

# Emmanouil (Manos) Panaousis

ASSOCIATE PROFESSOR OF COMPUTER SCIENCE, UNIVERSITY OF GREENWICH

HEAD OF CYBER RISK LAB, INTERNET OF THINGS AND SECURITY CENTRE

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## Experience

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### University of Greenwich

Greenwich Maritime, London, UK

ASSOCIATE PROFESSOR OF COMPUTER SCIENCE

September 2019 - Present

- Head of the Cyber Risk Lab.
- Cyber Risk and Enterprise Lead, Internet of Things and Security Centre.
- Principal investigator (P.I.) for Greenwich Innovation Fund "SecurityBudget", P.I. NCSC/RISCS MERIT, co.I. EPSRC CHAI, P.I. H2020 CUREX, P.I. H2020 SECONDO.
- Managing 2 postdoc researchers, 6 PhD students, 3 software developers, 2 business and market analysts.
- Supervising 10 BSc projects/year and 5 MSc project/year.
- Module leader "Information Security" (level 5).

### University of Surrey

Guildford, Surrey, UK

LECTURER/SENIOR LECTURER IN SECURE SYSTEMS

September 2017 - August 2019

- Principal investigator (P.I.) NCSC "Dynamic Protection Framework Against Advanced Persistent Threats in 5G Networks", P.I. H2020 CUREX, P.I. H2020 SECONDO, P.I. H2020 SPEAR.
- Managing 2 postdoc researchers, 2 PhD students, and 2 software developers; supervising 8 BSc projects/year and 2 MSc projects/year.
- Module leader "Information Security for Business and Government" (MSc) & "Web and Database Systems" (level 4).
- Member of the advisory board of the Surrey and Sussex Cyber Crime Unit.

### University of Brighton

East Sussex, UK

LECTURER/SENIOR LECTURER IN CYBER SECURITY AND PRIVACY

Oct 2014 - Aug 2017

- co.I. H2020 SESAME, co.I. H2020 VISION.
- Co-managing 2 postdoc researchers and 2 PhD students.
- Co-founder MSc Cyber Security, Module leader of 6 modules (year1-year3) on Information Security, Maths, and Computer Networking.
- General Chair of the 6th Conference on Decision and Game Theory for Security (GameSec 2015), TPC Chair GameSec 2016.

### Imperial College London

South Kensington, London, UK

VISITING RESEARCH FELLOW

February 2013 - June 2016

- Research and development on cyber security economics.

### Queen Mary University of London

Mile End, London, UK

POSTDOCTORAL RESEARCHER IN COMPUTER SCIENCE

February 2013 - September 2014

- Funded by the EPSRC project "Games and Abstraction: The Science of Cyber Security".
- Designed and developed novel cyber investments models, methodologies, and tools.

### Ubitech Technologies Ltd

Surrey Research Park, Guildford, UK

HEAD OF CYBER SECURITY RESEARCH

June 2011 - December 2012

- Principal security architect of the UBiNet distributed mobile communications software.
- Leading preparation of FP7 proposals.

### Kingston University

Kingston Upon-Thames, Surrey, UK

RESEARCH ASSOCIATE

February 2009 - January 2013

- Leading cyber security research in the FP7 PEACE project.
- Designed and developed a novel mobile communications security architecture, including secure peer-to-peer overlays.

## Projects

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### SecurityBudget: Cyber Security Budget Spending Companion for SMEs

University of Greenwich

PRINCIPAL INVESTIGATOR

January 2020 - July 2021

- Funded by Greenwich Research and Enterprise for Prototype development (Innovation Fund).
- Project Cost: £12,500.
- Designed and developed software to support SMEs on how to protect their systems subject to a limited available budget.

## **MERIT: A fraMEwoRk to Model and Incentivise Cyber Security Investment Decisions**

*University of Greenwich*

PRINCIPAL INVESTIGATOR, RESEARCH FELLOW RISCS

*April 2020 - March 2021*

- Funded by the National Cyber Security Centre (NCSC) in collaboration with the Research Institute in Sociotechnical Cyber Security (RISCS).
- Project Cost: £60,000.
- Designed and developed software to compute optimal cyber controls for SMEs against adversarial strategies.

