Security Group

University of Strathclyde

Track record and esteem indicators of members of staff

SHISHIR NAGARAJA

AREAS OF EXPERTISE – NETWORK SECURITY AND PRIVACY

EDUCATION

Ph.D. (Computer Security), University of Cambridge, St. John's College, UK, October 2008
Thesis title: *Robust Covert Networks*, Ph.D Supervisor: Prof. Ross J Anderson

EMPLOYMENT

Reader in Computer Security, University of Strathclyde, UK 12/17-- **Adjunct Professor**, ECE, University of Illinois at Urbana-Champaign (UIUC), 10/2009-- **Senior Lecturer**, Lancaster University, UK (12/2014 – 11/2017) **Lecturer**, University of Birmingham, UK, 02/2012 – 12/2014 **Assistant Professor**, IIIT Delhi, 05/2010 – 01/2012 **I3P Research Fellow**, Information Trust Institute, UIUC, 11/2008 – 10/2009	**Chief Technical Officer**, OpenNet Initiative, 08/2007 – 08/2008 (ISP attack monitoring) **Senior Software Engineer**, Novell Research, 02/2000 – 08/2003 (Low-latency Databases) **Software Engineer**, ZillionSoft Inc, Bangalore, March 1997 – October 1999

FUNDING (CURRENT NET LIVE PROJECT FUNDS – £ 1,207,000)
- EPSRC-Industry grant on 'Robustness-as-evolvability' (PI), £838,000+Industry cash £145,000 +In-kind, 2014—2019; Investigator's value £565,000 of which UoS £294,000
- DCMS Cybersecurity Teaching Bursaries award, Value £80700, 2016-2018
- Raytheon industry grant on 'Cloud robustness and security' (PI), Value £25000, 2015-2017
- GCHQ grant on 'Standardised security evaluation testbed' (PI), Value £210,000, 2014-2016
- CPNI grant on 'Targeted attacks and defences' (PI); Value £70,000, 2013-2016
- DARPA-I3P grant on 'Botnet detection and mitigation' (PI) – Value $150,000; 2008 – 2010
- DARPA grant on 'Botnet detection via structured graph analysis (PI)' – Value $155,000; 2010 – 2012
- IBM X10 faculty award for 'Private traffic analysis on the cloud (PI)' – Value $20,000; 2011
- DRDO grant on 'Detecting botnets in enterprise networks (PI)' – Value INR 50,00,000; 2010-12
- Google faculty award for 'Smartphone security and privacy analysis' –Unrestricted Gift $65,000; 2010

SELECTED PUBLICATIONS (455 CITATIONS SINCE OCTOBER 2016)
1. A. K. Biswas, S. Nagaraja, and D. Ghosal, **A survey of timing channels and countermeasures**, ACM Surveys, CSUR 50 (1), 6, 2017 [10 year Source Normalised Impact per Paper (SNIP) *16.54*, Top ten CS]
2. J Gardiner and S Nagaraja, **On the security of machine learning in malware C&C detection: a survey**, ACM Surveys, 2016 [SNIP*16.54*]
3. S. Nagaraja, *Targeted attacks and defences – a structured graph approach*, Journal of Computer Security (JCS) 2015 [SNIP *3.19*]
4. B Venkatesh, SH Choudhury, S Nagaraja, and N Balakrishnan, *BotSpot: fast graph based identification of structured P2P bots*, Journal of Computer Virology, 2015 [SNIP *1.46*]
5. S. Nagaraja, *Botyacc: unified P2P botnet detection using behavioural analysis and graph analysis*, in the Proceedings of the European Symposium on Research in Computer Security (ESORICS), 2014. [Conference Impact Factor (CIF) *11.50*]
6. J. Gardiner and S. Nagaraja, *On the reliability of network measurement techniques*, in the Proceedings of the Security Protocols Workshop (SPW), 2014. [CIF 10.47]
7. R. Khurana and S. Nagaraja, *Challenges in leveraging vibration-based covert channels for information-theft*, in the Proceedings of the Security Protocols Workshop (SPW), 2013. [CIF*10.47*]
8. S. Nagaraja, A Houmansadr, P Pyongwangwisal, V Singh, P Agarwal and N Borisov, *Stegobot: a covert social network,* in the Proc of the Info. Hiding Conference (IHC) 2011 [CIF *26.14*]
9. S. Nagaraja, Virajith Jalaparthi, Matt Caesar and Nikita Borisov, *P3CA: anomaly detection in ISP networks*, in the Proceedings of the 11th Priv. Enhancing Tech. (PETS) Symposium 2011 [CIF *18.11*]
10. S. Nagaraja, Peter Schaffer, Djamila Aouada, *Who clicks there: anonymising the photographer in a camera saturated world*, in the Proceedings of Privacy in the Electronic Soc. (WPES) 2011 [CIF *15.03*]

