

1st Annual NCI Research Day



Friday, 14th of June, 2019 9:00 am – 2:00 pm Cloud Competency Centre

Program

Friday, 14th June 2019 – Cloud Competency Centre

8.30 - 9:00	Breakfast
9:00 - 9:10	Welcome Speech
	Professor Jimmy Hill, Vice President Academic Affairs and Research
9:10 - 9:30	Beyond Fast and Furious: Smart Approaches to Data-Intensive Parallel Programming
	Assoc Prof. Horacio Gonzalez-Velez (School of Computing)
9:30 - 9:50	Investigating Teachers' Attitudes Towards Students with ADHD and Anxiety
	Dr Conor Nolan (School of Business - Psychology)
9:50 - 10:10	Government Proposals to Acquire the Liquor Trade in the First World War: The Case of Macardle, Moore and Company, Brewers
	Desmond Gibney (School of Business)
10:10 - 10:30	A Comparison of the Home Learning Environment of Families at Risk of Socio- Economic Disadvantage to National Norms in Ireland
	Dr Gráinne Kent (Early Learning Initiative)
10:30 - 10:50	SPuMoNI: Smart Pharmaceutical MaNufacturIng
	Dr Adriana Chis (School of Computing)
10:50 - 11:00	Coffee Break
11:00 - 11:20	Robotic Coding Clubs: A Community Action Research Project
	Lana Cummins and Glenn Connell (Early Learning Initiative)
11:20 - 11:40	Branding Abortion: The Influence of Consuming Visual Imagery on Irish Citizens' Abortion Referendum Experience
	Dr Louise Maguire (School of Business)
11:40 - 12:00	The Impact of Lifestyle Factors on Older Adults' Brain Health
	Dr Michelle Kelly (School of Business - Psychology)
12:00 - 12:20	Automatic Bootstrapping of OpenFlow in Wireless Ad hoc Networks
	Dr Sachin Sharma (School of Computing)
12:20 - 12:40	Overcoming Resistance: Business Model Innovation Processes in Tech SME
	Dr Nicole Gross (School of Business)
12:40 - 13:00	Analytics-Based Decomposition of a Class of Bilevel Problems
	Dr Ade Fajeminis (School of Computing)
13:00 - 13:05	Closing Session – Dr Cristina Hava Muntean (Chair of Research Committee)
13:05 - 14:00	Lunch - Cloud Competency Centre

Speakers

Assoc Prof. Horacio Gonzalez-Velez

School of Computing



Beyond Fast and Furious: Smart Approaches to Data-Intensive Parallel Programming

Abstract: Large data-intensive multiprocessing systems have long posed a challenge to known distributed systems programming techniques as a result of the inherent heterogeneity and dynamism of their resources. This talk presents some ideas on how to exploit the structure and behaviour of data-intensive parallel applications to efficiently allocate dispersed computational resources taking into account non-functional requirements. By abstracting commonly-used patterns of parallel computation, communication, and interaction, programmers can arguably enable parallel applications with substantial data requirements to adapt to the most suitable computing resources. We shall also discuss some lessons learned from the work in cHiPSet, a major European COST Action on High-Performance Modelling and Simulation for Big Data Applications http://chipset-cost.eu/.

More details can be found here:

Kolodziej, Joanna and González-Vélez, Horacio (2019) High-Performance Modelling and Simulation for Big Data Applications. Lecture Notes in Computer Science, 11400. Springer, Switzerland. ISBN 9783030162719 http://trap.ncirl.ie/3749/ http://dx.doi.org/10.1007/978-3-030-16272-6

Dr. Conor Nolan

School of Business (Psychology)



Investigating Teachers' Attitudes Towards Students with ADHD and Anxiety

Abstract: There currently exists a very small body of research in the area of attitudes towards children with mental health problems. Teachers' attitudes are important to investigate as they play a significant role in the development of young children, and mental health problems can have a negative impact on academic achievements. Implicit attitudes have not previously been in investigated in this area. The current research aimed to explore implicit and explicit stigmatising attitudes in teachers, and to explore gender-biased attitudes in relation to ADHD and anxiety. A measure of implicit attitudes, the IRAP, was used to measure implicit stigmatising attitudes and gender biases. Explicit attitudes were measured using the Days Mental Illness Stigma Scale (DMISS) and the Stigmatising Attitudes and Believability Questionnaire (SAB), along with vignettes to assess gender bias. The research involved two studies, with 74 primary school teachers taking part, ranging in age from 23-63. Results indicated that teachers did not show implicit or explicit stigmatising attitudes, but did show implicit gender biases. The research adds to the small pool of existing literature on the topic and has potential implications regarding teachers' understanding of ADHD and anxiety.

Desmond Gibney



School of Business

Government Proposals to Acquire the Liquor Trade in the First World War: The Case of Macardle, Moore and Company, Brewers

Abstract: My presentation is based on my above-titled book chapter in Accounting for Alcohol – an accounting history of brewing, distilling and viniculture, edited by Martin Quinn & Joao Oliveira, published in 2018 as part of the Routledge New Works in Accounting History series. My chapter used archival research methods to examine the proposed acquisition of the liquor trade by the UK government during World War 1, with specific reference to Macardles of Dundalk.