## **CHAI: Cyber Hygiene in AI-enabled Domestic Life**

*University of Greenwich*

CO-INVESTIGATOR

*December 2020 - Nov 2023*

- Funded by the EPSRC, call: Security for all in an AI enabled society.
- Project Cost: 2.4M GBP among 4 partners (Univ. of Greenwich, UCL, Queen Mary Univ. of London, Univ. of Bristol, Univ. of Reading).
- Winning grant: £453,000.
- Designed and developed software for deriving cyber hygiene controls against AI threats in domestic environments.

## **DETER: Dynamic Protection Framework Against Advanced Persistent Threats in 5G Networks**

*University of Surrey*

PRINCIPAL INVESTIGATOR

*May 2019 - Apr 2022*

- Funded by the National Cyber Security Centre (NCSC), PhD studentship, 2019-2022.
- Winning grant: £114,402.
- Designed and developed novel cyber risk managements models for 5G networks.

## **CUREX: seCURE and pRivate hEalth data eXchange**

*Univ. of Greenwich/Univ. of Surrey*

PRINCIPAL INVESTIGATOR

*December 2018 - April 2022*

- Funded by the European Commission (H2020, Research and Innovation Action).
- Project Cost: €4,987,825 among 16 partners (industry (7), academia (5), healthcare organisations (3), law firm (1)).
- Winning grant: €350,575.
- Designed and developed software for advising healthcare organisations with the optimisation of cyber controls subject to a limited budget.

## **SECONDO: a Security ECONomics service platform for smart security investments and cyber insurance pricing in the beyond 2020 netwOrking era**

*Univ. of Greenwich/Univ. of Surrey*

PRINCIPAL INVESTIGATOR

*January 2019 - December 2022*

- Funded by the European Commission (H2020, Marie Curie RISE).
- Project Cost: €1,600,800 among 7 partners (industry (4), academia (4)).
- Winning grant: €255,000.
- Designed and developed cyber risk management software for smart homes / domestic environments.

## **SPEAR: Secure and PrivatE smArt gRid**

*University of Surrey*

PRINCIPAL INVESTIGATOR

*May 2018 - April 2021*

- Funded by the European Commission (H2020, Research and Innovation Action).
- Project Cost: €2,965,597 among 17 partners (academia (5), research institutes (3), industrial (6), energy industries (3)).
- Winning grant: €283,760.

## **SESAME: Small cELLS coordinAtion for Multi-tenancy and Edge services**

*University of Brighton*

CO-INVESTIGATOR

*July 2015 - January 2018*

- Funded by the European Commission (H2020, Research and Innovation Action).
- Project Cost: €7,488,434.
- Winning grant: €331,639.

## **VISION: Visual Privacy Management in User Centric Open Environments**

*University of Brighton*

CO-INVESTIGATOR

*July 2015 - July 2017*

- Funded by the European Commission (H2020, Innovation Action).
- Project Cost: €2,748,913.
- Winning grant: €392,000.

## **GAME-ABLING: Platform of Games for People with Cerebral Palsy to Enhance Living Adjustment**

*Ubitech Ltd*

PRINCIPAL INVESTIGATOR

*December 2012 - November 2014*

- Funded by the European Commission (FP7).
- Project Cost: €1,507,767.
- Winning grant: €205,083.

## **Games and Abstraction: The Science of Cyber Security**

*Queen Mary University of London*

POSTDOCTORAL RESEARCHER

*February 2013 - August 2014*

- Academic Research Institute in The Science of Cyber Security, funded by EPSRC, GCHQ and BIS, Topic: Fundamentals of Computing.
- Project Cost: €1,507,767.

- Funded by the European Commission (FP7, Collaborative project).
- Project Cost: €3,777,900.