11. S. Nagaraja, P. Mittal, C.Y. Hong, M. Caesar, N. Borisov, *Botgrep: Finding peer-to-peer botnets with Structured Graph Analysis*, USENIX Security Symposium 2010 [CIF *41.44*]

12. S. Nagaraja, *The impact of unlinkability on adversarial community detection: Effects and Countermeasures.* Privacy Enhancing Technologies 2010 [CIF *18.11*]

13. S. Nagaraja, M. Caesar, N. Borisov, *Graphsplicer: Detecting bots with structured graph analysis*, International Conference in Distributed Computing Systems (ICDCS), 2010 [CIF *18.55*]

14. S. Nagaraja, **Robust Covert Topologies**, in the Symposium of of Bio-Inspired Computing, 2009.

15. S. Nagaraja, *Anonymity in the wild: Mixes on unstructured networks*, in the Proceedings of the Symposium on Privacy Enhancing Technologies (PETS 2007) [CIF 18.11]

16. Tyler Moore, Jolyon Clulow, Ross Anderson and Shishir Nagaraja. *New Strategies for Revocation in Ad-Hoc Networks*, at the European Workshop on Security and Privacy in Ad Hoc and Sensor Networks (ESAS) 2007 [CIF *7.48*]

17. F. L. Wong, M. Lin, S. Nagaraja, I. Wassel and F. Stajano, *Evaluation Framework of Location Privacy of Wireless Mobile Systems with Arbitrary Beam Pattern*, in Proceedings of the Fifth Annual Conference on Communication Networks and Services Research (CNSR 2007)

18. R. Anderson, T. Moore, S. Nagaraja, A. Ozment, *Incentives and Information Security,* **in** *Algorithmic Game Theory*, N. Nisan, T. Roughgarden, E. Tardos, and V. Vazirani (editors), ISBN-13: 9780521872829, Cambridge University Press, 2007. [1529 citations]

19. S. Nagaraja and R. Anderson*, the topology of covert conflict (revised and updated)*, in the Proceedings of the Workshop on the Economics of Information Security, Cambridge, UK, 2006. [55 citations]

20. S. Nagaraja and R. Anderson, *Snooping Dragon: Social malware surveillance of the Tibetan movement*, Technical Report 746, University of Cambridge, 2009. [64 citations]

PATENTS

21. UVS Kiran and S Nagaraja, An algorithm to cluster directory users into user communities based on similarity in access, USPTO 6,996,577, June 2006.

22. Madhusudhana H S, S Nagaraja and A Tripathi, Security and Policy Integrity in Multilateral Authorization Systems, USPTO 7,136,489, November 2006.

23. S Nagaraja and HS Madhusudhana, Method and System for Amassed Authorization, USPTO, 2003.

24. S Nagaraja, N Sirisilla and HS Madhusudhana, An adaptive method and system for user empowered management based on Dynamic Quorums, USPTO, November 2004

Notable Awards and Distinctions	*Program committee work*
• 19 invited talks between 2005--2018 • **Gates Cambridge Scholarship**, 2003 • **Best Paper Award, Workshop on Security and Privacy in Ad-hoc networks**, 2007 • **Faculty awards** from IBM (2011) and Google (2010) • **College Award for Exceptional Performance**, • **University of Birmingham (2014)** My work has direct relevance to the society and has high impact, as evidenced by value to political processes and the wide publicity from articles featured in New York Times (headlines), Guardian, BBC, CNN, MSNBC, the Economist, Forbes, New Scientist, and the Economic Times.	• International Conference in Parallel and Distributed Systems 2015 • IEEE Transactions on Dependable and Secure Computing 2014 • PET award committee 2013 • Privacy Enhancing Technologies Symposium (PETS) 2004, 2010, 2011, 2012, 2015 • (ER) IEEE S&P 2010; USENIX Security 2010-2012; CCS 2010-11, NDSS 2010 • ISPEC 2012, ICISS 2011, HotWiSec 2012, PKI 2012, Pervasive Health 2014

TEACHING

- 3 PhD students (2 in Lancaster, 1 in Strathclyde)
- Director of Studies, MSc in Cybersecurity, 2013-17; Admissions tutor of MSC 2012--17
- Graduate courses: Network Security 2011--2018; Privacy Enhancing Technologies 2010-2012; Internet Security (2010-2012);
- Undergraduate courses: Computer Security 2014—2018

Robert Atkinson

Employment

2015-Present **Senior Lecturer, University of Strathclyde**
2007-2015 **Lecturer, University of Strathclyde**
2005-2007 **Senior Research Fellow, University of Strathclyde**
2003-2005 **Research Fellow, University of Strathclyde**
1997-2003 **Research Assistant, University of Strathclyde**

