, engaging pancreatitis patients using social media could strengthen patient- clinician relationships and expand future research opportunities.

Keywords

Chronic pancreatitis; Social media; Netnography

Format

Oral presentation

Red Pilled Autism? Possible ASD Vulnerabilities to Incel Ideology

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Abstract

Involuntary Celibate (incel) men believe that they will never have sex and are thus denied true manhood. These beliefs lead to hatred of women, loneliness, and potential harm. Current research indicates a reported rate of 40% autism spectrum disorder (ASD) among incels; the general population rate is 2.97%. This research aims to discover if ASD traits provide the context of vulnerability to engaging in incel beliefs and exploring this through social communication and interaction abilities, personality, and online activity on views regarding sex and masculinity using a mixed-methodological approach, analysing the studies data separately and combining the results for interpretation. Study 1 involved participants (n=1,497) completing demographic information and four diagnostic surveys, the Autism Quotient 50, the Incel Traits Scale, the Problematic Internet Use, and the Exposure to Extremism to explore whether there are any relationships between ASD traits, incel beliefs, internet use, and extremism exposure exists. A correlation between ASD and internet use and exposure to extremist material online, but not incel traits, was found. In Study 2, the lived experiences of a sample of men with ASD will be explored using semi-structured interviews. Specifically, their romantic and/or sexual relationships and how they use the internet relating to these topics will be explored and analysed thematically.

Keywords

Incels; ASD; Autism; Internet; Extremism; Radicalization

Format

Oral presentation

Examining Social Media Hashtags Role in Digital Activism on Gender-Based Violence in Nigeria

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Abstract

This research focuses on studying the impact of trending social media hashtags, like the global #MeToo, #BringBackOurGirls, #BeingFemaleInNigeria and #EndSARS on digital activism and collective action against Gender-Based Violence (GBV) in Nigeria. The study aims to determine how effective these hashtags are in combating GBV and whether online activism can lead to real-world actions. While some studies have explored the use of hashtags in GBV activism, there is a lack of understanding on their specific role in Nigeria Drawing from Social Identity and Network Feminism theories, which emphasize the influence of social groups and collaborative networks in digital activism the research will investigate the effectiveness of social media in anti-GBV campaigns. Using mixed methods, tweets relating to GBV in Nigeria will be analysed to assess the impact of hashtag campaigns. Surveys, focus groups, interviews, and content analysis will be conducted to measure changes in public awareness, attitudes, and policy outcomes influenced by these campaigns. The findings of this research will provide valuable insights for developing online activism strategies against GBV in Nigeria and similar settings. By understanding how Nigerian activists leverage social media to drive change in the fight against GBV, this study aims to amplify the voices of marginalized communities and support efforts to combat GBV in Nigeria.

Keywords

Social Media; Hashtags; Digital Activism; Collective Actions; Gender-Based Violence

Format

Oral presentation

Session 2.1 Sustainable Industries

Using Nature-Based Solutions to Mitigate Urban Heat

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Abstract

This research investigates how effective urban greening may be at mitigating summertime heat stress in cities of temperate regions. Globally, temperatures are rising due to climate change and increasingly, incidences of summertime heatwaves are being observed in temperate zones. Population figures are forecast to continue growing in city conurbations, where heat stress is exacerbated by urban heat island (UHI) effect. Vegetation has the potential to mitigate UHI effect by its shading and moisture-generating qualities within the hard landscape of an inner city.

Manchester city centre will provide three case study areas, representing low to high-rise construction types. The areas will be modelled using ENVI-met software, to create simplified 3D simulations of sample neighbourhood blocks. The software enables one to analyse the interaction between local climate and urban structures, allowing for experimental placing of vegetative surfaces and analysis of the resulting heat transfers. The models will compare the sample areas with 2-5 proposed planting scenarios, designed to reduce solar absorption to the original built surfaces – thereby reducing local air temperatures and UHI effect. The results of this investigation aim to determine if the local climate is altered and to estimate if the UHI effect over the whole city centre could be mitigated.

Heat stress-related fatalities are predicted to rise as urban populations continue to grow. This study analyses how NBS may be used in cities to future-proof against the health and economic hazards of climate change induced heat stress.

Keywords

Nature-based solutions; urban heat island effect; heat stress; urban greening; urban future-proofing

Format

Oral presentation, Poster

A Sustainable Built Environment Through Pre-Demolition Audit

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Abstract

Every building has a service life after which it becomes unsafe for the occupant and the public. Therefore, when a building or infrastructure has come to end-of-service-life a decision has to be made which is mainly demolition. This research identifies the importance of pre- demolition audits before embarking on the demolition process as this is crucial to selecting the right demolition method, procedure, and sequence of operation.

European Commission defined a pre-demolition audit as an activity planned by the building or infrastructure owner that results in the register of the materials and components resulting from the upcoming demolition or renovation projects, as well as their administration and recovery options. Comprehensive material inventories are useful in accounting for the estimated waste from the demolition of the building, pre-demolition audit is a practical tool to conduct material inventory. A pre-demolition audit is essential for managing resources and promoting recovery of the material with useful life inside.

This paper will explore the benefits of using pre-demolition audits to enhance the sustainable consumption of natural resources, and promotion of urban mining as a sustainable practice in the built environment. The methodology is a review of articles, documents, and technical reports on pre-demolition audits in the built environment.

The outcome of this research will promote the use of pre-demolition audits in managing construction and demolition waste and accurate material inventory for materials and products stored in existing buildings and infrastructure thereby extending their service life and reducing under-utilization of resources.

Keywords

Pre-demolition audit; resource efficiency; sustainable consumption; urban mining

Format

Oral presentation, Poster

How Nigeria Waste Management System Can Influence the Performance of Waste-to-Energy

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Abstract

Waste-to-energy has attracted attention worldwide in that it can potentially solve the problems created by municipal solid waste by reducing waste volume and acting as energy source.

However, there are many high-profile examples of failed waste-to-energy projects. These are costly, time-consuming, and wastes resources. The problem exists that despite the potential advantages, high-profile failures of waste-to-energy projects persist. This is especially pertinent in Nigeria as efficient waste management practices are required to address the rising waste levels and meet the increasing energy demands arising from population growth and technological innovation. Via a comprehensive literature review, this research seeks to identify common areas of success and failure across waste-to-energy projects and looks to understand how these best practices can be applied to Nigerian waste-to-energy projects.

The results reveal waste-to-energy failures include a variety of reasons such as the quality of waste not meeting the varied feedstock requirements (i.e composition, content of organic fibres and moisture content)

It is known that the municipal waste of Nigeria and developing countries consists of different waste compositions, including non-combustible and non-biodegradable waste materials which are unsuitable for either thermal or biological treatment. Therefore, proper waste management is required to generate quality waste to achieve a good conversion. A greater consideration of the waste types available and required at the project outset can significantly influence the productivity or performance of different waste-to-energy technology options and potentially lead to greater project success, meeting both the increased energy demands and dealing effectively with the increasing waste levels in Nigeria.

Keywords

Municipal solid waste; waste-to-energy technology; waste management practice; quality of feedstock; facility performance

Format

Oral presentation, Poster

High Street Sustainability: Is the UK's Current Approach to Maintaining UK High Streets Sustainable?

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Abstract

For the past two decades, UK High Streets have battled a perfect storm of challenges: the lingering effects of the pandemic, the relentless rise of online retail, the decentralisation of traditional shopping spaces, and a volatile economic landscape. These factors have fundamentally reshaped consumer preferences, leaving many High Streets struggling to adapt. Meanwhile, the global conversation around sustainability has evolved significantly since Brundtland's definition in 1987, culminating in the United Nations' Sustainable Development Goals (SDGs) of 2015. However, translating these broad aspirations into concrete actions at the local level, particularly for the complex ecosystem of UK High Streets, remains challenging. Furthermore, the research reveals a key issue: the traditional definition of High Streets in the UK fails to capture their full significance. Specifically, UK High Streets are increasingly becoming multi-functional serving as vital spaces for spatial and social interactions reflecting local character and culture. However, their geographical definition often relies heavily on retail-centric parameters, reflecting an economically driven perspective. While economic considerations are crucial, this narrow focus overshadows other critical dimensions essential for sustainable development in High Streets. This study employs qualitative analysis to understand how UK High Streets are perceived and utilised. It argues that there should be a re-evaluation of people's spending habits, advocating for a shift away from a consumer-centric focus towards a greater emphasis on the local community and placemaking. This shift offers the potential to make UK High Streets more sustainable and resilient, enhance well-being, and contribute to achieving the SDGs at the local level.

Keywords

Sustainability; UK High Streets; Placemaking; Consumerism; Community

Format

Oral presentation

Impact of Interoperable Financial Technologies for Financial Institutions in Promoting Financial Inclusion for Smallholder Farmers of Pakistan

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Abstract

Financial inclusion remains a significant challenge in rural areas, where geographically isolated smallholder farmers (SHFs) face limited access to formal financial services. Supply-side barriers, including limited outreach, information asymmetry, rising operational costs, lack of targeted & tailored products, and stringent eligibility criteria, fuels lack of motivation for financial institutions (FIs) to cater SHFs. The situation in Punjab, the food basket of Pakistan, is no different. Interoperable financial technologies (IFTs) like Application programming Interface and mobile wallets accounts allow seamlessly integration of information and payment systems. Imagine them as bridges connecting various (FIs), mobile network operators, and data providers. Limited financial inclusion contributes to the widening yield productivity gap for SHF restricting them to the perpetual cycle of poverty and informal markets. This research investigates the impact of IFTs on lending behaviour of FIs promising a solution for financial inclusion of SHFs. The research addresses the significant gap identified by peer-reviewed-publications regarding the scantness of qualitative enquires. It Uses semi-structured interviews with the evolving key stakeholders in Punjab Government's 'e-Credit' programme. Subjective ontologies, interpretivist epistemologies provided value laden knowledge addressing the paucity of formal and digital agricultural credit and advisory support to SHF in Punjab. Thematic analysis elaborated the potential of IFTs as enhancing outreach & awareness, reducing cost of credit, targeted financial products, efficient and transparent information and payments for formal FIs. While this research provides recommendations addressing supply-side barriers for policy and practice, further research on IFTs impacting demand-side barriers can help improve the financial inclusion landscape for SHF.

Keywords

Interoperable financial technologies; Application programming interface (API); mobile wallets; financial inclusion; smallholder farmers

Format

Oral presentation

پاکستان کے چھوٹے کاشتکاروں کے لیے مالی شمولیت کو فروغ دینے میں مالیاتی اداروں کے لیے قابل عمل انٹرآپریبل مالیاتی ٹیکنالوجیز کے اثرات۔

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خلاصہ
مالیاتی رسمی کو کسانوں چھوٹے تھلگ الگ پر طور جغرافیائی جہاں ،ہے ہوئی بنی چیلنج اہم ایک شمولیت مالی میں علاقوں دیہی آپریشنل ہوئے بڑھتے ،آہنگی ہم کی معلومات ،رسائی محدود بشمول ،رکاوٹیں سائیڈ سپلائی ہے۔ سامنا کا رسائی محدود تک خدمات لیے کے کرنے پورا کو کسانوں ہولڈر چھوٹے ،معیار کے اہلیت سخت اور ،کمی کی مصنوعات کردہ تیار اور ٹارگٹڈ ،اخراجات انٹرآپریبل ہے۔ نہیں مختلف کچھ بھی صورتحال کی پنجاب باسکٹ فوڈ کے پاکستان کمی۔ کی افزائی حوصلہ کی اداروں مالیاتی کسی بغیر کے نظام کے ادائیگی اور معلومات اکاؤنٹس والٹس موبائل اور انٹرفیس پروگرامنگ کیشن ایپلی جیسے ٹیکنالوجیز فنانشل کو والوں کرنے فراہم ڈیٹا اور ،آپریٹرز ورک نیٹ موبائل ،اداروں مالیاتی مختلف انہیں ہیں۔ دیتے اجازت کی انضمام کے رکاوٹ میں بڑھانے کو فرق پیداواری لیے کے کسانوں ہولڈر چھوٹے شمولیت مالی محدود کریں۔تصور پر طور کے پل والے جوڑنے مالی کی کسانوں ہولڈر چھوٹے تحقیق یہ ہے۔ رکھتی محدود تک چکر دائمی کے منڈیوں رسمی غیر اور غربت انھیں جو ہے معاون کی اثرات کے ٹیکنالوجیز مالیاتی انٹرآپریبل پر رویے کے دینے قرض کے اداروں مالیاتی والے کرنے وعدہ کا حل کے شمولیت کے اشاعتوں والی جانے کی سے طرف کی مرتبہ ہم نشاندہی کی جس ہے کرتی دور کو خلا اہم اس تحقیق ہے۔ کرتی تحقیقات پذیر ترقی میں پروگرام 'کریڈٹ-ای' کے حکومت پنجاب یہ ہے۔ متعلق سے کمی کی انکوائریز کوالٹیٹیو جو ہے گئی کی ذریعے ہیں کرتی تشریح کی علوم علمی ایسے آنٹولوجیز سبجیکٹیو ہے۔ کرتا استعمال کا انٹرویوز ساختہ نیم ساتھ کے ہولڈرز اسٹیک کلیدی قیمتی لیے کے کرنے دور کو کمی کی معاونت مشاورتی اور قرضوں زرعی ڈیجیٹل اور رسمی کو کسانوں چھوٹے میں پنجاب جو لاگت کی کریڈٹ ،بڑھانے کو آگاہی اور رسائی لیے کے اداروں مالیاتی باضابطہ نے تجزیے موضوعاتی ہیں۔ کرتی فراہم معلومات کی ٹیکنالوجیز مالیاتی انٹرآپریبل پر طور کے ادائیگیوں اور معلومات شفاف اور موثر ،مصنوعات مالیاتی ٹارگٹڈ ،کرنے کم کو فراہم سفارشات لیے کے کرنے دور کو رکاوٹوں سائیڈ سپلائی لیے کے عمل اور پالیسی تحقیق یہ اگرچہ کیا۔ واضح کو صلاحیت کسانوں ہولڈر چھوٹے تحقیق مزید پر ٹیکنالوجیز مالیاتی انٹرآپریبل والی ہونے انداز اثر پر رکاوٹوں سائیڈ ڈیمانڈ لیکن ،ہے کرتی ہے۔ سکتی کر مدد میں بنانے بہتر کو نامے منظر کے شمولیت مالی لیے کے

:الفاظ مطلوبہ
انٹرآپریبل مالیاتی ٹیکنالوجیز، ایپلیکیشن پروگرامنگ انٹرفیس، موبائل بٹوے، مالی شمولیت، چھوٹے کاشتکار۔

پیشکش زبانی **:شکل**

Session 2.2 Law, Order & Justice

Behind Legal Bars: Safeguarding Women's Right to Health in Detention

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Abstract

This research addresses a pressing issue within human rights, focusing on women's right to health in detention facilities. Legal literature on women's right to health in detention lacks attention, with limited research by legal scholars. Despite universal recognition of the right to health, gender-specific rights in detention receive minimal scholarly focus, and the public health community may be unaware of relevant legal perspectives. Human rights to health serve as a critical legal tool to achieve health justice. Addressing this critical gap by investigating and comparing the impact of the conditions of detention on women offender's right to health.

Incarceration presents a unique opportunity for treatment and therapy due to controlled access to healthcare and stable accommodation. However, it is often considered an environment where women are subjected to harsh conditions that neglect their dignity, reproductive health, and essential medical needs. Resulting in restricted healthcare access and delayed diagnoses and treatments, which worsen morbidity rates. To shed light on the significant impact of women's right to health in detention settings by conducting a theoretical exploration of the right to health in International Human Rights Law. It further involves a comparative legal analysis of detention conditions for female offenders across countries, examining various cases, practices, and policies to identify gaps and best practices. This study intends to bridge the gap between legal scholars and the public health community by devising strategies to reduce health disparities while safeguarding women's right to health.

