Jonathan Francis Roscoe

PhD, MEng, CEng, MBCS

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Senior data scientist, specialising in cyber defence. I am experienced in the in the application of machine learning to cyber threat intelligence, disinformation and other emerging cyber security paradigms.

I deliver a fresh perspective and find creative solutions to challenging technical problems. I have a breadth of technical experience and knowledge, driven by an enthusiasm for breaking new ground.

I hold the positions of Persistent Threat Defence lead for the IEEE UK & Ireland Cyber Security chapter and Expert Fellow for the Security, Privacy and Trust Engagement network (SPRITE+).

PROFESSIONAL EXPERIENCE

2022 - present **Chief Researcher, Autonomous Detection and Response**, BT plc.

As a senior technical leader, I am responsible for managing teams of researchers delivering innovation in cyber defence for BT and its customers. Working across the business to shape future work and identify downstream opportunities. I deliver research over short, medium, and long-term horizons and I'm able to respond rapidly to business interests to exploit our research for the benefit of BT.

Driving BT's reputation as an innovation leader, with over 30 patent filings I am able to identify novel opportunities for IPR development and exploitation. As an author of internal lab reports and peer-reviewed publications, I am confident in technical writing and providing thought leadership to a variety of audiences through CxO engagements.

Key research topics are: anomaly detection in cyber threat intelligence, automated threat response and visual analytics.

2021 - present **Technical and Scientific Advisor**, Ministry of Defence

As a recognised expert in the areas of cyber security, machine learning and disinformation, I provide technical knowledge and insight to the Defence Science Expert Committee (DSEC), the MOD's main source of independent advice on non-nuclear science and technology issues.

2018 - 2022 **Emerging Security Research Manager**, BT plc.

I led a team of researchers delivering machine learning innovation to internal, industry and government stakeholders. My research explored disinformation in the role of 5G related arson, knowledge extraction from open-source threat reports and epidemiological modelling of malware in autonomous vehicle networks. In addition to technical delivery and project management, supervised researchers colleagues and doctoral candidates, managing calls for funding and contributing to industry working groups.

2016 - 2018 **Senior Researcher**, BT plc.

As part of the visual analytics team I developed state-of-the-art machine learning capabilities for a Hadoop based cyber platform. I directly supported delivery to government and enterprise customers, gaining hands-on experience delivering new technology within particularly stringent security constraints.

ACADEMIC HISTORY

2011 - 2018   **Computer Science PhD**, Aberystwyth University

Funded by the Prostate Cancer Charity and Hoover Foundation, the title of my thesis was *"Automatic Diagnosis of Prostate Cancer with Statistical Models"*. My research looked at the modelling of disease using a prior cohort along with the use of structural features in supervised machine learning for detection of prostate cancer in MRI.

2006 - 2011   **Software Engineering MEng**, Aberystwyth University

A BCS-accredited degree with an emphasis on enterprise engineering, I undertook a thesis titled *"Bilateral Comparison of Breast Tissue Density by Using Grey-Level Statistics in 2D Mammograms to Identify Regions of Abnormality"* and graduated with First class honours. As a committee member of the BCS Mid-Wales branch I established a variety of events to encourage innovation, knowledge sharing and skill development.

AWARDS

- 2020 E&T (IET) Excellence In Cyber Security
- 2020 IEEE ISI Best Presentation Award
- 2018 ITP Innovator of the Year Award
- 2018 TEIS Information Security and the Security Excellence awards

SELECTED PUBLICATIONS

- J. F. Roscoe, "Cryptocurrency Analytics", *The Journal of the Royal Signals Institution, Volume 40 Issue 2, Royal Signals Institution, 2021*
- T. Andrade, M. Smith-Creasey and J. F. Roscoe, "Discerning User Activity in Extended Reality Through Side-Channel Accelerometer Observations", *18th International Conference on Intelligence and Security Informatics (ISI), 2020*
- J. F. Roscoe and M. Smith-Creasey, "Unconventional Mechanisms for Biometric Data Acquisition via Side-Channels", *SIN '20: 13th International Conference on Security of Information and Networks*
- J. F. Roscoe, O. Baxandall and R. Hercock, "Simulation of Malware Propagation and Effects in Connected and Autonomous Vehicles", *2020 International Conference on Computing, Electronics & Communications Engineering*

SELECTED PATENTS

- "Graph-based condition identification", GB2113473.9, 2021
- "Improvements to digital transactions using quantum technology", PCT/EP2021/057298, 2020
- "Data interception protection", PCT/EP2021/054386, 2020
- "Anomalous behaviour detection in a distributed transactional database", PCT/EP2019/085913, 2019

PERSONAL INTERESTS

Passionate about technology and self-taught from a young age, I am a versatile programmer and engage in personal projects to develop my skill set such as amateur radio, prop making and flying freestyle quadcopters. I also enjoy tabletop role playing games and video games.