I 'reverse-engineered' the process by using modern finance techniques to assess the valuation proposed for Macardles a century ago. I drew parallels to recent events - the acquisition of liquor trade was supposed to be profitable for the government (similar to Ireland's bank bailout in recent years) and a failure to 'burn' the secured lenders (similar to when NAMA bought up distressed debt).

I conclude my presentation with some observations on opportunities for archival research, and suggestions on putting David Silverman's advice into practice about dissemination and recognising differing audiences for qualitative research.

More details can be found here:

Book chapter: https://www.taylorfrancis.com/books/e/9781315185477 Newstalk radio interview: https://www.newstalk.com/podcasts/highlights-from-talking-history/bestmarch-history-books-part-two https://podcasts.apple.com/ie/podcast/highlights-from-talking-history/id251191592?i=1000433290862

Dr. Gráinne Kent

Early Learning Initiative



A Comparison of the Home Learning Environment of Families at Risk of Socio-Economic Disadvantage to National Norms in Ireland

Abstract: The present study investigated the home learning environment (HLE) of three to five-yearold children (n=429) living in an area designated as socio-economically disadvantaged, involved in the Area Based Childhood (ABC) Programme, compared to a nationally representative sample of threeyear-old children (n=9,793), from the Growing Up in Ireland (GUI) Study. Statistical analysis of the frequency of engagement in home learning activities across both samples, revealed a significant difference in the environments to which children are exposed, with families from the GUI sample engaging more frequently in these activities than families from the ABC sample. Among the family demographic factors investigated, parental age and education level were significantly related to the frequency of engagement in home learning activities. Based on these findings, learnings and implications for the Early Learning Initiative will be discussed.

More details can be found here:

Kent, Gráinne and Pitsia, Vasiliki (2018) "A comparison of the home learning environment of families at risk of socio-economic disadvantage to national norms in Ireland". Irish Educational Studies, 37 (4). pp. 505-521. ISSN 1747-4965. DOI: 10.1080/03323315.2018.1471409

Dr. Adriana Chis

School of Computing

SPuMoNI: Smart Pharmaceutical MaNufacturIng

Abstract: This talk will introduce the SPuMoNI project, which is a CHIST-ERA EU funded project. The main idea of this project is to systematically assess all data produced by computerised production systems in representative pharma environments: design data quality assessment models based on the Data Quality dimensions agreed by the European Institute for Innovation Through Health Data, including rules derived from regulatory documents; and identify behaviour patterns of data probability distributions over time and among the manufacturing sources to identify outliers, i.e. data behavioural patterns which can violate Attributable, Legible, Contemporaneous, Original and Accurate (ALCOA) premises. To this end, there will be a semi-autonomous data quality control decision support system aiding pharma manufacturing companies to reduce the effort of analysing compliance data.

More details can be found here:

https://www.techcentral.ie/nci-wins-eu-big-data-funding-award-for-pharma/

Lana Cummins and Glenn Connell

Early Learning Initiative



Robotic Coding Clubs: A Community Action Research Project

Abstract: Robotic Coding Clubs were developed as a collaboration between the NCI's School of Computing and the Early Learning Initiative (ELI). Using a Community Action Research approach, the Clubs are aimed at children attending schools and services in the Dublin Docklands where educational disadvantage is a prominent concern. This presentation will explore the background, service delivery and findings from five Coding Clubs cohorts.

As the overall aim of the Robotic Coding Clubs is to develop young people's understanding, knowledge and skills in coding and computer technology and to inspire and support young people in their education. Pre and post measurements assessed students' attitudes and learning disposition towards Science, Technology, Engineering and Mathematics; students' third level aspirations and students understanding, knowledge and skills of coding.

The evaluations show that 90% of children felt that they learned a lot from Coding Club. However, the breakdown of individual questions illustrates that some positive responses fell from pre to post assessment. This may be attributed to logistical challenges which arose throughout the programme.

Taking the feedback and evaluations from the children into consideration, this programme needs to be reviewed for 2019 - 2020 to ensure that Robotic Coding Club meeting its objectives and is sustainable long term.



Dr. Louise Maguire and Fiona Murphy

School of Business

Branding Abortion: The Influence of Consuming Visual Imagery on Irish Citizens' Abortion Referendum Experience

Abstract: This research examines the role branding plays in the mobilising of contentious politics. Through the lens of the Irish Abortion referendum in 2018, we analyse how branding and visual imagery galvanized the abortion debate on the Yes side and created alliances and solidarity through public displays of sentiment towards the issue. As such, we discuss the salient role of branding, visual imagery and merchandise in provoking contentious political movements and seek to understand how affective communities are created through the opening up of spaces of horizontal activism, organisation and solidarity. Our particular case study of contentious politics in Ireland opens up a broader space to discuss how the tools of branding communication can serve to amplify the voices of movements that demand particular kinds of social change, often in contexts with significant resistance to doing so.

