# Dr. Nilufer Tuptuk
## Lecturer/Assistant Professor
Department of Security and Crime Science, University College London, UK

**RESEARCH INTERESTS:** Cyber-Physical Systems Security, Internet of Things, Applied Machine Learning, AI for Security, Evolutionary Computation, and Cybercrime.

## RECENT EMPLOYMENT HISTORY
**June 2021 – present: Lecturer/Assistant Professor,** Department of Security and Crime Science, University College London, UK.

**September 2019 – May 2021: Postdoctoral Research Fellow,** Department of Computer Science, University College London, UK. Worked on projects related to industrial control systems and cyber-physical systems security.

## EDUCATION AND QUALIFICATIONS
**2019 PhD in Security Science on Security of Industrial Control Systems,** University College London, UK.
**2014 MReS in Security Science (Distinction)**, Security Science Doctoral Training Centre, Department of Security and Crime Science, University College London, UK.
**2003 MSc in Advanced Computing**, Department of Computing, Imperial College London, UK.
**2002 BSc (Hons) Computer Science (First Class Hons**.), Queen Mary, University Of London, UK.

## RECENT GRANTS AND FUNDING

**2023 – 2025, Principal Investigator, "**Identifying Data Sources and Developing AI-based Solutions To Analyse Online Fraud" (The Dawes Trust, £350,000).

**2022 – 2023, Principal-Investigator**, "Crime enabled by connected and autonomous vehicles"(The Dawes Trust, £25,843).

**2021- 2023, Co-Investigator,** "Processes for Securing for Water Resource Management Systems" (PETRAS/EPSRC £204,000)

**2020- 2023, Researcher Co-Investigator, "**Early Anomaly Detection for Securing IoT in Industrial Automation project" (The PETRAS/EPSRC £202,000)

**2021-2022, Co-Investigator,** "Timing Anomalies as an Indicator of Mal-Intervention in Automation Systems (Innovate UK/CyberASAP programme, - Phase 1: £17,553.00 and Phase 2:  £66,000)

## SELECTED TEACHING AND SUPERVISION

**Teaching Duties**

**2021- Present:** Applied Data Science (Postgraduate Module), Data Science for Crime Scientists (Undergraduate Module), Department of Security and Crime Science, University College London.

**PhD Supervision**

**2021- Present:** Currently supervising 4 PhD students focussing on Security of Digital Twins, Cybercrime and IoT, and Adversarial Machine Learning on Connected and Autonomous Vehicles.

**Postgraduate/Undergraduate Supervision**

**2020- Present:** Supervised over 10 students on topics related to cybersecurity from UCL MSc in Machine Learning and Computational Statistics, MSc in Countering Organised Crime and Terrorism, MSC in Crime Science and BSc in Security and Crime Science (UCL).

## SELECTED PUBLICATIONS IN CYBERSECURITY

U. D Ani, J. Watson, **N. Tuptuk,** S. Hailes, A. Jawar, 'Socio-Technical Security Modelling: Analysis of State-of-the-Art, Application, and Maturity in Critical Industrial Infrastructure Environments/Domains', arXiv, 2023.

S. Gopalakrishnan, **N.Tuptuk,** S. Hailes, 'Machine Learning-based Intrusion Detection Systems , Deployment Guidelines for Industry', White Paper, PETRAS National Centre of Excellent in IoT Systems Cybersecurity, 2023.

U. D Ani, J. Watson, **N. Tuptuk,** S. Hailes, M. Carr, C. Maple, 'Improving the Security of Critical National Infrastructure using Modelling and Simulation', Policy Brief, 2022.

**N. Tuptuk,** P. Hazell, J. Watson, and S. Hailes, 'A Systematic Review of the State of Cyber-Security in Water Systems', Water 13, no. 1: 81, 2021.

**N. Tuptuk** and S. Hailes, 'Identifying Vulnerabilities of Industrial Control Systems using Evolutionary Multiobjective Optimisation', Preprint available on arXiv. In publication for Computer and Security Journal, (2023)

**N. Tuptuk,** A. Chalanga, and S. Hailes 'A Co-simulation Environment for Security of Smart Buildings', In Proceedings of the Living in the Internet of Things: Realising the Socioeconomic Benefits of an Interconnected World, 2019.

**N. Tuptuk,** 'Identifying and Detecting Attacks in Industrial Control Systems'. PhD Dissertation. University College London, 2019.

**N. Tuptuk** and S. Hailes, 'Crime in the age of the Internet of Things', in Routledge Handbook of Crime Science, Editors: Richard Wortley, Aiden Sidebottom, Gloria Laycock, Nick Tilley, 2018.

**N. Tuptuk** and S. Hailes 'Security of Smart Manufacturing Systems', Journal of Manufacturing Systems, 2018.

K. Mrugala, **N. Tuptuk**, and S. Hailes, 'Evolving Attackers against Wireless Sensor Networks using Genetic Programming' in IET Wireless Sensor Systems, 2017.

K. Mrugala, **N. Tuptuk**, and S. Hailes, 'Evolving Attackers against Wireless Sensor Networks' in Proceedings of the 2016 on Genetic and Evolutionary Computation Conference Companion (GECCO '16 Companion), Tobias Friedrich (Ed.). ACM.

**N. Tuptuk** and S. Hailes, 'The Cyberattack on Ukraine's Power Grid Is a Warning of What's to Come." The Conversation, 13 Jan. 2016.

**N. Tuptuk** and S. Hailes, 'Security of future Industrial and Manufacturing Systems', in AMRC Factory 2050 Conference, Sheffield, 2015.

**N. Tuptuk** and S. Hailes, 'Covert channel attacks in pervasive Computing', in IEEE International Conference on Pervasive Computing and Communications (PerCom), St. Louis, MO, 2015.


## PROFESSIONAL SERVICES

Reviewer for the following journals: Computer & Security, Crime Science An Interdisciplinary Journal, Transactions on Emerging Telecommunications Technologies, The Computer Standards and Interfaces Journal, Electronics Letters, Institution of Engineering and Technology, and Water.