Keywords

Health Justice; Incarceration Impact; Gender-specific Rights; Women Offenders; Right to Health

Format

Oral presentation

Implementing Alternative Sanctions in Criminal Punishment: Implication for Human Rights

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Abstract

Prisons as a punishment aim to provide justice and prevent crime by guiding the offenders to realise their mistakes and improve themselves. However, prisons face challenges, such as high re-offending rates and ensuring offender's rights, and the safety of society. As a result of prison's harmful impacts, numerous countries have sought alternative solutions. The philosophy of imprisonment is shifting towards rehabilitation and reform, aiming to reintegrate the offender into the community as a better person. Alternative punishment is based on keeping the convicted person free while imposing a punishment that will act preventively against committing more crimes.

This systematic legal analysis study examines the effectiveness of alternative sentences as non-custodial punishments by considering three aspects: Re-offending rate, protection of society, and offenders' human rights by focusing on protecting rights to liberty, right to family life, and dignity. The concept of human rights aligns with the idea of alternative sentences, which restrict the freedom of the convicted person to practice life without depriving them of their liberty entirely. Additionally, alternative sentences align with the right to family life, which considers the offender a fundamental and natural group unit of society. Moreover, the discourse surrounding alternative sentencing remains complex and multifaceted, reflecting diverse perspectives on its impact on re-offending rates. This study is considered an addition to the legal library designed for legislators, law enforcement, judicial, executive parties, and other researchers by informing their decision-making processes, improving policy formulation, and enhancing legal interpretations.

Keywords

Alternative Sentences; Human Rights; re-offending; Offender Rehabilitation; Incarceration

Format

Oral presentation

Exploring Fitness to Participate Among Defendants with Fetal Alcohol Spectrum Disorder During Court Proceedings in England and Wales

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Abstract

Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term used to describe the lifelong impact on the brain and body of individuals prenatally exposed to alcohol whilst in the womb. Despite research indicating that individuals with FASD are 19 times more likely to be involved in the Criminal Justice System, there has been very little empirical evidence on whether an individual with FASD can receive a fair trial in England and Wales. The question therefore is whether individuals with FASD possess the abilities required under the common law doctrine of fitness to plead: to understand the charges made against them, decide how to plead, challenge jurors, instruct solicitors, follow proceedings, give evidence in their own defence and participate effectively in a trial. Study 1 will review the literature on FASD and the Criminal Justice System, and case law in England and Wales, and compare it to the status of research internationally. Study 2 will explore the legal professionals' understanding of FASD and identify possible training needs. Through questioning experienced Forensic and Clinical Psychologists, Study 3 will identify the abilities needed to be fit to plead and psychological instruments required to test those abilities. The psychological instruments identified from Study 1 and 3 will be tested on a sample of adults diagnosed with FASD and compared to a sample of non-neurodivergent adults, in order to explore possible vulnerabilities. Information gained from this research will be used to increase the knowledge of FASD throughout the legal profession and inform future legal policy.

Keywords

Criminal justice system; fetal alcohol spectrum disorder; FASD; fitness to plead; fitness to stand trial

Format

Oral presentation, Poster

Cyber Threat Intelligence Sharing in Nigeria

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Abstract

Cybersecurity challenges are common in Nigeria, with 61% of enterprises reporting ransomware assaults in 2020. The sharing of cyber threat intelligence is a pivotal instrument in addressing the extensive challenges of cyber threats. It also helps in meeting regulatory compliance. There are a range of impediments that prevent cyber threat intelligence sharing. We propose to maximise this cyber threat intelligence sharing to resist malicious attackers. Therefore, this research investigates the factors influencing Nigerian cyber security practitioners' cyber threat intelligence sharing. To achieve this aim, we conducted research interviews with eleven cyber security practitioners using a semi-structured, open-ended interview guide, which was recorded and transcribed. We analysed the data using an approach informed by grounded theory. We coded the data where each code was represented by a brief descriptive sentence, organised the data into categories, and used constant comparison to check our code's consistency and accuracy. We developed memos that contained a brief essay on the subject and a few quotes that served as key evidence, from which our descriptive grounded theory emerged. After a detailed study, we discovered that cybersecurity practitioners in Nigeria are willing to exchange and receive cyber threat intelligence. However, we identify two impediments to sharing. Firstly, there is a lack of standardisation in cyber threat intelligence sharing, and secondly, there are data privacy concerns. These are barriers that hinder involvement in the dissemination of such cyber threat intelligence sharing in Nigeria. Based on our findings, we recommend adopting a standardised platform for sharing cyber threat intelligence by cyber security practitioners. Part of the standardised platform should be precise data privacy definitions and classifications.

Keywords

Cyber threat intelligence sharing; Cyber security practitioners; Nigeria; Frameworks; Grounded theory

Format

Oral presentation

Exploring the Risks and Protective Factors of Individuals with Foetal Alcohol Spectrum Disorder to Encounters with the Criminal Justice System as Suspects or Victims of Sexual Offences

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Abstract

Foetal Alcohol Spectrum Disorder (FASD) refers to a spectrum of disorders resulting from brain and central nervous system damage due to prenatal alcohol exposure. It is categorised as a 'neurodevelopmental disorder' alongside Autism Spectrum Disorder, Attention-Deficit/Hyperactivity Disorder and Intellectual Disabilities. The brain damage established in FASD results in numerous challenges for those affected - including impairments in physical, mental, cognitive, emotional, behavioural and social domains of functioning. In addition to these challenges, individuals may experience secondary difficulties (those that a person is not born with) including disrupted school experiences and mental health difficulties as well as demonstrating sexually harmful behaviours. Research has shown that those with FASD are 19 times more likely to encounter the criminal justice system. The aim of my research is to explore the features of FASD that may provide the context of vulnerability to becoming involved in the criminal justice system as suspects or victims of sexual offences. It will begin by undertaking a systematic scoping review to examine existing evidence on the topic – identifying case studies or empirical studies (both quantitative and qualitative) that have explored FASD in relation to sexually harmful, risky or inappropriate behaviour as well as sexual offending. This review will identify gaps in research to inform the development of 'fluidly' sequential exploratory studies with the aim of contributing to the body of knowledge and understanding in relation to the risks and protective factors for those with FASD who victims of sexually harmful behaviours or suspected or convicted of sexual offences.

Keywords

Foetal Alcohol Spectrum Disorder; Inappropriate sexual behaviours; Sexually harmful behaviours; Sexual Offences

Format

Oral presentation

Session 2.3 Communities & Lived Experience

Flood Disaster Governance: Critically Exploring Tools for Empowering Communities in the Context of Post-Disaster Resilience. A Salford Story

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Abstract

The aim of the research was to investigate the opportunities and barriers to enable a bottom-up community flood resilience. The results show that a top-down approach to managing a flood disaster created tensions between the community and stakeholders. The red thread that emerged from the qualitative data was an inherent distrust of the authorities, mainly due to the top-down actors being unprepared to respond to flooding on Boxing Day 2015. Utilising a human and physical geography approach, this research investigated opportunities and barriers to enabling community flood resilience, through adopting an ethnographic approach. Key actors on the ground during the floods in Salford were interviewed to inform a case study using mixed methods. A qualitative methodology was undertaken to elicit discourse from the key actors who were, the participants who lived on the floodplain, emergency responders, and the government including its agencies. The research encapsulated Participatory Action Research (PAR) and developed a novel method of a creative technology solution to capture data. Through the experimental ethnography lens, a mixed reality bespoke App was developed and deployed to observe participants and their preparedness to flooding for data analysis purposes. The research questions set out to explore the wider implications of how a community can build capacity to transform and adapt using technology in, determining how vulnerable or resilient the Salford participants were to pre-or post-flooding events. The results demonstrated that community champions are in fact a single point of failure to community resilience based on analysis and a conditional probability toolkit.

Keywords

Cross-disciplinary research; Experimental Ethnography; Mixed Methods; Mixed Reality; Resilience; Single point of failure

Format

Oral presentation

Developing a Community Response – The Messy and Unpredictable Reality of Co-design

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Abstract

The Covid pandemic demonstrated the power of community action during an emergency. The innovative and effective community solutions and response inspired the development of this co-designed study around another emergency – Climate Change. The research is designed with co-researchers from the community who have extensive networks, knowledge of the local community, and an interest in climate change. This presents an account of their reflections on the process and progress to date.

Over several months and through a deliberative and democratic process, household food waste was chosen as a topic around which to develop a community intervention. Further refinement and discussions took place to select which communities to work with. Three communities were chosen: two contrasting geographical areas with a distinct sense of place and young people.

Further time was taken to develop the intervention: a food waste diary adapted for community use which captures, what, why and how much food is wasted. Community Leaders were recruited from the community to encourage and support participants to take up and complete the food waste diaries. Following a community intervention designed with the co-researchers and community leaders the food waste diary will now be repeated.

The study has brought together a diverse group of individuals with a shared passion for tackling climate change through community action. The process has been complex, challenging, and messy; however, it is genuinely collaborative, responding to community needs and being as much about relationships and the process as the final findings.

Keywords

Co-researchers; Climate Change; Community response; Co-design

Format

Oral presentation

Words from World Watchers: Recording the Mauritian occult through a narrative approach

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Abstract

This study investigates lived experiences of Mauritians with occult beliefs and traditions (witchcraft and religion). The PhD is presented as an experimental nonfiction book. It seeks to take a three-pronged approach. First, it records Mauritian occult experiences gathered through interviews and fieldwork. Second, it explicates the Mauritian researcher's decolonising ways of doing research on the taboo subject of witchcraft. Third, it contributes new insights to co- creation in nonfiction writing: writing for and with research participants. This research has been carried out because occult experiences of Mauritians have not been extensively documented and people who practice folklore have often been deemed as savage or uneducated.

During this presentation, I present a short excerpt of my book, Words from World Watchers and explain how I document the occult lived experiences of participants, their family stories, and oral traditions with the intention of creating a space for Mauritians to speak, share, and narrate. I explain the process of Method Writing, a derivation of Konstantin Stanislavski's Method Acting. Method Writing becomes an act of ventriloquism to write participants' stories while getting as close to their authentic narratives as possible. In reality, it is quite a mysterious and haunting process as I gradually BECOME the participants, embodying their experiences and emotions to write what they want to share with the world. Ultimately, I use this presentation to extend an invitation to my audience to travel to a complex world and see it through the eyes of the Mauritian.

Keywords

Decolonising; Mauritius; Method Writing; Nonfiction; Witchcraft

Format

Oral presentation

Irish Early Childhood Practice Placements: Unveiling Supervision Experiences Using an Interpretative Phenomenological Approach

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Abstract

Since the early 1990s, significant efforts have been made to improve the Irish Early Childhood Care and Education (ECCE) sector in order to professionalise services provided to children under 7 years old and their families, as well as supporting professionals and students in this area. However, despite these efforts, early childhood educators experience significant challenges in relation to their professional recognition, professional supervision and mentoring, identity, level of qualification, and salary. Interestingly, there is little regard or respect for the utilisation of professional supervision to address these fundamental challenges for early childhood professionals in practice, often disregarding valuable formative practice placements for students as emerging early years professionals.

This doctoral research reveals the unexplored research area of professional supervision in early childhood education placements in Ireland. It investigates both the 'experience' and 'understanding' of current supervisory practices and arrangements utilising the conceptual framework of Interpretative Phenomenological Analysis (IPA). Ten participants (early years educators supervision students on placement) were interviewed in-depth using a qualitative semi structured narrative design.

The outcome of this research will add strength and enable substantial and meaningful impact in current professional practice in early childhood education by appraising and scrutinizing several factors that influence the current climate within Irish early childhood education practice. This study will contribute new literature that amplifies the voice of early childhood educators through their individual lived experiences and address the gap in understanding the purpose of professional supervision as a learning tool in practice placements.

Keywords

Early Childhood Education; Practice Education Placement; Professional Supervision

Format

Oral presentation

Opportunities and Challenges of Chinese Online Novel Authors

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Abstract
Internet literature has become a substantial and undeniable cultural industry in China, and online novels are a noteworthy part of this. From a historical perspective, the evolution of the Chinese online novel industry is rooted in its own unique background. In the ever-evolving landscape of online novels, authors, readers, and website platforms are the key roles in the industry. Authors hold a significant role within this industry as key contributors to the novel production process, and their numbers are substantial. Despite the wealth of existing research on various aspects of this field, there remains a conspicuous gap in understanding of the phenomenon from the author's perspective. A gap in knowledge which this research project seeks to close. The study employs a mixed-method approach, blending in-depth interviews with key players and autoethnography. The latter component is part of the research since the researcher has been an online novel author for 14 years. Personal narratives and experiences of authors are gathered as qualitative data, along with practice-as-research methods relevant to the writing process. Overall, the research seeks to comprehend the status, challenges, rewards, and perceptions of Chinese online novel authors, offering a more comprehensive understanding of this dynamic industry and should be of value to fellow academic researchers, potential authors, and industry stakeholders.

Keywords
Online novel; online author; Chinese internet literature; reader; website platform

Format
Oral presentation

Session 2.4 Health Conditions

Targeting the HGF/Met Pathway: Novel Sulphated Molecules as Promising Anti-Cancer Agents

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Abstract
The significance of metastasis, as a critical aspect of cancer development contributes to high global mortality rates, in which cells can migrate from the primary tumour to invade nearby tissues to spread and form secondary tumours in new sites of the human body. The genetic mutation of the Hepatocyte Growth Factor (HGF)/Met pathway has a significant role in cancer progression. The HGF/Met pathway has become an attractive target in anticancer drug development especially due to the urgency in developing effective therapeutic strategies against cancer. Early work in our research laboratory discovered that small, sulphated molecules inhibit the activity of the HGF/Met pathway. Our main target is to synthesize and purify small, sulphated molecules that can be used on cancer cells to reduce the HGF/Met pathway activity. The newly achieved sulphated products have a promising biological activity as potential anti-cancer agents and potential inhibitors of the HGF pathway. Our findings demonstrated substantial efficacy against cancer cells, efforts are ongoing to comprehensively assess their activity and their impact on cell migration/ metastasis. The synthesized products hold promise as therapeutic agents in combating cancer and metastasis.

Keywords
Metastasis; HGF/Met

Format
Oral presentation, Poster

Identification of Small Extracellular Vesicle MicroRNA Cargoes as Novel Biomarkers of Frontotemporal Dementia

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Abstract

The prevalence of dementia, a syndrome causing cognitive impairments such as memory loss and language problems, is increasing year by year, with numbers from the Alzheimer's Society estimating around 1.6 million people in the UK will suffer by 2040. Frontotemporal dementia (FTD) is the second most common cause of early onset of dementia, where the earliest an individual develops dementia is reported to be 40 years of age. One-way neurodegenerative diseases like FTD and Alzheimer's disease (AD) spreads through the nervous system is by small extracellular vesicles (sEVs), small delivery bubbles that carry different cargoes around the body. One specific cargo found in sEVs are microRNA, natural fine tuners that reduce or turn off specific mechanisms in the body, either for the better or to exacerbate diseases such as AD and FTD. Currently, no clear-cut methods exist that efficiently diagnose or differentiate the different dementia-causing diseases, yet research has shown the potential to measure miRNA signatures of these diseases to identify novel biomarkers.

Brain tissue from those with no disease, AD and the 3 genetic variants of FTD (*GRN, MAPT, C9orf72*), were broken down and sEVs were isolated. Brain sEVs were characterised using western blotting, transmission electron microscopy (TEM) and fluorescent nanoparticle tracking analysis (fNTA). Small-RNA-Sequencing was used to analyse the entire epigenomic environment of sEVs.