Research Funding (Security related proposals only)

1. Innovate UK: **Conserve: Contingency Operations for Strategic Infrastructure and the Vulnerable**, R Atkinson (PI), I Andonovic (CI), R Bellingham (CI), C Tachtatzis (CI), 1/10/15 – 31/3/17, Value £79,702 of £678,936
2. Newton Fund: **Smart Agriculture with Intelligent Transportation Systems for Sustainable Future Cities**, I Andonovic (PI), R Atkinson (CI), C Michie (CI), C Tachtatzis (CI), 1/4/15 – 31/3/16, £34,655.
3. Knowledge Transfer Partnership: **Data Provenance Solutions for the Internet of Things (Cisco Systems),** R Atkinson (PI), D Harle (CI), C Tachtatzis (CI), I Andonovic (CI), 1/2/2014 – 31/1/16, £136,782.
4. Technology Strategy Board: **Secure High availability Avionics Wireless Networks (SHAWN)**, R Atkinson (PI), I Andonovic (CI), C Michie (CI), D Harle (CI), 1/1/14 – 30/6/16, Value £162,724 of £730,108.
5. Keysight Technologies Funded Scholarship: **Deep Packet Inspection**, R Atkinson (PI), J Irvine (CI), 1/10/11 – 30/9/14, £14,615.
6. Defence Science and Technology Laboratory, **Social Networks**, J Irvine (PI), R Atkinson (CI), 1/3/12 – 31/5/12, £99,835.
7. Strathclyde University Links Programme: **Investigation of IEEE 1588**, R Atkinson (PI), I Andonovic (CI), 1/7/09 – 1/10/09, £9,273.
8. EPSRC: **Mobile VCE Flexible Networks Programme**, J Irvine (PI), R Atkinson (CI), J Dunlop (CI), EP/G066396/1, 1/109 – 31/12/09, £207,542.
9. Technology Strategy Board: **Wireless Data Acquisition in Gas Turbine Engine Testing**, I Glover (PI), R Atkinson (CI), TS/G002681/1, 1/10/08 – 31/3/09, £67,758.

Peer-reviewed Publications

1. *Low Power Radiometric Partial Discharge Sensor using Composite Transistor-Reset Integrator*, D Upton, BI Saeed, P Mather, M Sibley, P Lazaridis, K Mistry, IA Glover, C Tachtatzis, **R Atkinson**, and M Judd, IEEE Transactions on Dielectric and Electrical Insulation, In Press.
2. *Wireless Sensor Network for Radiometric Detection and Assessment of Partial Discharge in HV Equipment,* D Upton, B Saeed, P Mather, P Lazaridis, MFQ Vieira, **R Atkinson**, C Tachtatzis, MS Garcia, M Judd, and I Glover, J. Radio Science, March 2018, pp. 357 – 364, Vol 53, No 3, DOI: 10.1002/2017RS006507.
3. *Machine Learning Approach for Detection of nonTor Traffic*, E Hodo, X Bellekens, E Iorkyase, A Hamilton, C Tachtatzis, and **R Atkinson**, Journal of Cyber Security, Vol. 6, No. 2, November 2017, pp. 171 – 194, DOI: 10.13052/jcsm2245-1439.624.
4. *Calibration of Free-Space Radiometric Partial Discharge Measurements*, AA Jaber, PI Lazaridis, M Moradzadeh, IA Glover, ZD Zaharis, MFQ Vieira, MD Judd, and **RC Atkinson**, IEEE Transactions on Dielectric and Electrical Insulation, Vol. 25, No. 5, November 2017, pp. 3004 – 3014, DOI: 10.1109/TDEI.2017.006730.
5. *Radio Location of Partial Discharge Sources: A Support Vector Regression Approach,* ET Iorkyase, C Tachtatzis, P Lazaridis, IA Glover, and **RC Atkinson**, IET Science Measurement and Technology, Vol. 12, No. 2, March 2018, pp. 230 – 236, DOI: 10.1049/iet-smt.2017.0175.
6. *Radiometric Wireless Sensor Network Monitoring of Partial Discharge Sources in Electrical Substations*, Y Zhang, D Upton, A Jaber, H Ahmed, B Saeed, P Mather, P Lazaridis, A Mopty, C Tachtatzis, **R Atkinson**, M Judd, MFQ Vieira, and I Glover, International Journal of Distributed Sensor Networks, Vol. 2015, September 2015, DOI: 10.1155/2015/438302
7. *Development and Validation of a Simulator for Wireless Data Acquisition in Gas Turbine Engine Testing (WIDAGATE)*, X Dai, JE Mitchell, Y Yang, I Glover, K Sasloglou, **R Atkinson**, I Panella, J Strong, W Schiffers, and P Dutta, IET Wireless Sensor Systems, Vol. 3, No. 3, pp. 183 – 192, August 2013. DOI: 10.1049/iet-wss.2012.0064.
8. *An Advanced SOM Algorithm Applied to Handover Management within LTE*, N Sinclair, D Harle, IA Glover, J Irvine, and **R Atkinson**, IEEE Transactions on Vehicular Technology (special issue on self-organizing networks), Vol. 62, No. 5, pp. 1883 - 1894, June 2013. DOI: 10.1109/TVT.2013.2251922.
9. *Economics of Intelligent Selection of Wireless Access Networks in a Market-Based Framework: A Game-Theoretic Approach*, J Konka, J Irvine, and **R Atkinson**, IARIA International Journal on Advances in Networks and Services, Vol. 5 No. 3 & 4, December 2012, ISSN: 1942-2644.
10. *Wireless Communication Networks for Gas Turbine Engine Testing*, X Dai, K Sasaloglou, **R Atkinson**, J Strong, I Panella, LY Cai, H Mingding, AC Wei, I Glover, JE Mitchell, W Schiffers, and P Dutta, International Journal of Distributed Sensor Networks, Vol. 2012, March 2012, DOI: 10.1155/2012/212876.