## Mentorship and Supervision

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### Researchers

- 2019-Present, Caxton Okoh, Cyber Risk Management for Healthcare Organisations (CUREX).
- 2018-2019, Nadia Boumkheld, Game Theoretic Approaches to Cyber Deception (SPEAR).
- 2018-2019, Muhammad Usman, Intrusion Detection for Smart Grid Infrastructures (SPEAR). Moved to senior lecturer position at Univ. of South Wales.
- 2015-16, Babangida Albaba, 5G Security Requirements Analysis (SESAME). Moved to rector position at the Katsina State Institute of Technology and Management.
- 2015-16, Vasileios Vasilakis, 5G Security Requirements Analysis (SESAME). Moved to lecturer position at the Univ. of West London and then Univ. of York.

### Software Developers

- 2020-Present, Claire Stretch, Development of a cyber investment dashboard for SMEs and cyber risk auditors (CUREX, MERIT).
- 2019-Present, Kokulan Natkunam, Scientific Coding for a novel Cyber Risk Mitigation Framework (CUREX, MERIT).
- 2018-19, Adrian Coutsoftides, Game Theoretic Framework for Optimisation of Cyber Controls (CUREX). Moved to Data Scientist at Enteromics.
- 2018-19, Dmitry Fedorenko, Trust Management for Intrusion Detection in Smart Grid infrastructures (SPEAR). Moved to Software Developer at Hawk-Eye Innovations Ltd
- 2017-18, Adrian Coutsoftides, Blockchain-based Reputation Management for Smart Grids (SPEAR).

### PhD Students

- 2020-Present, Aris Farao, Cyber Defences for Domestic Environments (SECONDO).
- 2020-Present, George Papis, Applications of Blockchain to Cyber Insurance (SECONDO).
- 2019-Present, Robert Pell, A Cyber Risk Management Framework for 5G Infrastructures (DETER).
- 2019-Present, Emily Parsons, A Cyber Risk Management Framework for IoT-powered Domestic Environments (self-funded).
- 2019-Present, Antonia Nisioti, Data-Driven Decision Making for Cyber Forensics (self-funded).
- 2018-Present, Sakshyam Panda, Optimal Strategies for Cyber Security Decision-Making (funded by Univ. of Surrey).
- 2015-2018, Orestis Mavropoulos, A Framework for Security Analysis in Internet of Things Systems (funded by EPSRC). Moved to head of engineering position at Cyberlens Ltd.
- 2015-2018, Adeyinka Adedoyin, Case-based Reasoning, Business Intelligence (self-funded). Moved to lecturer position at Univ. of Ilorin, Nigeria.

## Service and memberships

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### Editorial

- IET Information Security, Associate Editor
- Games, ISSN2073-4336, MDPI, Guest Editor for Special Issue “Game Theory for Security”
- Wireless Communications and Mobile Computing, Guest Editor for Special Issue “Multi-Objective Optimization Algorithms for Wireless Sensor Networks”

### Memberships

- SPRITE Expect Fellow, Academic Expert Fellow, “The Security, Privacy, Identity and Trust Engagement NetworkPlus SPRITE+ HUB”.
- Gamesec, Advisory Committee Member for the Conference on Decision and Game Theory for Security.
- EPSRC, Member of the Peer Review College and Grants evaluator for the Engineering and Physical Sciences Research Council.
- RISCs, Member and Fellow of the Research Institute in Science of Cyber Security and funded Fellow (April 2020 - March 2021).
- REPHRAIN, Member of the College of Peer Reviewers of the National Research Centre on Privacy, Harm Reduction and Adversarial Influence Online, Bristol Cyber Security Research Group, University of Bristol.
- IEEE, Senior Member.