Dr. Michelle Kelly

School of Business (Psychology)



The Impact of Lifestyle Factors on Older Adults' Brain Health

Abstract: As a result of the ageing population, there has been a substantial increase in the prevalence of age-related cognitive decline. Aging researchers are therefore emphasizing the importance of exploring interventions to remediate levels of decline. Evidence suggests that modifiable lifestyle factors may improve cognitive functioning and reduce cognitive decline in older adults, thus providing a potential pathway for effective interventions.

The aim of this research was to review evidence on the effects of lifestyle factors including; cognitive stimulation, exercise, social engagement, improved hearing and Mediterranean-type diet, on the cognitive function of healthy older adults. Each factor was reviewed separately across six systematic reviews and meta-analyses. We searched PubMed, the Cochrane Library, ClinicalTrials.gov, EMBASE and SCOPUS to identify randomised controlled trials and cohort studies that examined the effects of modifiable lifestyle factors on the cognitive function of older adults (50+) without known cognitive impairment.

Data from 158 studies were reviewed in total. Each lifestyle factor showed an association with cognitive functioning. Overall, we conclude that maintaining a healthy and engaged lifestyle is very important for brain health.

More details can be found here:

https://www.researchgate.net/profile/Michelle_Kelly8

Dr. Nicole Gross

School of Business



Overcoming Resistance: Business Model Innovation Processes in Tech SME

Abstract: Many attempts of business model innovation fail. This study examines business-model innovation in small technology businesses, exploring the events which lead the firms to believe that they need to change their core model, but more importantly we extrapolate the factors which help and hinder the re-configuration process. We draw on four case studies in the European connected health sector to show that the firm's interpretation of market failure, broken relationships and feedback from customers alerts them to the need to innovate. Our findings also show that whilst the tech organizations re-configure their business models reactively as well as incrementally, an active and significant reconfiguration is hard to find. Factors, such as imprinted core beliefs, a strong sense of customer intimacy, an internal referral network as well as a lack of strategic vision tend to hold the business model in stasis. Other factors, such as complex technology, pressing market needs, competitive pressures and strategic planning, tend to propel the firms towards re-configuration. However, it seems to be the firm's collaborative capability - including the ability to share risk/reward and the alignment of their own with the partner's business model - which acts as central factor overcome the factors the limiting factors. The central conceptual contribution of our study lies in mapping the internal process which underpins business model innovation, focussing on factors which enable but also hinder the critical stage of a small tech organization's development as it seeks to bridge the space between initial entrepreneurial insights and organizational growth. The study has practical implications for managers navigating BMI processes and for investors who need to assess the prospects of these processes.

Dr. Sachin Sharma

School of Computing



Automatic Bootstrapping of OpenFlow in Wireless Ad hoc Networks

Abstract: A Mobile Wireless Ad hoc NETwork (MANET) is a decentralized wireless network in which mobile wireless nodes either directly communicate with each other or communicate via other wireless nodes in the network. In addition, OpenFlow has disruptive potential in designing a flexible programmable network which can foster innovation, reduce complexity and deliver right economics. In recent years, there are significant interests from research communities to deploy OpenFlow in MANETs. This talk discusses our proposed method on automatic bootstrapping of OpenFlow in MANETs. The proposed configuration method is tested in an emulated MANET created on the Fed4FIRE testbed. Results show the effectiveness of the method in configuring OpenFlow in wireless mobile ad hoc networks.

More details can be found here:

S. Sharma and M. Nekovee, "Demo Abstract: A demonstration of automatic configuration of OpenFlow in wireless ad hoc networks," in Proc. IEEE INFOCOM 2019

https://www.researchgate.net/publication/332230735_Demo_Abstract_A_demonstration_of_automati c_configuration_of_OpenFlow_in_wireless_ad_hoc_networks

Dr. Ade Fajeminis

School of Computing



Analytics-Based Decomposition of a Class of Bilevel Problems

Abstract: This research proposes a new class of multi-follower bilevel problems. In this class the followers may be nonlinear, do not share constraints or variables, and are at most weakly constrained. This allows the leader variables to be partitioned among the followers. The new class is formalised and compared with existing problems in the literature. We show that approaches currently in use for solving multi-follower problems are unsuitable for this class. Evolutionary algorithms can be used, but these are computationally intensive and do not scale up well. Instead we propose an analytics based decomposition approach. Some example problems are solved using our approach and two evolutionary algorithms, and the decomposition approach produces much better and faster results as the problem size increases.

More details can be found here:

A. O. Fajemisin, L. Climent, and S. D. Prestwich: "Analytics-Based Decomposition of a Class of Bilevel Problems". In Proceedings of the 6th World Congress on Global Optimization (WCGO 2019), 2019. https://wcgo2019.event.univ-lorraine.fr/

Speakers' Presentations