11. *RAID 6 Hardware Acceleration*, M Gilroy, J Irvine, and **R Atkinson**, ACM Transactions on Embedded Computing Systems, Vol. 10, No. 3, November 2011.

12. *Estimation of Impulsive Noise from Measurements in a 400 kV Electricity Substation*, Q Shan, IA Glover, **R Atkinson**, SA Bhatti, IE Portugues, PJ Moore, R Rutherford, MFQ Vieira, AMN Lima, and B Alencar de Souza, IEEE Transactions on Electromagnetic Compatibility, Vol. 53, No. 3, August 2011, pp. 653-663.

13. *A Mobility Framework to Improve Heterogeneous Wireless Network Services,* C Shen, **R Atkinson**, J Irvine, and D Pesch, International Journal of Ad Hoc and Ubiquitous Computing, Vol. 7, No. 1, pp. 60-69, January 2011, DOI: 10.1504/IJAHUC.2001.037854.

14. *Automated Protocol Selection For Energy Efficient WSN Applications*, C Shen, S Harte, E Popovici, B O'Flynn, **R Atkinson** & A Ruzzelli, IET Electronics Letters, Vol. 45, No. 21, pp. 1098-1099, October 2009, DOI: 10.1049/el.2009.1217.

15. *Detection of Super High Frequency Partial Discharge By Using Neural Networks*, Q Shan, S Bhatti, IA Glover, **R Atkinson** & R Rutherford, Insight – Nondestructive Testing And Condition Monitoring, Vol. 51, No. 8, pp. 442-447, August 2009, DOI: 10.1784/insi.2009.51.8.442.

16. *QoS-Aware Network-Supported Architecture to Distribute Applications Flows Over Multiple Network Interfaces for B3G Users*, Q Wang, T Hof, F Filali, **R Atkinson**, J Dunlop, E Robert & L Aginako, Springer Wireless Personal Communications, Vol. 48, No. 1, pp. 113 – 140, January 2009, DOI: 10.1007/s11277-007-9424-7.

17. *Effect of Co-phasing Diversity on CDMA Downlink Capacity*, F Tong, **RC Atkinson**, IA Glover, SR Pennock & PR Shepherd, IET Electronics Letters, Vol. 44, No. 13, pp. 786-788, June 2008, DOI: 10.1049/el:20080323.

18. *Design and Evaluation of Flow Handoff Signalling for Multihomed Mobile Hosts in Wireless Overlay Networks*, Q Wang, **R Atkinson** & J Dunlop, Elsevier Computer Networks, March 2008, DOI: 10.1016/j.comnet.2008.02.005.

19. *The Personal Distributed Environment*, **R Atkinson**, J Irvine, S Vadgama & J Dunlop, IEEE Wireless Communications, April 2007, DOI: 10.1109/MWC.2007.358966.

20. *Interferometric Noise Characterisation of a 2-D Time Spreading Wavelength Hopping OCDMA Network Using FBG Encoding/Decoding*, C Michie, I Andonovic, **R Atkinson**, Y Deng, J Szefer, C Bres, Y Huang, I Glesk, P Prucnal, K Sasaki, & G Gupta, Journal of Optical Networks, vol. 6(6), pp. 663-676, June 2007: DOI: 10.1364/JON.6.000663.