### General Chair

- Gamesec 2015 (6th Conference on Decision and Game Theory for Security, London, UK, November 2015)

## Programme Chair

- Gamesec 2016 (7th Conference on Decision and Game Theory for Security, New York, NY, USA, November 2-4, 2016)

## Programme Member

- Gamesec 2021 (12th Conference on Decision and Game Theory for Security, fully online conference, October 25-27, 2021).
- Inscrypt 2021 (17th International Conference on Information Security and Cryptology).
- ESORICS 2020 (25th European Symposium on Research in Computer Security, Guildford, UK, September 14-18, 2020).
- Gamesec 2020 (11th Conference on Decision and Game Theory for Security, University of Maryland - College Park, October 26-30, 2020).
- Gamesec 2019 (10th Conference on Decision and Game Theory for Security, Stockholm, Sweden, October 30 - November 1, 2019).
- Gamesec 2018 (9th Conference on Decision and Game Theory for Security, Seattle, WA, USA, October 29 - 31, 2018).
- Gamesec 2017 (8th Conference on Decision and Game Theory for Security, Vienna, Austria, October 23-25, 2017).
- Gamesec 2016 (7th Conference on Decision and Game Theory for Security, New York, NY, USA, November 2-4, 2016).
- Gamenets 2016 (6th International Conference on Game Theory for Networks, Kelowna, BC, Canada, May 2016).
- Gamesec 2015 (6th Conference on Decision and Game Theory for Security, London, UK, November 2015).
- CRiSIS 2015 (10th International Conference on Risks and Security of Internet and Systems, Mytilene, Lesvos Island, Greece, July 2015).
- FiCloud 2015 (3rd International Conference on Future Internet of Things and Cloud, Rome, Italy, August 2015).
- ICC 2015 (First Workshop on Security and Privacy for Internet of Things and Cyber-Physical Systems, London, UK, June 2015).
- Gamesec 2014 (7th Conference on Decision and Game Theory for Security, Los Angeles, CA, USA, November 2014).

## Teaching

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- Fall 2020, Information Security (level 5) (University of Greenwich).
- Fall 2019, Information Security (level 5) (University of Greenwich).
- Spring 2018, Information Security for Business and Government (level 7) (University of Surrey).
- Fall 2018, Web and Database Systems (level 4) (University of Surrey).
- Fall 2017, Web Publishing and Databases (level 4) (University of Surrey).
- Spring 2017, System and Network Security (level 7) (University of Brighton).
- Spring 2017, Network Management and Security (level 6) (University of Brighton).
- Spring 2017, Mathematics (level 4) (University of Brighton).
- Fall 2016, Security and Dependability (level 7) (University of Brighton).
- Fall 2016, Network Management and Security (level 6) (University of Brighton).
- Fall 2016, Network Technologies (level 5) (University of Brighton).
- Spring 2016, Mathematics (level 4) (University of Brighton).
- Fall 2015 and Spring 2016, Network Management and Security (level 6) (University of Brighton).
- Fall 2015, Network Technologies (level 5) (University of Brighton).
- Spring 2015, Mathematics (level 4) (University of Brighton).
- Fall 2014 and Spring 2015, Network Design and Technologies (level 5) (University of Brighton).
- Fall 2013, Distributed Systems and Security (level 6) (Queen Mary University of London).
- Fall 2013, Program Specifications (level 7) (Queen Mary University of London).

## Education

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### National & Kapodistrian University of Athens

BACHELOR OF SCIENCE (HONS) IN INFORMATICS & TELECOMMUNICATIONS

BSc Project on "Techno-economics of ADSL technologies".

*Athens, Greece*

*2002 - 2006*

### Athens University of Economics & Business

MSC (DISTINCTION) IN COMPUTER SCIENCE

MSc Project on "Optimising the Performance of IEEE 802.11 WLANs".

*Athens, Greece*

*2006 - 2008*

### Kingston University

PHD IN COMPUTER SCIENCE

PhD in "Security for Mobile Ad Hoc Networks".

*London, UK*

*2009 - 2012*

### University of Brighton

PG CERT IN LEARNING AND TEACHING IN HIGHER EDUCATION

*Brighton, UK*

*2015 - 2016*