ESE PGR Conference 2023

Conference programme

Friday 23rd June, 2023

University of Exeter,
Streatham campus

Washington Singer Building

Conference Agenda

09:00 - 09:30	Registration (all)
09:30 - 09:45	Conference opening and welcome note by chairs Ionna Trofimova Elliot and Mohamed Adel Abdelrazek (all)
Following the welcome, the conference will split into two separate sessions	
SESSION A1 - ROOM 234	
09:45 - 10:00	Guylaine Nouwoue - On the compliance effects of a many-to-many communication intervention under weak capacity
10:00 - 10:15	Loretto Leavy - The complex environments in which boards operate, develop and perform; conditions of effectiveness, interventions by the Chair and Nomination Committee, and board-level outcomes
10:15 - 10:30	Ida Bagus Mandhara Brasika - Recent carbon emission trends of land use change in equatorial Asia
10:30 - 10:45	Alice Florence Wells - Identifying the climate impacts across two different stratospheric aerosol injection strategies
10:45 - 11:00	Rebecca Hall - Reducing water and energy consumption associated with residential hot water
11:00 - 11:15	Lamia Mohammed H Alyami - Kalman filtering and Bayesian inference in enhancing pandemic state estimation
SESSION B1 - ROOM 219	
09:45 - 10:00	Han Wu - Is deep learning secure for robots?
10:00 - 10:15	Yujiao Qiao - Simulation of supersonic flow in gas circuit breakers
10:15 - 10:30	Amer Asiri - A framework to manage the transition to cloud manufacturing
10:30 - 10:45	Huda Mahdi - Mathematical modelling of brain activity
10:45 - 11:00	Anmar Ibrahim Fadhil Al-Adly - Physics-informed neural networks (PINNs) for structural health monitoring

11:00 - 11:15	Ionna Trofimova Elliot - Rethinking strategic management research: the scientific paradigm of an electricity system
11:15 - 11:30	**Coffee break (all)**
SESSION A2 - ROOM 234	
11:30 - 11:45	Faten Ayyash - Improving equity among consumers in intermittent water distribution systems
11:45 - 12:00	Mustafa Alfartoos - High efficiency, eco-friendly and inexpensive thermoelectric glazing for energy efficient buildings
12:00 - 12:15	Jamie Plaatjes - Space for political representation in circular economy business transitions: An integrative review of CSR and CE
12:15 - 12:30	Wang Zepeng - Mechanical responses of a vibro-impact capsule moving in a large intestine with complex structure via multi-body dynamics
SESSION B2 - ROOM 219	
11:30 - 12:30	**Telling the ESE research narrative** - A discussion lead by Dr. Rebecca Hooker *'ESE students - Q&A about their research journey to and from the University of Exeter'* With a professional doctorate in teaching English to speakers of other languages acquired from the University of Exeter in 2011, I have been teaching writing and research skills to international PGR students from across the whole university ever since – 450 a year! My research interests and publications include papers on students' lived experience, the benefits of speaking other languages, the place of 'play' in learning, and language learning provision for immigrants. However, my key passion is enabling and encouraging international students to develop the academic skills and confidence to articulate their research story and disseminate their research
12:30 - 13:30	**Lunch (all)**
SESSION A3 - ROOM 234	

13:30 - 13:45	Qian Yu - Ball-milling for the green synthesis of metal-organic frameworks: A design-of-experiment approach
13:45 - 14:00	Ramiz Beig Zali - Pipe condition monitoring with dynamic data using advanced AI/ ML tools
14:00 - 14:15	Shan Guansong - A piezoelectric vibration energy harvester for railway track applications
14:15 - 14:30	Aseel Ali - Heuristic augmented nature-inspired algorithms
14:30 - 14:45	Sophie Whistler - Satellite wave data for a surrogate wave model for the marine operations of offshore wind farms
SESSION B3 - ROOM 219	
13:30 - 14:30	**Tips for writing and reviewing papers** - by Prof. Markus Fitza, (The Frankfurt School of Finance and Management. Distinguished Research Professor, The University of Exeter)
14:30 - 16:30	*Panel discussions* - ***Energy and the Environment***
14:30 - 15:30	Panel discussion 1: **Rethinking methodologies in the technological era of electricity** Technological development being the main driver of long-term economic growth needs to be understood in order to harvest economic value from it. Recent research provides substantial evidence that the potential for technological complexity and diffusion is that which promises the highest value potential, both for countries and firms (Hotte, 2023; McNerney, 2021; Inoua, 2023). This argument is comical from the perspective of the methods being used - methods which do not capture the technological potential to diffuse, methods restricted to the quantization of discrete values (Jaffe & De Rassenfosse, 2019; Fontana et al., 2013; Kogan et al., 2017) - a prototype of which lies within quantum mechanics, a theory that virtually all contemporary technologies rely upon (Mermin, 2018). We aim to answer the following questions: *How does the business scholarship need to look to reflect a movement of economic value potential from matter (resource) to a*