Sequencing results identifies specific miRNAs differences between the three different genetic mutations of FTD when compared against control samples, and key miRNA found that could be used to distinguish against AD samples too.

Keywords

Dementia; Extracellular Vesicles; MicroRNA; Biomarkers

Format

Oral presentation, Poster

Investigation into *Toxoplasma gondii* infection in lung tissue

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Abstract

Toxoplasma gondii (a parasite of the Apicomplexa phylum) is an organism transmitted from animals to humans which can infect all warm-blooded animals, including humans and livestock. The parasite causes a wide range of disease symptoms: in humans, infection is largely asymptomatic, however, the parasite can cause significant illness in people with an impaired immune system. The parasite is highly prevalent in the humans with on average 30% of the global population infected. This parasite has veterinary importance as it induces abortion in livestock, leading to economic damage due to stillbirth and neonatal mortality. Innate immune system response on the site of infection produces cytokine IL-12 (a protein crucial in controlling the activity of other immune system cells). IL-12 stimulates adaptive immune system to produce another cytokine called interferon gamma (IFN-γ). That leads to increase activity of inducible nitric oxide synthase (iNOS), which enzyme produces nitric oxide (NO). Nitric oxide is an important effector molecule that can restrict intracellular pathogens including *T. gondii*. The aim of this study is to investigate the expression of the immune molecule (iNOS) in relation to *Toxoplasma gondii* infection in lung tissue. The differences in the expression of this molecule in both the uninfected and infected status can be examined in the lung tissue. Although of the role of iNOS in human lung tissue infected with *Toxoplasma* is not yet clear, we have established and optimised immunofluorescence (IF) protocol to detect iNOS localisation and measure the degree of association of *iNOS-T. gondi* parasite in lung tissue. Immunofluorescence is a technique that permits visualization of many components in any given tissue or cell type.

Keywords

Toxoplasma gondii; immune molecule; inducible nitric oxide synthase (iNOS); nitric oxide (NO); immunofluorescence (IF)

Format

Oral presentation

The Genomic Approach to Evaluate Micro-RNA Modifications as a Biomarker for Alcohol Exposure

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Abstract

The interdisciplinary topic of this PhD focusses on the effect of alcohol on the developing brain. The various disorders associated with alcohol include dementia, foetal alcohol syndrome disorder (FASD), and other neurodevelopmental disorders. It is therefore important to find biomarkers for alcohol exposure to interpret the disease, correct diagnosis, and appropriate treatment. A biomarker is a biological molecule found in the blood or body that is marker of a condition or disease. MicroRNAs are small, highly conserved non-coding RNA molecules that are 18-22nucleotides in length. The project aims to identify micro-RNA and DNA modifications as a biomarker for alcohol exposure in the small extracellular vesicles(sEVs). Small extracellular vesicles carry cellular messages between cells and contain RNA, DNA, proteins and lipids. Methods will be investigated to identify the DNA and RNA modifications obtained from the experiments. DNA modifications are analysed from real-time data, whereas RNA modifications in sEVs are captured by sequencing machines. Sequencing machines serves as a powerful tool to identify these modifications and data analysis is performed in computers. We aim to identify micro-RNA modifications as a biomarker for alcohol exposure to help in the early diagnosis and appropriate medical treatment for brain disorders.

Keywords

Biomarkers; RNA modifications; DNA modifications; small extracellular vesicles(sEVs); Sequencing machines

Format

Oral presentation

The Influence of Surfaces on Knee Biomechanics During a 90-Degree Change of Direction and Implications for ACL Injury Risk

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Abstract

Biomechanical assessments are often undertaken on surfaces such as concrete flooring or a running track surface. This may differ from the surface that an athlete trains/plays on. Different surface properties can affect the mechanics of movement. This can have implications when assessing return to sport readiness or injury risk. An anterior cruciate ligament injury (ACL) is one of the most debilitating knee injuries in sport, leading to pain, time away from sport and an increased risk of future injury. ACL injuries are most common during multi-directional sports such as football, and frequently occur because of a non-contact mechanism, such as a change of direction. Seventeen participants were included in this study. Reflective markers were placed on the body of the participant to represent the underlying skeleton and were captured using the motion capture cameras. A 90-degree change of direction was performed on both an artificial grass surface and a running track surface, both of which had force plates embedded beneath them. It was found that there were significant differences in the knee biomechanics of the cut performed on the difference surfaces. These findings underscore the importance of surface-specific assessments in accurately understanding ACL injury risk. Consideration of playing surface nuances is crucial for informed decisions on return-to-sport readiness post-ACL injury. This is essential to reduce the risk of future injuries, ensure the athlete returns to the previous level of performance, and reduce the chance of negative implications such as financial loss or the development of long-term problems such as osteoarthritis.

Keywords

Biomechanics; ACL; Surface; Injury

Format

Oral presentation, Poster

A Study Investigating Sedation, Aided by a Sedation Monitor on Patients with Severe Lung Conditions Whose Blood is Oxygenated Externally by a Machine

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Abstract

Extracorporeal membrane oxygenation (ECMO) is a heart or lung failure treatment when a machine oxygenates the blood outside the body. ECMO patients are initially profoundly sedated. However, managing this artificial sleep is challenging. Critical care staff use sedation scores to assess the level of sedation, but these scores are usually inaccurate. Bispectral index (BIS) monitors can measure brain electrical waves and help adjust the sedative drug doses by keeping the patients' BIS value in an appropriate range. This technology can help improve sedation management, avoiding over- or under-sedation and may reduce the drug doses.

Although BIS monitoring is standard in operating theatres and critical care, its effectiveness during ECMO has not been studied. This study will observe ECMO patients over the age of 18 who are admitted for ECMO due to severe lung failure and require sedation. The participants' target level of sedation will be determined using the Richmond Agitation Sedation Scale (RASS) score. For 48 hours, 15 participants will be observed using BIS monitoring with an RASS score, while another 15 will not have BIS monitoring.

The study investigates whether BIS-monitored sedation management is possible and feasible during ECMO. This observational study will be the first to examine the role of BIS monitoring during ECMO. It will provide data to inform the design of larger-scale clinical research, investigate safety aspects, and assess user experience. If BIS monitoring is deemed feasible for ECMO, clinicians will have evidence to use it, potentially significantly reducing medication doses and improving clinical outcomes.

Keywords

ECMO; BIS; sedation; extracorporeal; critical

Format

Oral presentation

Session 3.1 Construction and Engineering

Stakeholders' Perception on Risk Management Practices in Nigeria Construction Projects

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Abstract

Risk is issues and unforeseen circumstances which can hinder a project's completion and goal-achieving. Risk management is critical to construction projects and can significantly impact project outcomes. This study explores the perceptions of various stakeholders involved in Nigerian building construction projects regarding risk management practices.

In 2017, a total number of 517 petitions had been received by the Bureau of Public Procurement (BPP), an entity responsible for overseeing and enforcing federal law on procurement and construction of all federal projects in Nigeria. Across the country, a total sum of one-hundred and forty-seven billion Naira, equivalence of almost ninety-eight million USD had been spent by BPP's decisions to re-procure and re-award projects due to poor performance in projects delivery resulting in wastefulness of the nation resources.

Risk concept varies according to understanding, experience, and attitudes. Therefore, this study utilizes interviews and surveys to understand the perception of stakeholders on risk management practices in Nigeria Building Projects to enhance effort at national development. This study aims at designing a risk management framework to effectively identify and manage the risk factors in projects.

This will lessen the likelihood of the impact of risk, ensuring that the risk management solution aligns with project goals and expectations, improved project outcomes, and promote efficient project delivery to save time and cost.

Keywords

Risk; Risk Management; Construction Stakeholders; Building Construction; Projects

Format

Oral presentation

Perceptual Studies for Unmanned Aircraft System Noise: What can we learn from conventional aircraft

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Abstract
The sound produced by Unmanned Aircraft Systems (known as UAS or Drones) is often considered to be one of the main barriers (alongside privacy and safety concerns) preventing the widespread use of these vehicles in environments where they may operate near to the public. Understanding the impacts of a new noise source, particularly one that is not yet widespread in the public domain is difficult as exposure to this new noise source is limited. The author aimed to address this problem by designing a listening experiment comparing the response to UAS noise with the more familiar and better researched noise from conventional aircraft. By adopting this approach, it was thought that the differences in response to these vehicles could be established and the factors driving those differences could be explored using traditional and Sound Quality Metric (SQM) analysis. This presentation will present the rationale, research methods, results and future research.

Keywords
UAS; Drones; Aircraft; Noise; Perception

Format
Oral presentation

Predicting Vibration on an Operational Structure

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Abstract

To measure vibration at a point on a structure, one must place a sensor and use an instrument called a modal hammer to apply a force at that location. This testing provides insight into how a structure responds to external forces, therefore allowing engineers to determine the integrity of a structure and to identify weak points. However, testing can be an issue for practical structures such as industrial machines or infrastructure. One problem is that the point of measurement allows space for a sensor, but not enough room to use the hammer. A prediction method developed at Salford called the 'Round-trip' method circumvents this problem by allowing one to use the hammer at 2 easily accessible locations away from the sensor. Despite this there are still issues, such as: the structure must be non-operational during the experiment – not always possible, if there are many points of interest on the structure you will have to apply numerous forces with the hammer – this is very time consuming, and finally if the structure is large the sensor data gets contaminated with background noise and won't relate to the force from the hammer. Being presented is a novel evolution of the 'Round-trip' method called the 'Operational Round-trip' method, which bypasses these issues by predicting vibration at a point using operational forces (such as vehicles driving along a bridge) instead of a hammer. The use of operational forces enables real-time monitoring, thus allowing engineers to react with solutions much quicker and easier.

Keywords

Vibration prediction; operational; round-trip

Format

Oral presentation

Application of Balance Scorecard in Construction Performance Measurement with Combination of Critical Success Factors and Performance Measurement

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Abstract

The construction industry is considered to have comparatively poor performances due largely to inherent fragmentation that is compounded by increasing project complexities, sizes, and implementation challenges. These poor performances impact productivity, profitability, and market competitiveness of projects and businesses. The purpose of this research is to improve the performance of construction projects through the measurement of balanced project variables such as performance metrics and key performance indicators (KPIs) developed around identified project success criteria (SC) and critical success factors (CSFs) using an integrated framework.

A critical review of extant literatures was conducted to research the use of Balanced Scorecard (BSC) framework in carrying out Construction Performance Measurement (CoPM) in order to improvement performance.

The study shows that BSC has four perspectives that cover both tangible and intangible assets of the project and organisation. Also, each perspective has KPIs that are developed around SC and CSFs; and they possess characteristics that are financial, non-financial, short-term, long-term, lagging, and leading. Additionally, there is no agreed list of KPIs for CoPM, but they are unique to project contexts; and they have changing priorities with different projects. Lastly, regularly comparing measured project KPIs with corresponding benchmarks (project, organisational, market) will result in development of strategies whose implementations produces improved performance, profitability, and market competitiveness of the organisation.

The above shows that BSC is a tool that promotes strategic value of project and organisational assets through structured management of performance drivers. But the benefits of BSC can only be achieved with the support of senior management of organisations.

Keywords

Construction Performance; Critical Success Factors; Balanced Scorecard; Key Performance Indicators (KPIs); Continuous Performance Improvement

Format

Oral presentation, Poster

Development of a Proposal for an Artefact to Support Homeowner Decision-Making for Housing Retrofit

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Abstract

The aim of this research is to drive up sustainable housing retrofit in the UK by developing a proposal for a decision support system to support homeowner decision-making. The research process is approached from the design science research perspective. Accordingly, the research process is to be conducted by identifying the research problem, defining the requirements, designing, and developing the artefact proposal, validating the artefact proposal, and contributing to the body of knowledge. The research problem is justified with a literature review and questionnaire survey. Artefact requirements, artefact proposal development and validation are approached by interviews. A mixed-method methodological approach is used. The research findings support developing a decision support system artefact to help the homeowners' decision-making for housing retrofit. This is done by addressing rational and non-rational decision-making with information and motivation. Apart from the utility of the artefact, the study will contribute to the knowledge of developing artefacts for decision support. Further, the findings will help the government to make appropriate sustainability policy decisions. The research will contribute to the concept of a single point of contact stakeholder engagement model termed as "one-stop shop" for housing retrofits. This research tries to improve the retrofit process by automating the one stop shop concept by addressing structural issues in housing retrofit.

Keywords

Decision-making; Housing retrofit; Information systems; Sustainability

Format

Oral presentation

Cloud-BIM's Significance for Improved Project Information Management Across the Design and Construction Stages, Integrating the ISO 19650 Standards

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Abstract

Construction projects cannot be completed quickly with little effort; they require time and effort. This effort is due to the information necessary while moving from one activity to another during the project's lifecycle. In the design and construction industry, information management is a challenging problem. Information must be transmitted to reach the correct recipient on time and with the required quality and information level. An information management strategy is required to convey the information. The requirements for each project phase are collected from the Royal Institute of British Architects Plan of Work 2020 (RIBA POW 2020), reflecting the phase's goal, while the information management requirements using Building Information Modeling (BIM) requirements are collected from the International Organisation of Standardisation 19650 (ISO 19650).

The investigations show that the Common Data Environment (CDE) is the key to enabling the BIM implementation process, achieving project goals, and ensuring BIM success. The selection of the CDE is critical, as the type of CDE affects the information management methodology. Comparison between local and cloud systems is essential to emphasise the importance of cloud systems and their need to manage information smoothly. The aim is to propose a workflow strategy for the information transfer based on the project phase needs and information management using BIM requirements, considering cloud systems, which is crucial for closing information gaps and adopting ISO 19650 requirements to produce measurable and verifiable project results. This approach aids in understanding the ISO 19650 requirements and developing a practical and feasible information workflow plan.

Keywords

BIM; CDE; ISO 19650; Information Management; RIBA POW

Format

Oral presentation

Session 3.2 Telling Stories

The British Intelligence Community and Balkan Resistance Movements, 1941-45

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Abstract

The purpose of this research is to explore the extent of British intelligence operations in the Balkans during the Second World War, and the relationship the intelligence community had with the indigenous resistance movements in Albania, Bulgaria, Greece, Romania, and Yugoslavia.

The invasions of the Balkans in 1939-41 by the Axis Powers of Germany and Italy presented several opportunities for the Allies. However, their capacity to capitalise on these was limited to the air war. There was no invasion along the lines of Operation Overlord by the Western Allies. The Balkans subsequently became an anchor to the Axis and a drain on their resources, tying down much Italian and later German war resource that could have been employed elsewhere.

Knowing how much military attention had to be diverted to the region by the Axis, how did the Allies ensure that resistance was maintained? Attention and support was shifted towards the intelligence war. The role of British intelligence was to support, in all forms short of active military personnel on the ground, Balkan resistance movements, to keep them in the war and engaging the Axis powers.

This thesis provides an important basis for the understanding of the ways British intelligence worked with foreign organisations, and how they affected political and military relationships both in the contribution towards Allied victory in 1945 and post-war relations.

Keywords

History; Military; Intelligence; Defence; Balkans

Format

Oral presentation

Writing Neurodivergence in the Contemporary Irish Women's Novel

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Abstract

Robert Rozema notes that fiction has "thus far known only one child with autism: the high-functioning, hyper-verbal savant" (Rozema, 2014). As an attempt to push further debate about autistic representation, this paper examines Emilie Pine's portrayal of autism in her 2022 novel Ruth and Pen as explored through how protagonist, Pen, interacts with the world and those around her. I will theorise Pine's use of form and language to analyse the suitability of the novel form for representing neurodivergent narratives, suggesting that Pine's innovative use of the chapter structure to intertwine two stories enables a deeper understanding of Pen's character. In line with the themes of the text, I will also examine Pen's uncertain relationship with the idea of motherhood, looking in particular at the relationship between maternal instinct and the physical body. This will lead on to an analysis into the representation of neurodivergent attitudes towards motherhood, seeking to locate Pen as a challenge to traditional ideals of Irish motherhood by analysing her identity as a queer, autistic teenager in a pro-natal society. This paper will ultimately explore Pine's text as a new beginning in the way autism in represented in the contemporary Irish literary canon.

