MARIE SKŁODOWSKA-CURIE POSTDOCTORAL FELLOWSHIPS 2025

EXPRESSION OF INTEREST FOR HOSTING MARIE CURIE FELLOWS

HOST INSTITUTION

Nova Information Management School (NOVA IMS)

RESEARCH GROUP AND URL

Information Management Research Center (MagIC) - https://magic.novaims.unl.pt/en/

Nova Blockchain Lab - https://www.novaims.unl.pt/en/nova-ims/labs/nova-blockchain-lab/

SUPERVISOR (NAME AND E-MAIL)

Prof. Ian J. Scott – iscott@novaims.unl.pt

SHORT CV OF THE SUPERVISOR

Prof. Ian Scott specializes in data science and blockchain technology, with a particular emphasis on sustainable energy systems and smart cities. He currently serves as Research Director at the NOVA Blockchain Lab, NOVA Information Management School (NOVA IMS), where he drives interdisciplinary research aimed at leveraging emerging technologies to address global challenges including climate change, energy accessibility, and sustainability.

Prof. Scott transitioned from industry to academia following extensive international experience in energy policy development and market modeling across Europe, Asia, and the US. His work emphasizes advanced methodologies for managing uncertainty in long-term policy decisions, significantly enhancing energy modeling frameworks. His PhD, awarded summa cum laude from the MIT Portugal Program in 2020 combined approaches from economics, operations research, and data science to decision making under uncertainty in energy markets.

At NOVA Blockchain Lab, Prof. Scott leads groundbreaking projects such as COMMUNITAS, developing decentralized blockchain platforms for peer-to-peer energy trading across Europe, and Bee2WasteCrypto, pioneering hybrid blockchain solutions for incentivizing sustainable waste management practices. His work has demonstrated how decentralized blockchain systems can effectively drive behavioral changes and promote sustainable community practices.

5 SELECTED PUBLICATIONS

- Huang, C. T., & Scott, I. J. (2024). Peer-to-peer multi-period energy market with flexible scheduling on a scalable and cost-effective blockchain. *Applied Energy*, *367*, 123331.
- Scott, I. J., de Castro Neto, M., & Pinheiro, F. L. (2023). Bringing trust and transparency to the opaque world of waste management with blockchain: A Polkadot parathread application. *Computers & industrial engineering*, *182*, 109347.
- Scott, I. J., Carvalho, P. M., Botterud, A., & Silva, C. A. (2021). Long-term uncertainties in generation expansion planning: Implications for electricity market modelling and policy. *Energy*, *227*, 120371.
- Affonso, T. K., de Almeida, A. F., & Scott, I. (2023). Mental accounting for all? Assessing the effect of mental accounting on cryptocurrency usage.
- Scott, I. J., Carvalho, P. M., Botterud, A., & Silva, C. A. (2021). Long-term uncertainties in generation expansion planning: Implications for electricity market modelling and policy. *Energy*, *227*, 120371.

PROJECT TITLE AND SHORT DESCRIPTION

Data Science and Decentralized Blockchain Systems: Shaping Sustainable Future Societies
The NOVA Blockchain Lab is a dynamic hub for interdisciplinary research on the role of decentralised systems in future societies. We are dedicated to exploring how decentralized systems can address pressing societal and environmental challenges, from smart cities and energy systems to circular economies and financial innovation. We have open opportunities to conduct research in the following lines:

- **Blockchain System Development -** Designing, building, and rigorously testing cutting-edge blockchain systems to deliver secure, scalable, and sustainable decentralized applications. Our projects, such as COMMUNITAS and Bee2WasteCrypto, demonstrate real-world solutions that transform industries and communities.
- **Machine Learning for On-Chain Behaviour Analysis –** Blockchains provide unique and comprehensive datasets for understanding human behaviour and interactions with systems. We apply machine learning (ML), agent based modelling (ABM), and network science techniques to analyse interactions within decentralized financial (DeFi) protocols and other blockchain-based platforms. This research uncovers insights into the systemic dynamics of new world of Web 3.0 online interactions.
- **Consumer and Citizen Technology Adoption** Exploring how individuals and communities adopt and respond to blockchain technologies, cryptocurrencies, and decentralized systems. Our research investigates the behavioural, economic, and social factors influencing user acceptance, aiming to facilitate broader adoption and optimize system designs for maximum societal benefit.

SCIENTIFIC AREA WHERE THE PROJECT FITS BEST*

Information Science and Engineering (ENG)

*Scientific Area where the project fits best – Please select/indicate the scientific area according to the panel evaluation areas: Chemistry (CHE) • Social Sciences and Humanities (SOC) • Economic Sciences (ECO) • Information Science and Engineering (ENG) • Environment and Geosciences (ENV) • Life Sciences (LIF) • Mathematics (MAT) • Physics (PHY)