21. *Comparison of ISMA and DECT-DCS Channel Access Policies for Indoor Wireless Communications Systems*, **RC Atkinson** & J Dunlop, IEE Electronics Letters, Vol. 36, No. 15, pp. 1307-1309, July 2000, DOI: 10.1049/el:20000921.

Conference Publications

22. *Low Power High-Speed Folding ADC based Partial Discharge Sensor for Wireless Fault Detection in Substations*, D Upton, R Haigh, U Khan, K Mistry, PJ Mather, PI Lazaridis, F Filho, C Tachtatzis, **R Atkinson**, M Judd, and IA Glover, URSI Radio 2018.

23. *Machine Learning Approach for Detection of nonTor Traffic*, E Hodo, X Bellekens, E Iorkyase, A Hamilton, C Tachtatzis, and **R Atkinson**, International Conference on Availability Reliability and Security, Calabria, Italy, August 2017.

24. *Trie Compression for GPU Accelerated Multi-Pattern Matching*, XJA Bellekens, C Tachtatzis, A Seeam, and **R Atkinson**, 9th International Conferences on Pervasive Patterns and Applications, Athens, Greece, February 2017.

25. *Strategies for Protecting Intellectual Property when Using CUDA Applications on Graphics Processing Units*, XJA Bellekens, G Paul, C Tachtatzis, JM Irvine, **R Atkinson**, 9th International Conference on Security of Information and Networks (SINCOF 2016), New Jersey, USA, July 2016

26. *Threat Analysis of IoT networks using Artificial Neural Network Intrusion Detection System*, E Hodo, XJA Bellekens, A Hamilton, P. Dubouih, ET Iorkase, C Tachtatzis, **R Atkinson**, 3rd International Symposium on Networks, Computers and Communications (ISNCC 2016), Hammamet, Tunisia, May 2016

27. *Cyber-Physical-Security Model for Safety-Critical IoT Infrastructures,* X Bellekens, A Seeam, K Neiradzinska, C Tachtatzis, A Cleary, **R Atkinson**, and I Andonovic, Wireless World Research Forum (WWRF35), Copenhagen, Denmark, October 2015.

28. *Challenges of Security and Trust In Avionics Wireless Networks*, RN Akram, K Markantonakis, S Kariyawasam, S Ayub, A Seeam, and **R Atkinson**, IEEE/AIAA Digital Avionics Systems Conference (DASC), Prague, Czech Republic, September 2015, pp. 1 – 26, DOI: 10.1109/DASC.2015.7311582.

29. *Data Remanence and Digital Forensic Investigation for CUDA Graphics Processing Units*, X Bellekens, G Paul, JM Irvine, C Tachtatzis, **RC Atkinson**, T Kirkham, and C Renfrew, IEEE/IFIP Workshop on Security for Emerging Distributed Network Technologies (DISSECT 2015), Ottawa, Canada, May 2015.

30. *A Highly Efficient Memory Compression Scheme for GPU-Accelerated Intrusion Detection*, XJA Bellekens, C Tachtatzis, **RC Atkinson**, C Renfrew, T Kirkham, ACM International Conference on Security of Information Networks (SIN '14), Glasgow, UK, September 2014, [Best paper award].

31. *Vulnerability of Zigbee to Impulsive Noise in Electricity Substations*, SA Bhatti, Q Shan, **R Atkinson**, M Viera and IA Glover, 30th Union Radio-Scientifique Internationale (URSI) General Assembly and Scientific Symposium, Istanbul, August 2011.

32. *Vulnerability of Bluetooth to Impulsive Noise in Electricity Transmission Substations*, SA Bhatti, IA Glover, **R Atkinson**, Q Shan, Y Yang, JMR de S Neto and JS da Rocha Neto, IET International Conference on Wireless Sensor Networks, Beijing, China, pp. 53-58, November 2010.

33. *Trust Architecture for Personal Distributed Environment*, S Goo, J Irvine, **R Atkinson** & J Dunlop, VTC-04 Fall, Los Angeles, USA, September 2004, DOI: 10.1109/VETECF.2004.1405029, ISBN: 0-7803-8521-7.

Prof. Lilian Edwards

Employment

Professor of Internet Law, Strathclyde University, 2011-.
Deputy Director, Centre for Creativity, Regulation, Enterprise and Technology) 2012-2017
Director, Centre for Internet Law and Policy, Strathclyde, 2011-
Visiting Professorial Fellow, ISSTI, Edinburgh University: 2015-2017

Professor of Internet Law, University of Sheffield, 2008-2010; Southampton University, 2006-2008;
Senior Lecturer, Edinburgh University, 1989- 2006;
Lecturer, Strathclyde University, 1986-1988.