	system of 'matter-and-motion'? *What methodologies should we use to depict realities of an economic change driven by non-linear technological diffusion with an electron at its heart?* *Where shall we look for answers: quantum mechanics, theoretical mathematics, applied statistics, etc. and what business scholars can learn from them?* *Are we distancing theory from business realities with methods which do not capture a systematic complexity of technological change intertwined by electricity?*
15:30 - 16:30	Panel discussion 2: **The importance and intrigue of the systems: natural, technological and geographical** *The first multidisciplinary discussion uniting young scholars from various disciplines under the ESE umbrella.* We have researchers from physics, engineering, IT and the business school attending this discussion. We will unite our expertise during an important discussion to facilitate the green transition agenda on a practical level - by supporting boards with the material necessary to make an informed managerial decision to redirect their business strategy from profit creation and generation practices in the world of oil, to profit creation and generation practices in the world of electricity. Thus, part of the discussion will be around 1) technological evolution within an electricity system, both generation (renewables) and distribution (mobility, digitalisation, electrified heating) and 2) commercial lessons being learned from systems in natural sciences. Panel contributors: Ionna Trofimova Elliot (chair), Major Ash Wilson RE, Emmanuel Meyer, Aseel Ali, Nayani Ghoshal and Anmar Ibrahim Fadhil Al-Adly.
16:30 - 16:45	Closing remarks: Professor. Kim Peters (all)
16:45 - 17:45	**Cheese and wine (all) and time to view poster presentations in Room 220. We will also be announcing the winners of our prize draw**
18:00 onwards	**Dinner at the Mercure Exeter (open to all PGRs who registered for an evening meal prior to the conference)**

Posters

Alongside the talks, there will also be poster presentations on display throughout the conference in Room 220. The authors will spend some time beside their work to answer questions. Please do go along at any time over the course of the day and take a look.

Panel biographies:

Ionna Trofimova Elliot, Director: Borderless Renewables. Postgraduate researcher, University of Exeter

I have considerable experience in the renewable energy industry. My personal motivation in pursuing this research project is both strategic and practical in nature. First, I hope to assist academic research by narrowing a research practice gap in strategy, second, I hope to assist the green transition agenda on a practical level by supporting boards with the material necessary to make an informed managerial decision to redirect their business strategy from VC&C practices in the world of oil to VC&C practices in the world of electricity, which is critical at a time when renewable electricity production is replacing fossil fuels.

Major Ash Wilson RE, Future Energy Provision Lead, Ministry of Defence. Postgraduate researcher, University of Exeter

Having commissioned into the Corps of Royal Engineers in 2008, her 15 years military service has seen her stationed throughout the UK as well as completing several tours of Afghanistan and the Falkland Islands. She is a Defence Procurement Specialist who has worked with all the Defence Commands and Delivery teams. In 2021, she won a full time PhD sponsorship to enable her research focussed on overcoming barriers to renewable energy generation and storage on the Defence Estate. Her main focus is assessment of the institutional barriers presented by Central Government institutions to enabling an energy transition to renewables. A key area of the research focuses on enabling different models for Private Finance to support the transition which includes work with Cabinet Office and Her Majesty's Treasury, as well as support to other central government departments whose own energy aims align. She also leads the MoDs Future Energy Provision Program, whose funded work streams seek to apply the outcomes of the research in real time.

Emmanuel Meyer, Managing Director, Power Tree. Board member - various

Aseel Ali. Postgraduate researcher, University of Exeter

I'm a PhD student specialising in Artificial Intelligence. My research now revolves around applying ACO to solve the Bin Packing Problem (BPP). The BPP is a complex, NP-hard problem in combinatorial optimisation that involves efficiently packing objects of different volumes into a finite number of bins or containers in a way that minimises the number of bins used. This BPP finds significant applications in numerous areas such as: logistics and transportation (for container and freight loading), storage and warehousing, cloud computing (for efficient distribution of virtual machines among physical servers), the cutting stock problem in manufacturing, and even data compression. By solving the BPP effectively, we can lead to cost savings, improved efficiency, and better resource utilisation across these domains. By aligning the natural behaviour of ants in seeking the most efficient routes to food sources with commercial applications such as BPP, my research aims to provide innovative and effective solutions to complex problems. The overarching goal is to translate the lessons learnt from natural systems, such as the collaborative and decentralised decision-making of ants, into scalable, robust solutions for commercial and societal applications

Nayani Ghoshal. Postgraduate researcher, University of Exeter.

I am a first year EPSRC funded postgraduate research student within the Environment and Sustainability Research Group based at the Department of Human Geography. In my research titled "Net Zero Energy Transition in Rural Landscapes: A Study into the Interface between Technology, Livelihood and Climate", I aim to investigate the net-zero energy transition and its impact on the everyday life and livelihood of the people who are directly and indirectly impacted both positively and negatively.

Anmar Ibrahim Fadhil Al-Adly. Postgraduate researcher, University of Exeter.

I study physics-informed neural networks (PINNs), which are a recent development and incorporate physics-based knowledge into neural networks (NNs) in the form of constraints (e.g., displacement, force boundary conditions, governing equation, etc.) or loss function, and offer promise for generating digital twins of physical systems and processes.

Prize draw

2 x passes (worth £595) to the 18th annual edition of the UK Sustainable Infrastructure Summit on the 6th July in Central London.

Conference committee members:

Ionna Trofimova Elliot, Israa Kadhim, Xiaoyan Hu, Huan Zhu, Mohamed Adel Abdelrazek, Debs Allbrook, Mustafa Albalushi, Tamuno-Omie Gogo & Said Al Kindy. With thanks to Sarmishtha Ghosh.

A big thank you to everyone that has contributed and attended today - we hope you had a very interesting and valuable day at the ESE postgraduate conference, 2023.