Keywords

Neurodiversity; Irish literature; Autism; Motherhood

Format

Oral presentation

Adapting Classic Novels to the Comic Strip Format in American Newspapers and Comic Books

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Abstract

The first American comic strip adaptation of a classic novel was a 1926 version of Swiss Family Robinson (1812). Since then, there have been more than 1,000 English language strips, comics and graphic novels presenting remediations of classic and canonical novels. This research considers the adaptation process in relation to the format limits of comic book production and the opportunities for narrative expansion and reinvention of the source text. The most successful adaptors of classic novels were The Gilberton Company (1941-1967) who published 169 adaptations under the brand Classics Illustrated. The study will show the path of adaptation used by Gilberton along with an original 52-page comics adaptation written by the researcher to better understand the creative process. The new adaptation will match the length and format of the original Gilberton publications.

Classics Illustrated and similar cultural artefacts illuminate the fuzzy boundary between high- middle- and low-brow art. The public perception of comics as inferior reading material clashes with the self-confessed aim of the publishers to introduce young readers to what they considered to be 'good literature'.

Traditional comics scholarship has tended to skew towards two key topics: the anti-comics campaign of the 1950s, and the chronology of superhero comics. A detailed literature review found no studies which looked at the practice of adapting classic novels to the comic strip format. This research will, therefore, provide a considered understanding of an aspect of American popular culture which has received only scant attention by scholars. The intersection of literature, comics studies and cultural capital provides a rich area for future academic research.

Keywords

Adaptations; Censorship; Classics; Comics; Media

Format

Oral presentation

“She openeth her mouth with wisdom” (Prov. 31:26): orality and aurality in the motherhood literature of Anne Bradstreet (1612-1672)

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Abstract

Proverbs 31:26 – “She openeth her mouth with wisdom, and the law of grace is in her tongue” – is central to the motherhood literature of Anne Bradstreet (1612-1672). Bradstreet’s identity as a wife and mother is deeply intertwined with her identity as a Puritan woman writer. Yet, the intellectual culture of seventeenth-century women’s religious writing is not well understood. If Puritan Studies has not tired of emphasising the importance of Bradstreet’s literary feminism, it has neglected to investigate the significance of Proverbs 31 to Bradstreet’s authorial identity and rhetoric. Illustrating the ideal Christian woman, Proverbs 31 is foundational to understanding Bradstreet’s motherhood texts and the authority that could be wielded by women who aligned their behaviours with its teachings. This paper will explore how Bradstreet asserts her maternal authority in her motherhood texts by cross-referencing scripture such as Matthew 11:15 – “He that hath ears to hear let him hear” – and Romans 10:17 – “faith is by hearing, and hearing by the word of God” – with Proverbs 31. Placing Bradstreet’s maternal voice at the forefront of this research will build an understanding of how the dual roles of orality and aurality constructed notions of authoritative speaking in seventeenth-century women’s religious writing. As silent reading did not become the dominant mode of reading until the early eighteenth century, foregrounding the act of reading literary works aloud in the period highlights a performative oral and aural authority in Bradstreet’s advocations for sustaining good Christian practice through the teaching of children in her motherhood texts.

Keywords

Anne Bradstreet; Puritan women’s writing; Christian practice; maternal authority; rhetoric

Format

Oral presentation, Poster

Metanarratives in Detective Fiction of the Golden Age

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Abstract

One of the most consistently popular literary genres, crime fiction hit new heights of popularity in Britain in the time between the First and Second World Wars. Now often dubbed its 'Golden Age', the fiction written and published during this time was characterised by, among other traits, a rigid adherence to 'fair play' rules; simply put, through providing adequate clues so that the reader should be given every opportunity to 'solve' the novel's murder alongside the detective. My research project is considering the ways in which authors from this time and abused used these 'rules', and how it affects the relationship between the reader and the text, especially considering the literary theory of metafiction – that is, self-referential and self-aware fiction. Any previous research on this subject has previously been constrained by focusing solely on the genre's more popular texts and authors; by my research project will therefore offer an alternative to the existing literature.

As well as examining present day texts that deliberately emulate 'Golden Age' fiction, this project will explore both the works of authors who have endured to the present day, such as Agatha Christie, and lesser-known writers from the time whose works are only recently being 'rediscovered', like E. C. R. Lorac. To best demonstrate this, my presentation will therefore be based around a metatextual reading of one such text that has yet to receive any academic attention – Lorac's 1937 novel These Names Make Clues – and how it fits in relation to my wider research.

Keywords

Golden age; metafiction; detective fiction

Format

Oral presentation

Session 3.3 The Natural World

Model for Safe Living Quarter Due to Effects of Carbon Dioxide and Other Flare Pollutants on Rainwater in Niger-Delta

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Abstract

Carbon-dioxide does not only affect climate change, but also contributes tremendously to acidification of rainwater. Hazard identification and risk assessment are fundamental components of effective risk management. This study provides a novel methodology for environmental and safety assessments of flared gases in sensitive areas such as residential homes. Distancing Sampling Technique (DST) was used to investigate rainwater pH at distances from flare sites in order to develop a Risk Management Model for sensitive regions. First, a review on rainwater acidity was made around flaring and non-flaring areas in Niger-Delta states, which revealed Moderate-High acidity effect around flaring zones and no effect on non-flaring zone. Secondly, Flared Gas Quantification, pH Experimental Evaluation (PEE) and Flare Risk Assessment were the three systematic approaches used respectively to quantify, measure and evaluate the effects of CO2 and other flare pollutants around the area of study. Average of 734,800,000 Mscf of associated petroleum gases were flared around the oil and gas producing areas in Delta State, causing a release of more than 39X106 Tonnes of CO2 from 2012-2022. The experimental results revealed range of pH from 4.56±0.06 to 5.10±0.06 for the 33 samples of harvested rainwater from Kwale community in Delta state, causing a deviation of 16.38% to 30.05% from standard. This indicates an excess alteration of the chemical balances of the water chemistry, which poses a high risk to humanity, ecosystems and the general environment. The developed model suggests 4.81KM radius as the safe distance for human habitation from flare sites.

Keywords

Acid rain; Distance sampling; Standard Deviation; Risk Matrix; CO2 sequestration

Format

Oral presentation

High-Resolution Geochemical Analysis of Proglacial Lake Sediments to Establish Rapid Glacier Dynamics of Zermatt Glacier Catchment within Switzerland's Alpine Glacier

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Abstract

The Swiss Alps are home to numerous glaciers that have been shrinking rapidly over the past few decades due to climate change. A dramatical loss of 10% recorded between 2022 and 2023 (6% and 4% respectively) was equated to the loss recorded between 1960 – 1990. This has resulted to the extinction of many small glaciers e.g. St. Annafirm glacier and icesheet decoupling. These glaciers are key indicators of climate change impacts, an essential component of the Alpine ecosystem, and serve as a crucial water source for millions of people, necessitating comprehensive studies to understand their behaviour.

This research employs high-resolution geochemical analysis of proglacial lake sediments to establish rapid glacier dynamics including timing, and unaccounted glacier events. The study aims to bridge existing knowledge gaps regarding changes in proglacial catchment formation due to deglaciation and their time of occurrence from elucidating the intricate relationship between glacier dynamics and sediment geochemistry.

By identifying key geochemical markers indicative of rapid glacier dynamics, the study seeks to provide insights on sediment depositional processes, allowing for a more comprehensive understanding of the drivers of glacier dynamics in the Zermatt Glacier catchment. To achieve these objectives entails an integrated analytical approach involving geochemical, petrographic, and geochronological dating.

Moreover, data obtained from this research can be integrated into glacier dynamics models to improve their accuracy and predictive capabilities. This can help scientists and policymakers anticipate future glacier behaviour and its implications for water resources, natural hazards, and ecosystem dynamics in the Zermatt Glacier catchment and beyond.

Keywords

Glacier; Glacier Catchment; Proglacial Lake, Icesheet, deglaciation

Format

Oral presentation, Poster

An Investigation into Elasmobranch Ecology Using CT Scanning, DNA Metabarcoding and Eight Years of Recreational Fishing Data

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Abstract

Sharks, rays, and skates (*Elasmobranchii*) are facing global decline, with one third of all species at risk of extinction. Achieving a better understanding of the biology and ecology of these species is a crucial part of conservation management and a key aim of this study. A multi- disciplinary approach will be implemented to answer questions about their distribution, population size, diet, evolutionary history and dental structure.

Firstly, eight years of fishing data from recreational sea anglers in England and Wales (provided by Substance on behalf of Cefas) will be investigated and analysed using statistical modelling, with a specific focus on catch location, composition, and temporal trends. This will capture temporal variation in species distribution across multiple areas, to monitor behaviour changes and habitat use. Additionally, we will use DNA metabarcoding, a lab-based approach to identifying species through DNA sequencing, to examine stomach contents of rays and skates, revealing information about diet and feeding patterns. Finally, the study will use computed tomography (CT) scanning to create detailed, high resolution 3D images of mouth structures of the teeth and jaws of rays and skates, providing new data on mouth size, shape, and structure, highlighting links between diet and dental and mouth structure. The overall outcome of the study will help to inform fisheries management and conservation planning in a rapidly changing and challenging environment.

Keywords

Elasmobranch; CT Scanning; Fishing; Metabarcoding; Diet

Format

Oral presentation

DNA from Environmental Samples Reveals Fish Biodiversity and Movement Patterns in a Recovering UK Estuary

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Abstract

Pre-industrial Revolution, the Mersey estuary had an estimated ~50 species of fish inhabiting the system year-round. This number significantly declined during the onset of industrial activity in the early 1850s, to the point in which the system was considered biologically dead. Efforts to improve water quality in the Mersey have been underway since the 1970s, resulting in the return of fish to the system. To ensure the long-term return of fish to the Mersey, expansive, repeatable monitoring approaches are required to be able to survey and implement conservation management strategies. We apply a highly sensitive molecular monitoring approach (eDNA metabarcoding), in which we examine trace amounts of DNA present in water samples collected from the estuary. We can then match the DNA traces found with the known species they belong to, therefore, generating an idea of the fish biodiversity present. To enhance this approach, we addressed a key limitation, being that it cannot determine the location of the species that has shed the DNA trace, therefore, in addition to the eDNA metabarcoding method, we developed a 2D hydrodynamic model (to simulate fluids in motion) and a particle tracking model (to simulate particles in motion) of the Mersey estuary. This enables us to visualise the tidal movements and the impacts they have on the transport of DNA particles. Combining these two methods will allow for the tracking of DNA particles forward and backwards in time, overcoming a key limitation by providing potential source locations of fish DNA for targeted conservation plans.

Keywords

Estuary; metabarcoding; modelling; eDNA; fish

Format

Oral presentation

"There is so much that we have never heard, and so little time to hear it": Terminal Illness, Ecology and Irish Folklore in Lynn Buckle's *What Willow Says*

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Abstract
Lynn Buckle's 2020 novella, What Willow Says is a first-person fictional account of a Grandmother's experiences raising her granddaughter following the death of the mother. The themes of the text revolve around her struggle to learn sign language and facilitate her deaf granddaughter, and her work as an artist designing a compendium of Irish trees. Meanwhile, the narrator is diagnosed with a terminal cancer that means she will never see her granddaughter grow up and will never finish her project, and her struggles to come to terms with this are hampered by constant stigmatising of illness and disability. The narrator writes about her local ecology; the boglands, forests, and folklore of the Irish midland, that is often ravaged by industry and modernity. She shares these interests with her granddaughter, and observes their transmutation as they become rooted in new linguistic contexts and experiences. Through this she explores the relationship between cultural preservation and mortality. This forms an interesting examination of the social function of stigma, and the role that preservation plays in stigmatising forces of change, in the context of language, illness and ecology.

Keywords
Disability; Ecology; Folklore; Contemporary Fiction; Irish Studies

Format
Oral presentation

Session 3.4 Managing Health 1

Addressing an Inequality in Access to Primary Care Research – A literature review

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Abstract

During the financial year 2021/22, at the height of the COVID-19 pandemic, General Practices supported vital research into oral antivirals for COVID-19, recruiting more than 26,000 participants, alongside the relentless work conducted by practices in supporting vaccine research. Despite this, the number of GPs recruiting to Institute for Health and Care Research (NIHR) portfolio studies in England remains consistently below 50% each year.

This figure varies across regions, falling to 23% in Greater Manchester, and rising to 95% in Northwest London in 2022/23. These figures suggest a regional inequality in access to potentially life-changing research from primary care providers.

A robust literature review has uncovered several barriers facing practices that contribute to the differing levels of engagement. Factors such as funding, deprivation, workload and workforce, public opinion and a lack of incentives contribute to demotivation within practices.

In the UK, there currently exists no empirical evidence or data on how GPs could be motivated to support research and overcome these barriers.

To address this, a series of questionnaires and interviews will take place throughout NIHR regions, followed by qualitative and quantitative data analysis. The aim, identify the barriers and challenges facing practices that contribute to engagement in clinical research, including potential incentives and motivators that would support or encourage GPs to take part.

Knowledge gained from these activities will help inform researchers and research organisations to provide support and opportunities for GPs across England, ensuring that more of the population has access to clinical research opportunities through their general practitioners.

Keywords

Clinical research; Social capital; General practice; Barriers and challenges; Incentives and motivations

Format

Oral presentation

Investigating the Retention and Attrition of Emergency Care (EC) Advanced Clinical Practitioners (ACP) in the United Kingdom (UK)

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Abstract

Background: Advanced Clinical Practitioners (ACPs) have become an integral workforce within healthcare across the United Kingdom (UK), being recognised as a priority for the future development within the NHS. ACPs within Emergency Care (EC) are often senior clinical decision makers that work within a multidisciplinary team providing high quality care for patients that attend with a variety of presentations. ACPs provide a continuity in the workforce when junior medical staff rotate on a regular basis and therefore high levels of attrition of ACPs is concerning given the already stretched services of EC. A scoping review identified no specific research on this area surrounding ACPs retention and attrition.

Aim: The aim of this study is two-fold. Firstly, to identify some of the causative mechanisms that instigate ACPs to leave EC. Secondly to recognise potential reasons for attrition in the future from ACPs currently working in EC and what support mechanisms could assist in the retention of staff.

Methods: Applying a mixed methods approach this study will collect both qualitative and quantitative data. Questionnaires will be distributed to ACPs that currently work in EC and semi-structured interviews conducted with ACPs that have left EC. Analysis of the data will include coding using SPSS and thematic analysis to develop themes for the reasons for attrition.

Results: Preliminary findings suggest over half of EC-ACPs do not envisage themselves working in EC in five years' time and that role sustainability appears to be an early theme.