Grants

2016 – July 2017: **Researcher in Residence at the Digital Catapult, London**: **£25,000**

Carrying out empirical work on the Internet of Things and Privacy by Design.

2012 – 2017: **Centre for Creativity, Regulation, Enterprise & Technology (CREATe)**: lead
funder AHRC (Arts and Humanities Research Council). Value £206,025.00 of £4M

2002-2010: (**associate director** for 2006-2010): Co-Director of **SCRIPT Centre** on Privacy,
Property; E-commerce; and Intermediary liability. Funded by the AHRC.

Peer reviewed journal articles

1) Edwards L and Veale M, *Slave to the Algorithm? Why a right to an explanation is probably not the remedy you are looking for.* (30,000 words) 2018 Duke Journal of Law and Technology

2) Edwards L, *Privacy, Security and Data Protection in Smart Cities: A Critical EU Law Perspective* (2016) 1 European Data Protection Law Review 28-58

3) *Privacy in Public Spaces: What Expectations of Privacy Do We Have in Social Media Intelligence?* (with Urquhart) (2016) 24 (3) Int J Law Info Tech 279-310

4) Edwards L, *From Privacy Impact Assessment to Social Impact Assessment,* Security and Privacy Workshops (SPW), 2016 IEEE, DOI: 10.1109/SPW.2016.19 (with Diver and Macaulay)

5) Edwards and Harbinja E, *Protecting Post-mortem Privacy: Reconsidering the Privacy Interests of the Deceased in a Digital World* (2013) 32 Cardozo Journal of Arts and Entertainment Law 101-147

6) Edwards L, *Section 127 of the Communications Act 2003: Threat or Menace?* 2012 SCL

7) Edwards L, *Coding Privacy* (2010) 74 Chicago-Kent Law Review 101

8) Edwards L and Wilson C *On-line dispute resolution in cross-border consumer e-commerce transactions: lessons from eBay and ICANN* (2007*)* International Review of Law, Computers & Technology, 21, (3), 315-333.

9) Edwards L and Theunissen A *Creating Trust and Satisfaction Online: How Important Is ADR? The UK eBay Experience* (2007) Web Journal of Current Legal Issues

10) Edwards L, *Dawn of the Death of Distributed Denial of Service: How To Kill Zombies* (2006) 24 Cardozo Journal of Arts and Entertainment Law 23-62

11) Edwards L, *Reconstructing Consumer Privacy Protection On-Line: A Modest Proposal* (2004) International Journal of Law, Computers and Technology 314-344. (**Winner of the Barbara Wellbury Memorial Prize for the best solution to the problem of on line privacy)**

12) Edwards L, *Taking the "Personal" Out of Personal Data: Durant v FSA and its Impact on the Legal Regulation of CCTV* (2004) 1:2 *SCRIPT-ed*.

13) Edwards L, *The Scotsman, The Greek, The Mauritian Company and the Internet: Where on earth do things happen in cyberspace?* (2004) 8 Edinburgh Law Review 99-111.

14) Edwards L, *Consumer Privacy, On-Line Business and the Internet: Looking For Privacy in All The Wrong Places* (2003) 3 IJLIT 226-250

15) Edwards L, Duguid S and Kingston J, *A Web-Based Decision Support System for Divorce Lawyers,* (2001) International Review of Law, Computers and Technology 265-279.

16) Waelde *C* and Edwards L, *Defamation and the Internet: a Case Study of Anomalies and Difficulties in the Information Age*, (1996) 10 International Review of Law, Computers and Technology 263-294.

17) Edwards L and Huntely J, *Creating A Civil Jurisdiction Adviser*, [1992] 1 Law, Computers and Artificial Intelligence 5-40.

Books and edited collections

18) L Edwards and C Waelde eds *Law and the Internet* (3rd edn, Hart, 2009) :
    a) *Chapter 1 : The Rise and Fall of Online Intermediary Liability*
    b) *Chapter 14 : Privacy and Data Protection Online: the Laws Don't Work?*
    c) *Chapter 15: Consumer Privacy 1: Online Direct Marketing*
    d) *Chapter 16: Consumer Privacy 2: Data Profiling and Targeting* (with J Hatcher)
    e) *Chapter 20: Pornography, Censorship and the Internet*
    f) *Chapter 21 : Information Security and Cybercrime* (with I Brown and C Marsden)
19) L.Edwards ed. *Special issue on Privacy and Technology, (2006) 3 (4) SCRIPT-ed*
20) *Family Law,* (with Dr A.M.O.Griffiths) (W.Green/Sweet and Maxwell, 2nd edn, 2006), 545 pp.
21) Edwards L ed. *The New Legal Framework for E-Commerce in Europe* (Hart Publishing, Oxford, December 2005), 511pp
22) Edwards L. and Waelde C. eds. *Law and the Internet : A Framework for Electronic Commerce* (Hart Publishing, Oxford, 2000), 342pp.
23) *Family Law,* (with Dr A.M.O.Griffiths) (W.Green/Sweet and Maxwell, 1997), 414pp.
24) Edwards L. and Waelde C. eds. *Law and the Internet: Regulating Cyberspace* (Hart Publishing, Oxford, 1997), 257pp.