Keywords

Emergency Care; Advanced Practitioner; Mixed-Methods; Questionnaires; Interviews

Format

Oral presentation

Exploring the Experience of Patients and Staff of a Rapid Assessment and Treatment Unit in the Emergency Department

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Abstract

Emergency Department's (ED) have seen unprecedented pressure in the last decade, with an increase in patient crowding compromising safety. Innovative methods are needed to improve patient experience. Rapid Assessment and Treatment (RAT) units are a method of initial assessment in ED, comprising of a clinical team in substitute for previously nurse led triage processes, in a purpose built unit. A recent scoping review demonstrated the positive effects of RAT on time to be seen by a clinician, left without being seen rate and time to treatment rate in ED, all indicators of the quality of the service. The review discovered that there was no literature regarding the experience of patients of the service and limited studies on the experiences of staff. The aim of this study will be to explore the experiences of patients and staff of an ED RAT unit to gain a deeper understanding from their perspective. A qualitative research approach will be undertaken using semi-structured interviews for patients and focus groups for staff, and will occur in the spring and summer of 2024, in a double-centre study. A number of patients and staff will be selected to contribute willingly to the study. The aim is to contribute to the knowledge base surrounding the effectiveness of a RAT service, with the aim of eventually improving the quality of care for patients and working environment for staff. This will support ED's to redesign their front door services to improve standards of care in line with new research. New knowledge generated will inform ways to improve the effectiveness of a RAT service and the quality of patient care.

Keywords

Emergency Department; Triage; Rapid assessment and treatment

Format

Oral presentation, Poster

Is a Global Approach to Leadership Development Suitable for Early Career Nurses?

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Abstract

In their report 'State of the World's Nurse's 2020', the World Health Organisation states that nurses and midwives comprise of 59% of the health workforce, they are the largest professional grouping, and they occupy a diverse range of patient facing roles. There are many studies which highlight the benefits of good nursing leadership for patient outcomes, and for staff morale and retention. To this end, there are also several policy documents of global relevance which identify leadership as a key focus for the profession, and of course, the Nursing Now Campaign ran with significant global success in 2020.

Within this context, leadership development courses and programmes for nurses targeting a global audience have proliferated. Leadership is a complex phenomenon with theories developed to describe the concept from different perspectives such as the individual, the team, or the organisation. Cultural norms, organisational environment, and workplace context all impact on perceived effective leadership. However, if good leadership and leaders are impacted by local context, how can we be assured that a global approach to leadership development is effective?

This study aims to understand if leadership courses and training which are aimed at a global audience are relevant for early career nurses in local contexts. The study population are a group of nurses from different parts of the world, who are taking part in a leadership development programme delivered online through social media, using social learning theory. Observations of online engagement and qualitative interviews provide the data which is explored.

Keywords

Nursing leadership; global nursing; early career nurse training; leadership skills development

Format

Oral presentation, Poster

Radiation Assessment: studies the stable element transfer of rice as a staple food in Thailand

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Abstract

Radiological risk assessment, planning, and emergency preparedness require a knowledge of element concentration in specific areas to evaluate potential human exposure. Soil-crop-transfer is used to assess the translocation of elements from soil to plant: concentration ratio (CR) and therefore into the food chain. Despite Thailand's absence of nuclear incidents, published limits on radionuclide concentrations exist. Given the limitations on measuring radionuclides, stable elements were studied due to their relatively similar physical and chemical behaviour. Rice is the staple food crop of Thailand, and the country was the top rice exporters globally in 2023. We conducted an assessment of the representative regions for rice cultivation by comparing land use patterns and soil types (59 paddy fields across 17 provinces). 285 paired samples (soil, rice grain and inedible parts (roots and stems) were collected. Stable elements consisting of seventeen essential nutrients, trace metals, analogues, and radionuclides (Arsenic, Cadmium, Cobalt, Chromium, Caesium, Copper, Lithium, Nickel, Lead, Rubidium, Selenium, Strontium, Thorium, Thallium, Uranium, Yttrium and Zinc) were determined. The mean concentrations of trace metals Chromium, Cobalt, Zinc, and Arsenic were predominantly high in the rice roots. However, the soil has high concentrations of radionuclides analogous of Caesium, Thorium, and Uranium. The CR values were derived soils across the country and the different rice parts. This study provides a significant dataset of CR values for Thai rice highlighting soil properties as the principal factor affecting CRs. Future endeavours could extend this CR dataset to subtropical regions for international evaluation activities.

Keywords

Environmental contamination; stable isotopes; rice; concentration ratio; element transfer

Format

Oral presentation

Perceptions and Digitalisation of Outbreak Management Processes in UK Health Services

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Abstract

In an era where infectious diseases constitute a perennial threat to global health security, the efficacy of outbreak management (OM) protocols within healthcare systems is paramount. This study evaluated the United Kingdom's healthcare services' approach to managing infectious disease outbreaks, with a focus on the perspectives of infection prevention and control (IPC) practitioners towards the access, effectiveness, and digitalisation of OM data and processes.

Utilising a national cross-sectional survey, complemented by freedom of information requests from the foremost NHS teaching and research hospitals, the research sought to delineate the current landscape of outbreak management practices. Analysis of the responses from 53 IPC practitioners, alongside data from nine responsive NHS trusts, illuminated both strengths and areas for enhancement within OM processes.

Findings from this investigation reveal a dichotomy within the healthcare sector's approach to outbreak management. While perceptions of the fundamental components of OM are generally positive, significant concerns were raised regarding the robustness of surveillance mechanisms, the promptness of outbreak detection, and the efficacy of communication channels. Moreover, the study highlights a critical lag in the digitalisation of OM processes, with a predominant reliance on rudimentary software tools, such as Microsoft Excel and Word, which potentially impede the agility of response operations and the capacity for retrospective analysis and learning.

In conclusion, this research underscores the imperative for advancements in surveillance capabilities, acceleration of outbreak detection, and the modernisation of digital tools in OM processes. These enhancements are crucial for bolstering the United Kingdom's healthcare system's resilience against infectious disease outbreaks.

Keywords

Green infrastructure, hedge, species, insertion loss

Format

Oral presentation

Session 4.1 Health and Wellbeing

Targeted Drug Delivery Using Hollow Gold Nanoparticles for Enhanced Cancer Therapy

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Abstract

Gold nanoparticles (AuNPs) have attracted considerable attention in the field of nanotechnology due to their unique properties and diverse applications, particularly in delivering drugs. Hollow gold nanoparticles (HGNs) represent a promising advancement, featuring a hollow core structure ideal for drug encapsulation and targeted delivery. This project focuses on synthesising HGNs and modifying them with anticancer drugs Doxorubicin and Daunorubicin, aiming to enhance therapeutic efficacy and reduce side effects in cancer treatment. The process involved synthesizing HGNs and attaching functional ligands to facilitate drug binding. Subsequently, Doxorubicin and Daunorubicin were loaded onto the HGN surface to create drug-loaded nanoparticles. Various characterization techniques including UV-vis spectroscopy, Differential Centrifugal Sedimentation (DCS), and Dynamic Light Scattering (DLS) confirmed successful drug binding and nanoparticle stability. In vitro studies using cancer cell lines demonstrated the selective uptake of drug loaded HGNs and their cytotoxic effects, underscoring the potential of HGNs as effective carriers for targeted cancer therapy. These findings highlight the promising role of HGNs in targeted drug delivery, offering a novel approach to improving cancer therapy outcomes while minimising adverse effects.

Keywords

Nanotechnology; Drug Delivery; Cancer Therapy; Doxorubicin; Hollow Gold Nanoparticles

Format

Oral presentation

Investigating the Impact of Multiple House Moves on Families/Individuals within the Private Rental Sector in Greater Manchester

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Abstract

Greater Manchester has over 240,000 households privately rented, with tenants often subjected to higher costs for properties, alongside insecure tenancies. Strong demand and short supply is restricting choice and causing prices to increase. Alongside possible eviction, tenants often feel unable to settle in their communities and maintain relationships which are key to good mental health. Relevant studies have indicated prevalent stress and anxiety, with some tenants experiencing post-traumatic stress following evictions.

This study will use a mixed-methods approach, gathering quantitative data before moving onto qualitative. A tenant questionnaire will gather demographic details, number of property moves, and how these came to be. Participants will rate the impact of moves on areas including finances, education/employment, travel, social activities, physical and mental health. Participants can then take part in the second phase featuring qualitative analysis of interviews. This will provide a deeper insight into the issues being discussed, due to a focus on gathering individual's perspectives.

This research will provide a broader view of property moves within Greater Manchester and the reasons for this. It will extract extensive examples of how these moves can impact people/families. It will improve understanding of the effects housing can have on health, making recommendations to both tenants and professionals. With the proposed Renter Reform Bill and Greater Manchester's plans to support the sector, the way we rent our homes is entering an exciting phase, and this research will ensure a fuller understanding of the importance of our homes to take forward.

Keywords

Housing; Home; Mixed-methods; Social well-being

Format

Oral presentation

Design and Synthesis of Multifunctional Antimicrobial Nanoparticles for the Potential use in Treating Prosthetic Joint Infections

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Abstract

Prosthetic joint infections (PJI) are infections associated with a prosthetic joint that can lead to further complications. With the continued rise of antimicrobial resistance, many of the antibiotics used to treat PJI are becoming increasingly redundant. Novel approaches to treating bacterial infections must be identified in order to prevent serious illness and death. The use of nanoparticles as an antimicrobial is one potential way of continuing to effectively treat bacterial infections.

Nanoparticles can be synthesized from different elements, with varying shapes and sizes that have interesting properties and a wide range of potential uses. Nanoparticles can also be functionalised with antibiotics, which can be attached directly to the nanoparticle's surface via linkers. By screening and optimizing different nanoparticles and drug combinations, it is hoped to create a nanoparticle that be used to inhibit the growth of bacteria that are commonly associated with prosthetic joint infections, such as Staphylococcus aureus and Pseudomonas aeruginosa.

By using different microbiological tests on the target strains of bacteria, nanoparticles can be identified as to having an antimicrobial effect, as well as establishing lowest concentration that the nanoparticles will stop bacterial growth. It is then intended to establish how effective these nanoparticles are at preventing the growth of a bacterial biofilm, which is one of the main causes of complications in PJI.

Keywords

Prosthetic joint infections; bacteria; nanoparticles; biofilm

Format

Oral presentation

Bipolar Magpie: A 21st Century Embodied Eco-Feminist Poetics

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Abstract
A creative/critical project comprised of eco-poetry and analytical development of the feminist eco-poetics of the gendered mentally ill body. Eco-poetry is engaged with our natural world and environment. The collection of poetry is entitled: What Does Eco-Poetry Look Like When You Can't Get out of Bed?. An alternate view of eco-poetry, focusing on my experiential knowledge of bipolar disorder, influencing how I write about the environment. My body is impacted by a chronic mental illness. Seeking to communicate my experience of; changing climate/environment as observed and embodiedness of mental illness through the poetry and analysis of the work, among others; of Dorothy Wordsworth through to Zoe Skoulding and Harriet Tarlo of the recent radical landscape poetry movement. These poets inform a feminist, experimental, embodied, mad, eco-poetics. A poetics rooted in interrogating the very nature of current eco-poetry and landscape, intersecting with themes of place and eco-feminism. The hybrid form of journaling and experimental poetry reframes the boundaries that separate the domestic from the natural world. My concept of the domestic as landscape provides greater inclusion for poets with disabilities and mental illness. This poetics highlights the importance of the flora and fauna of liminal urban/suburban areas, it is focused on the act of LIVING with chronic mental illness.

Keywords
Mad Studies; Eco-Poetry; Feminism

Format
Oral presentation

Developing and Manualising Poetry Therapy for Depression

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Abstract

I have a lived experience of suffering from severe depression. During a recent period of recovery, I began writing poetry and, having felt at first hand the debilitating effect of depression and the need for hope, was inspired to become a counsellor. It is no surprise that the World Health Organisation label depression a leading cause of disability and a lead contributor to global burden of disease (2021), estimating 5% adults and 280m suffer worldwide (2023), emphasising the importance of researching different interventions for depression. For my MSc, I researched the depressive identity and writing poetry outside therapy. For my PhD, my research will consider how to use poetry in therapy. My objective is to develop a group poetry therapy intervention for depression. There is a paucity of quality research evidence for the theory and mechanisms of change of poetry therapy. Using practitioner interviews, workshops, and other expressive arts approaches, I will design and test a group poetry therapy intervention. This will involve collecting quantitative and qualitative data including psychological measures, surveys, and participant interviews. I will use these to build a theoretical and operational model for group poetry therapy. I will consider whether there is a distinct theory of therapeutic change for poetry therapy and how poetry operates to help those in distress. Whether poetry therapy is a tool or distinct therapy approach will be addressed. How therapists can be trained to deliver poetry therapy and how poetry can be integrated into expressive arts therapies will also be considered.

Keywords

Poetry Therapy; Group Therapy; Depression

Format

Oral presentation, Poster

Acute Purulent Skin and Soft Tissue Infections: A thematic analysis of patient and professional perspectives

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Abstract

Introduction: Skin and soft tissue abscesses are a common health complaint, often generating acute hospital admissions for treatment. Controlling the source of infection through the surgical technique of incision and drainage has been the unwavering outcome for a vast majority of these patients. This practice is increasingly becoming associated with both empirical and holistic failings, such as, wound breakdowns, acute and chronic pain, poor aesthetics, and psychological and emotional distress. The rise of community acquired methicillin resistant staphylococcus aureus is also a pivotal concomitant. It is offered that the acceptance and ritualism of this practice has blinded the sector to the technique's shortcomings, affecting patient, professional and institution.

Aim: To gain a deep understanding of why incision and drainage is universally applied in the treatment of a diverse patient population. To explore the experiences and perceptions of patient, nurse, clinician, and stakeholder in the phenomenon of skin and soft tissue abscesses and contemporary management practice.

Methods: Through the lens of critical realism, qualitative data was generated through semi-structured focus groups designed to elicit core values, and beliefs from patients, healthcare professionals and organisations. Thematic analysis was utilised in the analysis of the qualitative data.

Interim results: There were four refined themes generated: 1 The contemporary skin and soft tissue infection phenomenon, 2 If Incision and drainage needs to be done, it needs to be done, but……., 3 Skin and soft tissue infections: the impact of the unseen, 4 Perceptions of a novel approach to Incision and drainage.

Keywords

Surgery; Abscess; Advanced Nursing Practice; Qualitative; Thematic Analysis

Format

Oral presentation

Session 4.2 Waste and Pollution

A Smart Framework for Food Waste Management

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Abstract

The United Nations Sustainability Development Goals (UN SDGs) aim to bring peace and prosperity for people and the planet by 2030. However, there is increasing recognition that ongoing barriers have resulted in significant challenges to the achievement of these goals, particularly in areas such as resource management. Notably, one of the world's essential resources, food, has faced challenges in its supply chain and food wastage remains particularly prevalent. As much as 1.3 billion tonnes of food worth 1 trillion dollars are lost annually. This results in an 8-10% contribution to global greenhouse gas emissions driving climate change processes. Food waste arises due to poor planning, communication and knowledge gaps, marketing disconnects, and overconsumption by households. Emerging technologies, such as AI, internet of things, machine learning, blockchain, and robotics have been used to address food waste management.

The research aims to develop a comprehensive framework for effective waste management that integrates food waste, smart technologies, and carbon balance. The research will utilize systematic review, focus groups, and case studies to evaluate options, feasibility, and implementation. The research will contribute to effective management of food and carbon balance between stakeholders by providing a dynamic information system to minimize food waste and emissions throughout the supply chain.

Keywords

Food Waste Management; Smart Technology; Carbon Balance; Sustainability; Environment

Format

Oral presentation

Investigating the Impact of Mixed-Plastic Pyrolysis Char on the Mechanical Properties of Virgin and Recycled Polypropylene Composite

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Abstract

Plastics are essential to modern life, but managing their waste presents serious worldwide issues. The world produces 320 million tonnes of mixed post-consumer plastic waste (MPW) annually; with a 9% yearly rise in MPW generation, estimates suggest this figure will triple by 2050. Addressing this crisis demands sustainable approaches.

Pyrolysis, the thermal breakdown of plastics in an inert environment, presents a promising solution for MPW management. It yields valuable products—oil, gas, and char—while accommodating commingled wastes, thus overcoming a major challenge of traditional recycling methods. Literature, however, raises sustainability concerns, particularly regarding underutilized pyrolysis char which usually ends up in landfills.

This study, therefore, explores the potential of utilizing char (MPC) derived from pyrolysis of mixed-plastic waste as a reinforcing filler for virgin polypropylene (PP) and recycled polypropylene (rPP) composites. The derived MPC was incorporated into PP and rPP matrices at various weight fractions (0, 5, 10, 15, and 20 wt.%) via plastic injection moulding to produce fiber-reinforced composites. Subsequently, the mechanical properties of the resulting composites were evaluated using tensile and impact testers.

Findings revealed that PP/MPC composites displayed increased tensile and yield strength but decreased modulus and elongation. Conversely, rPP/MPC composites exhibited improvements in all four parameters – tensile strength, yield strength, modulus, and elongation. Notably, both composites showed superior impact resistance at 5 wt.% MPC loading. These findings suggest the potential of MPC to enhance the mechanical properties of PP and rPP, promoting a circular economy and a sustainable approach to plastic waste management.

Keywords

Mixed plastic waste; Pyrolysis; Mixed-plastic pyrolysis char; Circular economy; Sustainable composites

Format

Oral presentation, Poster

Navigating Embodied Carbon Challenges: Towards a model for Sustainable Smart Building Development in the UK

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Abstract

Reducing greenhouse gas emissions in the UK Construction industry has emerged as a critical imperative to achieving the targets of Net Zero 2050, yet currently carbon emission levels in the built environment sector unmanageable. To address this pressing issue, this research aims to initiate a measurement model through theory of triple bottom line, balancing the environmental, economic, and social aspects of a construction projects.

Qualitative data analysis will be the cornerstone of this investigation, investing insights collect from expert interviews within the built environment sector. Through the application of analytical hierarchical process, a robust measurement model will be produced.

The impediments to effectively curbing embodied carbon in smart building construction are multifaceted. Challenges include escalated construction costs, limited availability of low carbon materials, deficient government policies, hesitance in adopting new construction materials, scarcity of environmentally conscious professionals in the construction industry, and a dearth of low-carbon design investigation in the initial phases. The oversight of environmental impact assessment during project inception, coupled with the absence of comprehensive embodied carbon management policies and best practices among stake holder groups, compounds the challenges within the UK-Built environment sector.

This research contributes to develop a bespoke measurement model specifically tailored to the unique context of the UK, enabling the construction of smart buildings to mitigate environmental impact, and decreasing the embodied carbon emissions significantly through built environment sector construction activities.

Keywords

Embodied carbon; environment impact assessment; carbon emissions; net zero; greenhouse gas emission

Format

Oral presentation, Poster

Understanding Circular Economy Disclosure-based Studies: A state-of-the-art analysis

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Abstract

The circular economy is an economic system aimed at minimizing virgin resource consumption and waste generation through continuous resource circulation. Increasingly, large corporations are choosing to disclose circular economy activities in their annual, non-financial reports. These Circular Economy Disclosures (CEDs) offer a new lens and a data source for researchers interested in studying non-financial reporting. While Circular Economy Disclosure-based (CED-based) studies are on the increase, a review that comprehensively examines the current state of such research is not available in the extant literature. This review addresses this gap by examining the CED-based studies. CED-based studies published from 2014 to 2023 were gathered from Web of Science and Scopus databases. Objectives of the CED-based studies were analysed to identify the common themes of interest across the papers. The theoretical positioning and methodological approaches to studying circular economy disclosures were synthesised. The results revealed three interconnected themes of CED-based studies: understanding the characteristics of CEDs; using CEDs as a lens to understand circular economy interventions implemented by firms; and understanding the drivers of CEDs. Differences in the methodological choices to meet the research objectives were also observed. 'Industry specificity' emerged from the analysis as a basis for evaluating the methodological approach and conclusions reached by the CED-based studies. It also highlighted the under-representation of in-depth industry-specific studies. This finding calls for future work to focus on single industries and to develop industry specific CED analysis criteria to enhance the understanding of the corporate uptake of the circular economy concept.

Keywords

Circular Economy; Non-financial Reporting; Circular Economy Disclosure

Format

Oral presentation

Acoustic Invisibility Cloaks for Noise Reduction in Aviation

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Abstract

In recent years, a branch of acoustic research called metamaterials has explored the use of repeating structures to control sound waves. Many designs have emerged and one of the most interesting is invisibility cloaks. This design hides a region of space by smoothly guiding sound waves around it as if nothing was there. One possible application of invisibility cloaks is noise reduction in aviation. Aeroplanes emit a large amount of unwanted noise, and designers work to reduce this to meet environmental targets. Novel electric aircraft designs create noise with different characteristics, and this also needs to be mitigated. It has been suggested that a cloaking material could be used to cover noise reflecting surfaces so that the engine sounds are not reflected back to the ground. However, one of the challenges of realising this is adapting the cloak to work in realistic conditions. Previously work has focussed on a stationary cloak, whereas for aviation a rotating cloak needs considering. The research is describing the effect of rotation on the cloak's performance and considering whether any improvements could be made to the design when operating in this condition.

Keywords

Noise emissions; electric aircraft; metamaterials

Format

Oral presentation

Forward Thinking Approach in Adopting Circular Economy Model in Real Estate Development: In Review

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Abstract

This paper is at the forefront of transforming strategies in real estate development through an in-depth exploration of circular economy principles. Circular economy principles center on reducing waste and maximizing resource use by recycling, refurbishing, and reusing materials, and products as much as possible. Instead of the traditional 'take-make-dispose' model, a circular economy seeks to create a closed-loop system that minimizes environmental impact and promotes sustainability.

The aim is to evaluate diverse circular economy models for promoting sustainability within the real estate sector, prioritizing the achievement of both operational efficiency and lasting sustainability. In the context of Salford's rapid urban development, which has intensified the need for affordable rental housing, this study proposes to identify the most efficient circular economy tactics to meet this escalating demand. This approach not only conserves resources but also offers economic and environmental benefits by reducing the need for new materials and decreasing waste.

This investigation will offer a comprehensive analysis of the top circular economy approaches capable of revolutionizing practices in sustainable real estate. Intending to unveil optimal solutions for the affordable housing issues in Salford, Manchester, the focus of this study is to implement the most practical circular economy ideas. The ultimate objective is to synchronize efforts toward environmental sustainability with the requirements of urban residential development.

Keywords

Circular Economy; Sustainable Real Estate; Affordable Housing; Environmental Conservation; Real Estate Development

Format

Oral presentation

Session 4.3 Managing Health 2

Enhancing Safety and Reliability of Water Infrastructure Using Deep Learning-Based Anomaly Detection

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Abstract

Ensuring the reliability, security and safety of water treatment and distribution systems is paramount for safeguarding public health and sustaining thriving communities. Anomalies such as leaks, contamination, and other operational irregularities pose significant risks to water infrastructure, necessitating advanced methods for early detection and mitigation. This research will focus on leveraging deep learning techniques for anomaly detection in water treatment and distribution plants. Deep learning is when computers learn from lots of examples to become good at understanding and making decisions about complex information, much like how we learn from lots of experiences to become experts in certain things. The study aims to develop and optimize deep learning algorithms capable of analyzing sensor data to identify anomalies accurately and efficiently. By investigating different deep learning architectures, evaluating performance using real-time sensor data, and assessing robustness against environmental challenges, the research seeks to enhance the reliability and resilience of water infrastructure. The anticipated outcomes include improved anomaly detection capabilities, proactive response to potential issues, and broader implications for enhancing the sustainability and safety of communities worldwide. Additionally, the outcome would contribute to advancing the field of water infrastructure management and lays the foundation for future developments in anomaly detection techniques applicable to various critical infrastructure sectors such as power plants, and petrochemical plant, pipelines distribution systems, railway networks, communication infrastructure and so on.

Keywords

Anomaly; Detection; Sensors; Water treatment; Distribution Plant

Format

Oral presentation, Poster

Aligning Capability in a Complex Health Care Setting

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Abstract

This presentation discusses the Aligning Capability (AC) model and approach that has been developed and used by the author over the past 8 years. AC is based upon and draws together a wide range of conceptual models, frameworks and theories but its focus is on real world application. AC enables anyone using the model to take account of the fact that healthcare is delivered within a complex adaptive human system. It helps people to produce solutions to their 'wicked problems' by addressing what it means to thrive as a human being living (individually and collectively) in a world that is complex, messy, entangled and unpredictable. The model directs the user's attention to those aspects of a healthcare system that have consistently been found to help and/or hinder people's individual and collective capability and contributions in meeting the needs of the populations they serve. In particular, the AC approach focuses on the level of alignment, flow and resonance between its human and environmental factors. The findings emerging from an exploratory case study into the use of AC within the health and care "Place" of West Cheshire are showing that AC can bring benefits in terms of increased trust, a genuine common purpose, clarity of focus and new ways of thinking and behaving in decision making and leadership in a complex context.

Keywords

Complexity; Human; System; Leadership; Healthcare

Format

Oral presentation

Artificial Intelligence in Breast Imaging: Mammography Workforce Perspective

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Abstract

Introduction: The integration of Artificial Intelligence (AI) in medical imaging, particularly in breast imaging, is on the rise. This study aims to assess the mammography workforce's knowledge, awareness, and attitudes towards AI in breast imaging prior to clinical implementation.

Methods: A quantitative online survey, conducted from January 2023 to January 2024, targeted the mammography workforce in England. It collected data on demographics, knowledge and understanding of AI, perceptions and attitudes towards AI, and the level of education, involvement, and support for AI adoption in clinical practice. Descriptive and inferential statistics were applied to analyse the responses.

Results: Out of 119 valid responses, there was a high level of self-reported knowledge (97.4%) and awareness (91.5%) of AI in breast imaging. The majority viewed AI's potential positively (61.8%), though there was uncertainty about AI's impact on job performance (50%), ease of use (53.8%), and job security (33.1%). A significant portion (74.6%) lacked confidence in AI proficiency for clinical use, and only 11.1% had been involved in AI research, development, or clinical application. Additionally, 71% felt unprepared for AI's integration into the clinical setting.

Conclusion: The findings indicate a significant knowledge gap and a lack of engagement in AI-related activities among the mammography workforce, alongside a prevalent unpreparedness for AI integration in breast imaging.

Implication for Practice: To bridge these gaps, implementing comprehensive training programs, knowledge dissemination initiatives, and clear communication about AI's benefits is critical for preparing the mammography workforce for effective AI integration.

Keywords

Artificial Intelligence; Medical Imaging; Mammography; Breast Imaging; AI Awareness

Format

Oral presentation

Tailored Agile Medical Software Development: A Global South Perspective

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Abstract

Within the field of software development for Information and Communication Technology Development (ICT4D), software developers adopted the agile method due to its flexibility in providing software of superior quality that aligns with customer requirements. Agile is a software development method that includes, among others, Scrum, eXtreme Programming (XP), Lean, and Kanban. Agile scrum concepts, like roles, ceremonies, and artefacts, help development teams manage software product complexity and improve collaboration. However, adopting the agile scrum method poses a significant challenge for medical software developers due to safety and strict regulatory compliance. These challenges are heightened due to the sensitivity of the data and the need for strict adherence to regulatory compliance, especially in the context of developing countries. Through qualitative case studies, semi-structured interviews, and systematic data analysis techniques informed by grounded theory, the study explores how 11 software developers in India and Nigeria tailor agile scrum concepts in developing safety-critical and non-safely critical medical software. We identified 14 activities and mapped them to five roles and artefacts that enrich emergence facts, which include hybrid agile and plan-based practices, tailored roles, and software quality assurance artefacts. We also detailed the clinical tester and chief technology officer's roles. These roles and practices uniquely adapt to India and Nigeria's local needs and regulatory environments. The study further identifies challenges like the absence of robust local regulations and the need for more specialised skills in agile methodologies, forming the study's contribution.

Keywords

Agile Scrum; Roles; Ceremonies; Artefacts; Medical Software; Grounded Theory

Format

Oral presentation

Occupational Therapists' Access and Engagement with Evidence-Based Practice

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Abstract

Occupational therapists (OTs) hold a favourable view towards evidence-based practice (EBP) but this view does not translate effectively into practice. Perceived barriers to the integration of EBP into practice include time constraints, experience of reviewing evidence and the availability of research. Previous studies of EBP identify a gap in the literature regarding qualitative exploration of OT's understanding and incorporation of EBP into their practice.

This study aims to address this gap by qualitatively identifying and conceptually analysing the training and application of EBP in the clinical reasoning of OTs by conducting semi-structured interviews with a purposive sample of OT lecturers, OT students, and practising OTs. The data gathered from these interviews was analysed using reflexive thematic analysis.

Preliminary findings reveal that in undergraduate training, gaps exist between theory and practice. Not all students engage positively with EBP and its application is not consistently observed during practice placements. OTs demonstrate a commitment to evidence-based practice but rely on lower levels of evidence such as case studies, expert opinion, and professional guidelines.

The implications of these findings suggest a need for generating higher levels of evidence and enhancing its accessibility for practising OTs. Additionally, professional bodies need to produce more readily accessible evidence-based guidelines to facilitate seamless integration into practice. Understanding the application of EBP is important because it ensures that treatment techniques are effective and provides validation for future funding of OT roles in health and care.

Keywords

Occupational therapy; evidence-based practice; guidelines, barriers, attitudes

Format

Oral presentation, Poster

Session 4.4 Practice Based Research

Screening of Goosebumps: Embodied and autoethnographic research, exploring nature and phototherapy after cancer and hysterectomy

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Abstract

This ongoing research explores my use of nature, wild swimming and phototherapy after the challenge of cancer and hysterectomy. With the NHS in turmoil and lack of services generally, the process offered hope and resilience during the height coronavirus pandemic, this shift in my perspective has made me connect more deeply to nature to heal physically and mentally.

'Goosebumps' (the installation video) organically transpired after many treatments for stage one cancer and subsequent hysterectomy. My current process experiments with sustainable methods that connect with the earth as a belief that as I heal from nature, I must give back, using sympathetic and ethical techniques. I took an autoethnographic methodological approach, both practically and theoretically. Therefore, using ethnographic methods to study my own experiences. I discovered not only the healing effects of nature, but documenting my swims also became a cathartic act of reclaiming myself from surgeons

This research I would like to share, offers first-hand insight into the after effects of cervical cancer and hysterectomy, both of which are lacking in the humanities field. This is key to provide insight to an altogether underrepresented, but common treatment. I am keen to also connect the higher risk factors dependent on my socio-economic background. Furthermore, to also promote the easily accessible nature and phototherapy benefits.

Keywords

Autoethnography; Phototherapy; Wild swimming; Nature therapy; Cancer

Format

Oral presentation

Adaptive Creativity in Electronic Music Production: Formulating Creative Process Through Self-Imposed Limitations

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Abstract

This research investigates the decision-making process in electronic music production, focusing on integrating computer technologies such as Ableton Live and Max MSP. In an era of rapidly evolving technology, traditional roles in music production - arranger, songwriter, composer, producer, sound designer, and audio engineer - have converged into a singular entity, requiring individuals to embody multiple roles to produce music effectively. Artists are now faced with a multitude of choices, prompting a reassessment of traditional workflows and decision-making approaches. This research delves into the intricacies of decision-making in modern music making, shedding light on how the interplay between technology, creativity, and workflow can be efficiently negotiated. It emphasises the importance of self-imposed limitations in shaping the attainment of sonic objectives, prioritising focused achievement over the allure of boundless possibilities.