Commissioned Reports

1) *The Use of Privacy Icons and Standard Contract Terms for Generating Consumer Trust and Confidence in Digital Services (*Connected Digital Economy Catapult, 2014) (with W. Abel.)

2) Section on legal issues in OECD The Role of Internet Intermediaries in Advancing Public Policy Objectives, Part II, 2011

3) *Role and Responsibility of the Internet Intermediaries in the Field of Copyright,* WIPO, 2011

4) *3rd and 4th Mcafee Virtual Criminology Reports 2007--2008 ,* November 2008 (with Dr Ian Brown)

Book chapters

1) "From the fantasy to the reality: social media and real name policies" in *Festshrift for Jon Bing*, 2014, Oslo University.
2) "What happens to my Facebook profile when I die?": Legal Issues Around Transmission of Digital Assets on Death " (with Harbinja) in Vinicius et al eds *Digital Assets and Death* (Springer, 2013)
3) Edwards L "Anti-Social networking: social networks, privacy, law and code" Brown I and Mueller M eds *Research Handbook on Internet Governance* (Edward Elgar, 2013).
4) "Data Control and Social Networking: Irreconcilable Ideas?" (with Ian Brown) in Matwyshwn A ed *HARBORING DATA: INFORMATION SECURITY, LAW AND THE CORPORATION,* (Stanford University Press, 2010)
5) "Privacy and confidentiality: the law" in Clark and McGhee eds *Private and Confidential? Handling Personal Information in Social and Health Services* (Polity Press, 2008) (with Rodrigues)
6) "Switching Off the Surveillance Society? Legal regulation of CCTV in the UK", in C Prins, de Vries, et al, eds. *Reasonable Expectations of Privacy: the Privacy Network* (Asser Press, 2005).
7) "Anonymity, Consumers and the Internet: Where Everyone Knows You're A Dog" (with Geraint Howells) in Nicoll C, Prins and van Dellen eds. *Digital Anonymity and the Law (*Asser Press, 2003), pp 207-247. I was main author.
8) "Canning the Spam: Is There a Case for Legal Control of Junk Email?" in Edwards L. and Waelde C. eds. *Law and the Internet : A Framework for Electronic Commerce* (Hart Publishing, 2000), 309-329
9) "Defamation and the Internet" in Edwards L. and Waelde C. eds. *Law and the Internet : A Framework for Electronic Commerce* (Hart Publishing, 2000), 249-273
10) "Pornography and the Internet" in Edwards L. and Waelde C. eds. *Law and the Internet : A Framework for Electronic Commerce* (Hart Publishing, 2000), 275-308

James Irvine

Personal	Full Name	James Menzies Irvine
	Work Address	Institute of Sensors, Signals and Communications
		Department of Electronic and Electrical Engineering
		University of Strathclyde, Glasgow G1 1XW
	Phone number	+44 141 548 4072
	Email address	j.m.irvine@strath.ac.uk
	Professional Bodies	CEng, SMIEEE, MIET, FHEA

Education		
	PhD in ECC and security coding theory; University of Strathclyde	*1989-1993*
	B Eng (Hons) in Electronic & Microprocessor Eng; University of Strathclyde	*1985-1989*

Career History		
	University of Strathclyde, Reader, Electronic & Electrical Engineering	*2006–present*
	Cork Institute of Technology, Visiting Professor	*2003–4*
	University of Strathclyde, Senior Lecturer, Lecturer and Research Fellow	*1994-2006*
	Modular Controls, Proprietor	*1989–94*

Selected Grants & KE Activity

DCMS *£450K*
> "5G RuralFirst Testbed", *June 2018, 10 months*. CI.

Power Networks Demonstration Centre (UKPN, SSE, SPEN & others) *£200K*
> Three security projects: TCS-002 Cyber Best Practice, TCS-005 Security across organisational boundaries, TCS-006 Cyber security incident response*, June 2017, 18 months* PI.

TreeGreen/Luceco *£75K*
> "Secure Wi-Fi Enabled Lighting Control", *May 2017, 6 months*. PI.

Scottish Enterprise/TreeGreen, ... *£65K*
> "Secure Smart Home", *June 2015, 18 months*. PI.