During the presentation, I will create an original track in Ableton within 10 minutes, following rules drawn by the audience. Some audience members will select one or two cards containing rules or restrictions for me to adhere to during the experiment. Through this demonstration, I aim to showcase how constraints act as catalysts for creativity, guiding decision-making processes and influencing sonic outcomes. Such an approach not only reinforces the theoretical framework outlined in the research but also offers insight into the inherent innovative potential of embracing limitations within the domain of modern electronic music production.

Keywords

Electronic Music Production; Constraints; Creativity

Format

Oral presentation

Posters

Renal Social Work: A patient view

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Abstract

Background: This is an in-depth qualitative study examining kidney patients' lived experience of renal social work (RSW) support. Whilst it is widely accepted in practice that psychosocial care is beneficial for people with long term health conditions, there is limited research evidencing this, especially from the patient's view.

Objective: This study focusses on patient experience of social care support within the current model of service delivery exploring patients' experiences and perceptions of care examining whether this best meets the patient's needs.

Methodology: An interpretative phenomenological analysis approach is used, exploring the participants lived experience of RSW support. This enables the researcher to gain an in- depth, richer understanding of the phenomenon and will require the researcher to take a reflective position, acknowledging prior knowledge of the subject.

Methods: Semi-structured interviews with up to 20 patients and caregivers who have recently experienced support through RSW and other members of the renal multi- disciplinary team, will be undertaken. Participants are purposively recruited from current caseloads, new referrals to the service over the next 12 months and data collated retrospectively from monthly social work activity data. Using an established Interpretive Phenomonological Analysis (IPA) framework, the results are presented thematically, highlighting what patients value in renal social work and uses this to discuss potential methods for best meeting their needs.

New knowledge: The study generates a greater evidence base of social care need, influencing the future of social work provision in long term health conditions and informs the development of national best practice social care models.

Keywords

Renal social work; kidney patient; psychosocial; social care needs

Format

Poster

Nanoparticle for Next Generation Antimicrobials to Fight Antibiotic Resistance

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Abstract

The World Health Organization has identified antibiotic resistance as one of the most significant global health threats to humanity. According to the Global Antibiotic Research and Development Partnership (GARDP), approximately 700,000 people die annually due to drug resistant infections. There is an urgent need to develop new approaches to effectively combat the emergence and spread of antimicrobial resistance (AMR), addressing the growing challenge posed by new resistant pathogens. Nanoparticles demonstrate a great potential for multifunctional medicine design, offering novel solutions to challenges commonly encountered in traditional treatments. The success of nanoparticles-based strategies relies on the ability of the nanoparticles to penetrate biological barriers of pathogenic microorganisms and interfering with crucial molecular pathways, creating unique antimicrobial mechanisms.

This interdisciplinary study focuses on design and development of a library of anisotropic nanoparticles, predominantly using copper as core materials. The research outlined explores the role of the shape, core material, and functionalisation on antimicrobial properties in vitro. We propose robust protocols for antimicrobial testing of functionalised nanoparticles in vitro, against key pathogens identified in the WHO's priority list. Findings show that the antimicrobial activity of nanoparticles strongly relies on that size, shape & surface chemistry of the particles, which can be controlled to design a novel nanoparticles-drug based antimicrobial agents with enhanced antimicrobial activity in comparison to traditional antibiotics.

Keywords

World Health Organization (WHO); Global Antibiotic Research and Development Partnership (GARDP); Antimicrobial resistance (AMR); Copper Nanoparticles; Nanomedicine

Format

Poster

Air Quality Alert: Navigating Air Pollution in Manchester's Transit-Oriented Communities

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Abstract

In cities striving for sustainable development, Transit-Oriented Development (TOD) emerges as a critical approach, focusing on creating high-density neighbourhoods around transportation hubs and integrating residences with community activities and daily needs. However, the dense urban structure characteristic of TODs can restrict air circulation, leading to the trapping of pollutants and heightened air pollution exposure for residents.

Particulate matter (PM), a significant pollutant emitted by vehicles, originates not solely from engines but also from friction between vehicle components or between tyres and road surfaces. Recognising this broader source of pollutants challenges the sole dependence on technologies targeting engine emissions, such as electric vehicles, to tackle traffic-related pollution.

Understanding the dynamics of PM emissions is crucial, especially in condensed urban structures like TOD. For instance, this study examined PM levels in two TOD areas in Manchester City, Manchester Piccadilly and East Didsbury, along with street design, traffic flow and vehicle speed. The findings highlighted that driving behaviours, such as frequent stops and starts, increase friction between vehicle parts and road surfaces, elevating PM emissions. Additionally, the compact urban layout of these areas exacerbates PM trapping, limiting dispersion and increasing residents' PM exposure.

Addressing these issues requires comprehensive urban design considerations and traffic management strategies, especially in densely populated areas. Strategies include optimising building height and traffic flow. Efforts in urban planning should not only prioritise accommodating the increased population but also focus on mitigating air pollution to safeguard the health and well-being of city residents.

Keywords

Transit Oriented Development; Particulate matter; Electric Vehicles; Driving Behaviour; health and well-being

Format

Poster

Quantifying the Real-World Movements of Children

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Abstract

Previous studies quantifying walking movement patterns (gait) have found that adult-like gait is present in children as young as 3-years-old. This measured age of gait maturation (when movement patterns replicate an adult's) will depend on what factors are being measured and how. The concept that children move like adults has resulted in children's footwear being smaller adult shoes. However, children require shoes that allow their feet to develop without being overly supported, cushioned, or constricted during movement. Furthermore, while much of the literature compares walking, children also regularly run and jump in play. These skills develop soon after walking before undergoing a long learning period towards mastery.

Many studies also only explore children's walking across a lab. This is often with markered motion capture that can include having upwards of 30 reflective markers attached to the body to track its movement in space. This can be distracting, altering children's natural movement. Additionally, a lab setting, which is created to produce consistency, may impact a child's natural variation of movement.

This industry-funded research aims to address the gaps in knowledge of how children move in the real world. Marker-less motion capture is a new method that tracks movement of the body using normal video cameras, allowing the children to feel more natural in their movement. We will assess playground movements such as running, jumping, and turning in a real-world environment to gain understanding of how children's gait develops with age in more realistic activities to scientifically inform footwear design.

Keywords

Children; Running; Jumping; Markerless Motion Capture; Kinematics

Format

Poster

Structural Characterisation of Lysogenic Phage from the Liverpool Epidemic Strain of *Pseudomonas aeruginosa* and their Influence on Type Six Secretion Systems

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Abstract

The Liverpool Epidemic Strain (LES) of *Pseudomonas aeruginosa* is a key bacterial pathogen and major cause of respiratory illness and death in Cystic Fibrosis (CF) patients. *P. aeruginosa* is found in the lungs of 80% of CF patients and is the leading cause of death. Within the LES genome a set of 3 active prophages, which are viruses that infect and integrate into the host bacterial genome and have been associated with fitness advantages and survival of the LES. The phage allows the LES to form biofilms (thin but robust communities of bacteria that attach to surfaces) in the CF lung that are resistant to antibiotics making the bacteria very difficult to clear by the immune system.

To allow research into the characteristics of each phage, the lab strain of *P. aeruginosa*, PAO1 was used, 3 copies were infected with the phage, making phage 2, 3 & 4 lysogens.

This study carried out structural analysis of LES phage by transmission electron microscopy (TEM). Proteomic analysis of purified LES phage suspensions by SDS-PAGE and subsequent LC-MS, both involved growing the phage to high titres >1.0 x 109 PFU/ml (Plaque Forming Units). The analysis detected 17, 8 and 10 structural proteins for LES phage 2, 3 and 4 respectively, identifying most of the structural proteins from genome annotation tools and 3 additional genes for both phage 2 & 4.

Overall, this study has used a combination of genomic, proteomic, TEM and functional analyses to improve our understanding of LES phage biology.

Keywords

Bacteriophage; SDS-PAGE (Sodium dodecyl sulphate polyacrylamide gel electrophoresis); TEM (Transmission electron microscopy); *Pseudomonas aeruginosa*; LC-MS (Liquid Chromatography – Mass spectrometry)

Format

Poster

Antimicrobial Resistance of *Klebsiella pneumoniae* in Palestine

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Abstract

Antimicrobial resistance poses a significant global health threat, decreasing the effectiveness of treatments for serious infections. With a decline in the development of new antibiotics, coupled to the increase in resistance to existing antibiotics, it is critical to closely monitor resistance trends. Low to middle-income countries, such as Palestine, may face heightened vulnerability due to suboptimal antibiotic use and limited healthcare resources.

This study focuses on 126 *Klebsiella pneumoniae* samples sourced from various hospitals across Gaza. Antimicrobial resistance of the samples was tested via EUCAST disc diffusion, a method used to assess bacterial susceptibility to a range of different antibiotics. The bacteria samples' ability to form biofilms—a structured community of microorganisms that can adhere to surfaces – was also tested. These results may provide insight for healthcare providers to refine antibiotic prescriptions, improve treatment strategies and detect emerging resistance patterns.

Keywords

Antimicrobial resistance; Gaza; Palestine; *Klebsiella pneumoniae*

Format

Poster

Creating a Community of Practice Inclusive of the African Communities in Access to Healthcare in Greater Manchester: Enabling young adults from African backgrounds as ambassadors

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Abstract

The aim of this research project is to gain a better understanding of the following question: How can we innovatively enable young adults from African backgrounds to act as the expert bridge and health ambassadors in gaining the necessary evidence to address health inequalities and also to implement necessary changes in the UK. Evidence suggested that there are gaps in access to healthcare for African communities because the professional health structure is not completely inclusive. According to Public Health England (2021), available evidence suggests a complex interplay of deprivation, environmental, physiological, health-related behaviours and the 'healthy migrant effect' in the UK. Ethnic minority groups are disproportionately affected by socio-economic deprivation and structural racism, these are key determinants of health status.

How can health innovation be coproduced for African families, what does health innovation mean? Are they invisible to the system and how do we contextualise culture to change behaviour and to inform healthcare services?

Using the discourse analysis method in qualitative focus groups I will be speaking to 10 black African young adults from the ages of 21-25years, I am going to have 2 focus groups of 5 participants. This will enable me the opportunity for participants to share ideas and experiences within themselves and to identify how the resulting themes may differ for each of the groups.

The intended outcome of this work will be used to design ways to address any barriers that may emerge and to build the capacity of stakeholders and Africans to foster an inclusive community of practice.

Keywords

Community of practice; African young adults; Health care ambassadors; Expert bridge; Improved service provision

Format

Poster

Delivering Retrofit for Heritage Housing

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Abstract

Global warming has instilled the need for reaching net zero by 2050, with the UK Government turning to retrofit as a solution within the residential sector. There is currently tried and tested specifications such as the Public Available Specification 2035 (PAS 2035) providing retrofit guidance for UK homes, but few organisations attempt to utilise such guidance for the UK's heritage stock, with attempts often leaving irreversible damages to properties and occupants.

Little has been done to formulate a framework for the 25% of UK housing stock that falls under the heritage category, and although organisations such as English Heritage and the Sustainable Traditional Building Alliance (STBA) do provide guidance on more sympathetic approaches to retrofitting heritage homes, there is still a continuation of inconsistency and misunderstandings seen within the sector, aided by limited regulatory guidance and strategies that provide a coherent systematic approach. So how are historic homes fairing in the fight for net zero?

In Partnership with Seddon Construction Ltd, The National Trust and the University of Salford, this study asks can retrofit be delivered successfully to heritage stock? Using a mixed methodological approach, including energy modelling and observational case studies, the project's unique partnership will allow a 360 view from conception to completion of the retrofit process as applied to some of the National Trust heritage stock, allowing an honest evaluation of some of the UK's leading guidance and regulation, providing suggestive changes to current processes that reflect the unique approaches needed for the UK's heritage homes.

Keywords

Retrofit; pas2035; heritage housing; coheating; energy efficiency

Format

Poster

Laboratory Testing of Novel Blast Noise Control Techniques

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Abstract

DNV are a company that carry out crucial major hazards testing to improve safety across a wide range of industries, including energy and infrastructure, at their site at Spadeadam, Cumbria. One common form of testing is Explosive Depth Hardening (EDH), in which plastic explosives with the equivalence of up to 10 kg trinitrotoluene (TNT) are used to harden pre-cast railway crossings. The operations produce extremely high intensity noise and may be carried out up to 10 times per day. The source characteristics of the explosion are not well understood and vary significantly with operational demands.

Furthermore, the noise produced from these blasts can have detrimental effects on both the workers on site and local residents around the site. It is important to be able to quantify the characteristics from these explosions to be able to appropriately protect workers with correct hearing protection. This will also improve the management of environmental noise impacts on local communities.

This poster presents the current research on novel techniques to control the noise from explosions. Experimental water curtains, water sprays, and metamaterial designs have been tested. It is proposed to implement these methods for use during full-scale explosive tests on site, and the potential improvements to occupational and environmental noise impacts will be discussed.

Keywords

Acoustics; Impulse; Noise; Mitigation; Environment

Format

Poster

Nursing Innovation by Invention: A scoping review

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Abstract

Aim: To explore the contemporary literature on the emerging role of nurse professionals' innovation by way of radical or incremental product development.

Design: Scoping review

Data sources: The primary search was performed in February 2023 with a repeat search and revision to the review completed in in September 2023. The Current Index of Nursing Allied Health Literature, Emerald Insight, British Nursing Index, National Health Service Knowledge and Library Hub and Google Scholar™ were utilised using the term 'Nursing AND (new product development) AND (device innovation)'. Handsearching of relevant reference lists were also undertaken to ensure adequate data saturation from the available literature.

Review methods: Acknowledging the Population, Concept and Context of nursing innovation, a systematic approach was adopted to demonstrate rigor and transparency of the review.

Results: Seventeen papers from 274 results were correlated and analysed. Themes of nursing impetus for innovation, defining the nurse inventor concept, facilitators and barriers to the nurse inventor concept were all identified as areas of knowledge to be developed and conceptualised.

Conclusion: While the nurse inventor concept is intriguing and seen to be diversifying practice opportunity within the profession, it requires further challenge, clarity, and exposure. Local and national recognition of the role by healthcare organisations should be developed, with credence afforded to the role's explicit specifications and integration into today's nursing practice. Future research should aim for a consensus of definition, typology, scope of practice, and job planning.

Keywords

Nursing; Innovation; Product Development; Medical Devices

Format

Poster

Exploring the Lasting Impact Coercive Control has on Women Post-Separation from their Abusive Male Partners: A narrative-based study of women's lived experiences

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Abstract

Contemporary understandings of coercive control within interpersonal violence have been broadened to include psychological, financial and other types of abuse, alongside physical abuse. This research adopts narrative methods to investigate the perceptions of female survivors of heterosexual relationship domestic abuse and coercive control post-separation, and aspires to capture the lasting perceived impact of coercive control. Acquiring data from reflective journals and repeated narrative interviews, participants' perceptions of their post-separation lived experiences have contributed to an understanding about developmental progressions in women's recovery. A 2014 UK study found over 90% of women experience post-separation abuse. Proposing potential legal remedies, aimed specifically at post-separation abuse is one objective of this research, based upon evidence from the lived experiences of female survivors of domestic abuse. Participants' divergent accounts reaffirm how dissolution of an abusive relationship does not cease complications that women face; if anything, they can exacerbate. One participant compared their abuser to a chameleon, with new hidden methods enabling them to adapt and continue their abuse post-separation, supporting how coercive control does not end when you leave an abusive relationship. Preliminary findings further encapsulate the complexities of coercive control and issues abused women face post-separation, for example worsening wellbeing and barriers to forming new intimate relationships. Narratives also signify how separation is a protracted process and not universal for every survivor. Analysis has started to deepen our understanding about abused women's perceived post-separation experiences, with optimism to use these findings to create recommendations for future policy and practice.

Keywords

Coercive control; heterosexual relationship domestic abuse; female survivors; post-separation lived experiences; narrative interviews

Format

Poster

How Reliable is Markerless Motion Capture?

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Abstract

Aim: To examine the reliability of biomechanical variables (i.e. the way a person moves and so the internal forces they are exposed to) during single-leg squat (SLS) and single-leg landing tasks (forward and medial direction) using markerless motion capture. Also, to examine between-day reliability of the same protocol using marker-based motion capture.

Methods: Nineteen males performed all tasks twice, one week apart. Joint angles of trunk, hip, knee, and ankle were processed using Theia3D (a type of markerless motion capture algorithm). A separate study (10 different participants) evaluated the reliability of marker-based motion capture. The data was analysed during the whole task (from the beginning to the end) and at a specific instant of the task (maximum knee flexion). Root mean square difference (RMSD) was calculated to analyse the whole task, whereas intraclass correlation coefficient (ICC) and standard error of measurement (SEM) were calculated to analyse the specific instant of the task.

Results: For markerless motion capture, RMSD and SEM values for all tasks were <5° for most of the variables, suggesting acceptable reliability. Only hip flexion presented values >5° in all tasks (5° to 7°). ICC indicated moderate to good reliability (0.77 to 0.83). Similarly, most variables presented values <5° using marker-based motion capture. Only hip and trunk flexion during SLS reported values >5° (6° to 8°). ICC indicated good to excellent relative reliability (0.80 to 0.90).

Significance: Markerless motion capture using Theia3D can reliably measure single-leg tasks with measurement errors comparable to marker-based motion capture. The low measurement error provides confidence for the regular monitoring of athletes during single-leg tasks.

Keywords

Repeatability; measurement error; kinematics; markerless motion capture

Format

Poster

Three Minute ThesisTM

Nanoparticles Synthesis for Next Generation Antimicrobial to Fight Antibiotic Resistance

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Abstract

One major concern to human health is the sharp rise in Antimicrobial Resistance (AMR) caused by harmful pathogens. According to recent reports from the Centers for Disease Control and Prevention (CDCP), the world is on the verge of a “post-antibiotic era" in which bacterial infections will become the leading cause of death rather than cancer. This has sparked a global effort to invest in the research and development of innovative methods to design potent antimicrobial agents to combat resistant pathogens and challenge the Antimicrobial Resistance (AMR) dilemma. Nanomaterials have gained significant attention as a viable therapeutic substitute to tackle obstacles encountered by conventional antibiotics and combat resistant microorganisms. These nanoparticles exhibit unique and tuneable physio-chemical properties, which strongly rely on the size, shape, and surface chemistry of the nanoparticle. The success of nanoparticle-based strategies relies on the ability of the nanoparticles to penetrate biological barriers of pathogenic microorganisms and interfere with crucial molecular pathways, creating unique antimicrobial mechanisms.

This interdisciplinary research focuses on the development of protocols to design novel metallic nanoparticles, namely silver, gold, and copper with unique surface functionalities designed to target and kill pathogens that are at the top priority list of the World Health Organisation (WHO). So far, the study demonstrated that the antimicrobial activity of antibiotic-nanoparticle conjugates is dependent on the core metal of nanoparticle employed, their size, shape, and surface functionality in form of the antibiotic utilised against selected strain of bacteria.

Keywords

Antimicrobial Resistance (AMR); Centers for Disease Control and Prevention (CDCP); Metallic Nanoparticle; resistant pathogens; World Health Organisation (WHO)

Format

Three Minute Thesis™

More than Just Observation: A Deep Dive into Irish Early Childhood Placement Supervision

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Abstract

This research examines the important role of early childhood educators in Ireland. Since the 1990s, there's been a significant focus on improving childcare and education for young children (under 7) and their families. However, despite these efforts, early childhood educators experience significant challenges in relation to their professional recognition, professional supervision and mentoring, identity, level of qualification, and salary. Interestingly, there is little regard or respect for the utilisation of professional supervision to address these fundamental challenges for early childhood professionals in practice, often disregarding valuable formative practice placements for students as emerging early years professionals. This kind of support can be very valuable for both experienced educators and students just starting out. This doctoral research reveals the unexplored research area of professional supervision in early childhood education placements in Ireland. It investigates both the 'experience' and 'understanding' of current supervisory practices and arrangements utilising the conceptual framework of Interpretative Phenomenological Analysis (IPA). Ten participants (early years educators supervision students on placement) were interviewed in-depth using a qualitative semi structured narrative design.

This study will contribute new literature that amplifies the voice of early childhood educators through their individual lived experiences and address the gap in understanding the purpose of professional supervision as a learning tool in practice placements.

Keywords

Early Childhood Education; Practice Education Placement; Professional Supervision

Format

Three Minute Thesis™

Deep Learning for Detecting Asset Degradation

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Abstract

In any industrial system, ensuring that the engineered components therein are in working order is essential for the safety of workers and for efficient and cost-effective running. However, due to factors such as stress, deformation, and corrosion, individual components degrade over time, eventually leading to failure. In this project, we consider the use of machine learning to analyse maintenance video and identify degradation with the goal of developing a system that is capable of alerting the user to conditions worsening over time.

We have compared deep convolutional neural networks for accuracy when used in analysing corrosion; similarly, a comparison of object recognition algorithms has showed us the most accurate when used to identify bolts. To work towards identifying conditions that change over time - unwanted loosening of bolts, for example - we are now experimenting with triplet loss architectures to compare time series of images. We have compiled a training dataset of more than 1,100 images of bolts and bolt rotation for use with these architectures, as none was publicly available.

We have compared different triplet loss architectures to determine the most accurate when used to detect the unwanted rotation of bolts. In doing so, we found that the results appeared inconclusive; we are now using visualization techniques to look inside the black box and see what the models have learned, thus helping to explain these results. This enables us to make more accurate architectures that are reliable, reject unwanted noise, and detect the correct problem.

Keywords

Machine learning; Training data; Continuous Maintenance

Format

Three Minute Thesis™

Exploring the Role of Interoperable Financial technologies for Financial Institutions in Promoting Financial Inclusion for Smallholder Farmers in Pakistan

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Abstract

70% of the world's food is produced by smallholder farmers (SHF) as reported by Food & Agriculture Organisation (FAO). In Punjab - considered the food basket of Pakistan – this is no different. 90% of Punjabi farmers are categorised as SHF, producing 85% of the national food. Financial inclusion, i.e. the access to basic formal financial services is still a critical challenge for geographically isolated SHF, especially in developing countries. Financial institutions (FIs) apathy towards this group stems from high operational costs, information asymmetry, limited access and awareness, and digital divide. Interoperable financial technologies (IFTs) like APIs and mobile wallets provide seamless integration of information and payment systems. Think of it as bridges connecting FIs, mobile network operators and the data providers. To put this in context, consider that a 2018 Government of Punjab commissioned 'yield estimation survey' demonstrated the Punjab land for wheat crop had the potential to produce over 9000 kg/hectare. The world's best average is just below 9000 kg/hectare, the large farmers just over 5000 kg/hectare, but the small and marginalised farmers of Punjab yield below 3000 keg/hectare. This yield gap originates from lack of formal financial inclusion. This research is exploring the impact of IFTs catering to supply-side barriers of FIs in promoting financial inclusion for SHF. Using semi-structured interviews with the key stakeholders, subjective ontologies are recorded for interpretivist epistemologies of this qualitative enquiry. Thematic analysis shows reduced cost of credit, increased outreach, effective and efficient systems offering targeted financial services by the FIs. My research offers policy and practice recommendations for improving the financial inclusion landscape for SHF. Further research is required to explore the impact of IFTs for demand side barriers.

Keywords

Financial inclusion; smallholder farmers; Interoperable financial technologies; Application programming interface (API); mobile wallets

Format

Three Minute Thesis™

Using Nature-Based Solutions to Mitigate Urban Heat

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Abstract

In all regions of the world, temperatures are rising due to climate change and increasingly, incidences of extreme weather events are being observed in temperate zones. Urban population figures continue to grow in city conurbations, where heatwaves particularly impact elderly residents and intensify air pollution. Summertime heat stress is further exacerbated by the urban heat island (UHI) effect. Urban greenery has the potential to mitigate the UHI effect by shading hard surfaces and creating evaporative moisture. This research analyses how effective vegetation may be at mitigating summertime heat stress in temperate cities.

Three case study areas in Manchester, representing low to high-rise construction types, will be investigated using ENVI-met software, to create simplified 3D simulations of sample city canyons. This software is used to analyse the interaction between local climate and urban structures, allowing for experimental placing of nature-based solutions (NBS) and quantification of the resulting heat transfers. To reduce solar absorption to the original built surfaces, 2-5 NBS scenarios will be simulated in the sample areas to assess the reduction to surface and air temperatures, and the subsequent local and overall city centre UHI effect. This investigation aims to determine if the UHI effect is altered and to estimate the NBS strategies required to mitigate heat stress in present day and future heatwave scenarios in Manchester and similar temperate cities.

Keywords

Nature-based solutions; urban heat island effect; heat stress; urban greening; urban future-proofing

Format

Three Minute Thesis™

Exploring Fetal Alcohol Spectrum Disorder (FASD) within the Criminal Justice System in England and Wales

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Abstract

Crime can affect us all and therefore, as a society, we all have an invested interest in ensuring crime can be prevented and reduced. Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term used to describe the permanent damage to the brain, and body, of an individual when exposed to alcohol prenatally. Research has suggested that a lack of knowledge within the social and legal services, and treatment of offenders with FASD, traps offenders in a 'revolving door' of crime. This circularity not only causes long-term harm for offenders but also increases their reoffending, thereby inflicting further damage to the community. Despite research indicating that individuals with FASD are 19 times more likely to be involved in the Criminal Justice System, there has been very little empirical evidence on whether an individual with FASD can receive a fair trial in England and Wales. The question therefore is whether individuals with FASD possess the abilities required to be fit to plead in a court of law. This presentation will explore the literature regarding FASD and the Criminal Justice System and case law in England and Wales. It will explore the current knowledge of FASD within the legal profession and discuss the abilities needed to be fit to plead. The purpose of this research is to raise awareness of FASD within the Criminal Justice System, highlight the needs of people with FASD before the court, raise awareness of the 'revolving door' of crime, and inform policy.

Keywords

Criminal justice system; fetal alcohol spectrum disorder; FASD; fitness to plead; fitness to stand trial

Format

Three Minute Thesis™

Examining Social Media Hashtags Role in Digital Activism Against Gender-Based Violence in Nigeria

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Abstract

In 1929, Nigerian women orchestrated the 'Women's War,' a coordinated uprising against British colonialism, which became a landmark moment in the history of women's advocacy in Nigeria. This pivotal event, known for its effective use of traditional communication tools like the "gong" to mobilize thousands, paved the way for transformative social change. Fast forward to today, social media hashtags such as #MeToo, #OrangeTheWorld, and #BBOG have emerged as modern-day equivalents of the "gong", offering women a powerful platform to voice their concerns and rally support against gender-based violence (GBV) in Nigeria. This research examines the impact of SM hashtags on digital activism and collective action against GBV in Nigeria. By utilizing a mixed-methods approach, including qualitative analysis of SM hashtags like #BBOG, #BFIN, and #EndSARS, alongside historical tweet mining and quantitative data from interviews and focus groups, the study aims to explore the effectiveness of hashtags in galvanizing online campaigns and transforming them into offline actions. The expected outcome is to provide a nuanced understanding of how SM hashtags can serve as catalysts for change in GBV activism, contributing to the debate surrounding their role in bridging the online-offline activism divide. Recommendations will focus on optimizing SM strategies for activists and policymakers to enhance the impact of digital campaigns in Nigeria and beyond.

Keywords

Social Media; Hashtags; Digital Activism; Collective Action; Gender-Based Violence

Format

Three Minute Thesis™

Exploring Environmental Management Approaches of Smart Building Construction in the UK

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Abstract

Achieving net zero 2050 ambitions in the UK Construction industry requires a reduction in greenhouse gas emissions (GHG). Currently, the built environment sector's carbon emissions are out of control. To address this issue, this research proposes developing a theory based on the theory of the triple bottom line, which balances the environmental, economic and social aspects of construction projects. The foundation of this inquiry will be qualitative data analysis, namely insights obtained from expert interviews within the built environment sector. An analytical hierarchical process will be employed to produce a reliable measurement model. Effective embodied carbon reduction in the construction of smart buildings has been hindered by several obstacles. These include inadequate government policies, a lack of low carbon materials availability, resistance to using new building materials and technologies, scarcity of environmental conscious professionals and absence of application on low carbon design strategies in the inception stage of the smart building construction process. This research endeavours to create a bespoke measurement model tailored specifically to the UK context. Therefore, this model will enable the construction of smart buildings that significantly mitigate environmental impact and reduce embodied carbon emissions from construction activities within the built environment sector. By addressing these challenges this research contributes to improving the environment conscious best practices while also advancing the Net Zero 2050 targets in the smart building construction process.

Keywords

Embodied carbon; Carbon emissions; Net zero; Smart building; greenhouse gas emission

Format

Three Minute Thesis™

ACL Injury Risk Reduction in Elite Female Academy Footballers

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Abstract

Women are susceptible to Anterior Cruciate Ligament (ACL) injuries, accounting for 16-32% of all injuries. ACL injuries account for 43% of injury burden. Women are 2-3x more likely to sustain an ACL injury in comparison to their male counterparts. Additionally, Women are more likely to sustain more severe injuries then their male counterparts in relation to time loss.

The literature has identified both internal and external risk factors that predispose female athletes to ACL injuries. Intrinsic risk factors being identified as previous injury, age, hormones, anatomy, strength deficits and kinematics. While external risk factors have been identified as competition (match vs training demands) and level of exposure (acute/chronic workload ratios), playing positions, footwear, surface and environmental conditions.

It has been identified that 88% of all injuries were non-contact and three situational patterns predisposing to ACL injuries - pressing and tackling, regaining balance after a kick, and indirect contact not related to the injury site - have been identified.

A high rate of ACL injuries are associated with non-contact injury mechanisms suggesting that a high proportion could be prevented. The literature has suggested that the adoption of a neuromuscular training program can reduce the risk of ACL injuries in female players by two thirds. Therefore, prevention programs should look to address modifiable risk factors including kinematics, and strength deficits. The purpose of this research is to assess the ability of an intervention program targeted at ACL injury risk factors to reduce ACL injury in elite female adolescent footballers.

Keywords

Anterior Cruciate Ligament; ACL; Elite Women's Football; Injury

Format

Three Minute Thesis™

Digital Information Management System for Facilitating Construction and Demolition Waste Management

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Abstract

The construction industry is indispensable for global economic advancement, yet it faces the challenge of efficiently and sustainably delivering the built environment. This sector consumes substantial quantities of raw materials and generates significant waste, with the UK alone producing 138 million tons of construction waste. Embracing a circular economy is perceived as a vital strategy to tackle environmental issues and foster economic progress. To achieve sustainable development objectives, the construction sector can adopt Circular Economy (CE) standards. The incorporation of Construction 4.0 technologies can facilitate this transition by optimizing resource utilization and bolstering circularity. However, despite extensive research on digital technologies in construction, there remains a lack of emphasis on integrating these technologies to bolster circular practices. This research aims to develop a Digital Information Management System (DIMS) that integrates BIM, IoT and Blockchain to facilitate Construction and Demolition Waste Management, following the Design Science Research methodology. It will start by raising awareness of the problem, proposing a solution, developing the solution, evaluating it, and providing recommendations and conclusions.

Keywords

Circular Economy (CE); Digital Information Management System (DIMS); Construction and Demolition Waste Management (CDWM); Design Science Research (DSR)

Format

Three Minute Thesis™