Pick Protection *£5K*
> "Smartphone Based Attack Alarm", *January 2015, 3 months*

Bristows/IPComm *£13K*
> "Expert witness, IPComm vs Nokia, UK", *October 2014, 6 months*

Scottish Executive *£56K*
> "Integrated Intelligent Sensor System" *June 2012, 36 months*. CI.

Bristows/Samsung *£40K*
> "Expert witness, Unwired Planet vs Samsung/Huawei/Google, UK", *April 2014, 16 months*

Fish & Richardson/Samsung *£18K*
> "Expert witness, Ericsson vs Samsung, USA", *July 2013, 7 months*

Defence Science and Technology Laboratory (DSTL) *£100K*
> "Social Networks" *February 2012, 4 months*. PI

Sponsored PhD students from **NPL** (Secure Distributed Sensing, 2018-2021), **TreeGreen Ltd** (Secure Connected Home, 2016-9), **RTDS Technologies (**Real–Time Emulation of Communications for Smart Grid Protection and Control, 2015-8), **Maidsafe Ltd (**Lifestuff Security, 2013-7)

Selected Publications

Co-author of 7 patents, including
'**Threshold Authentication Method**' (GB0715023.8),
'**Authentication Method using a Third Party**' (GB0719584.5, WO 2009/044174), and
'**Distributed protocol for authorization**' (GB0719583.7, WO/2009/044132) 9 April 2009

- ❖ Wyglinski, A, **Irvine, J** and Chapman, J, (eds) The Future of Vehicular Security and Privacy, IEEE Vehicular Technology Magazine, 13 (1), March 2018.
- ❖ Paul, G, and **Irvine, J**, 'An introduction to security challenges in user-facing cryptographic software', in Khajuria, S, Sørensen, L, Skouby, K E (eds) 'Cybersecurity and Privacy - Bridging the Gap', River Publishers, Aalborg, 2017. ISBN 9788793519664
- ❖ Paul, G and **Irvine J**, 'Automating Identification of Potentially Problematic Privacy Policies', Journal of NBICT, Volume 1, pp165-186, DOI: 10.13052/NBICT.2016.009
- ❖ Paul, G and **Irvine J**, 'IEDs on the Road to Fingerprint Authentication', IEEE Consumer Electronics Magazine, April 2016, DOI: 10.1109/MCE.2016.2521978

Selected Publications (cont)	❖ Paul, G and **Irvine J**, 'Practical Attacks on Security and Privacy Through a Low-Cost Android Device', Journal of Cyber Security, Vol. 4, 2016 pp 33-52 DOI: 10.13052/jcsm2245-1439.422
	❖ Bellekens, X, Paul, G, **Irvine, J**, Tachtatzis, C, and Atkinson, R, 'Strategies for Protecting Intellectual Property when Using CUDA Applications on Graphics Processing Units', 9th International Conference of Security of Information and Networks, July 2016.
	❖ Paul, G and **Irvine J**, 'Take control of your PC with UEFI secure boot', Linux Journal. 257, Sep 2015, p. 58-72
	❖ Paul, G, Thomas, D and **Irvine, J**, 'Privacy Implications of Smartphone-Based Connected Vehicle Communications', Proceedings of the 82nd Vehicular Technology Conference (VTC2015-Fall), Boston, Sep 2015
	❖ Paul, G, Dubouilh, P-L and **Irvine, J**, 'Performance Challenges of Decentralised Services', Proceedings of the 82nd Vehicular Technology Conference (VTC2015-Fall), Boston, Sep 2015
	❖ Paul, G and **Irvine, J**, 'Achieving optional Android permissions without operating system modifications', Proceedings of the 81st Vehicular Technology Conference (VTC2015-Spring), Glasgow, May 2015
	❖ Bellekens, X, Paul, G, **Irvine, J**, Tachtatzis, C, Atkinson, R C, Kirkham, T and Renfrew, C, 'Data remanence and digital forensic investigation for CUDA graphics processing units', 1st IEEE/IFIP Workshop on Security for Emerging Distributed Network Technologies (DISSECT), Ottawa, May 2015
	❖ Paul, G and **Irvine, J**, 'Privacy implications of wearable health devices', 7th International Conference on the Security of Information and Networks (SIN14), Glasgow, September 2014
	❖ Dahshan, H, Elsayed, F, Rohiem, A, Elmoghazy, A, **Irvine, J**, 'A Trust Based Threshold Revocation Scheme for MANETs', Proceedings of the 78th Vehicular Technology Conference (VTC Fall), Las Vegas, September 2013
	❖ Sinclair, N, Harle, D., Glover, I., **Irvine, J**. and Atkinson, R., An Advanced SOM Algorithm Applied to Handover Management within LTE, IEEE Transactions on Vehicular Technology, Vol. 62, No. 5, pp. 1883 - 1894, June 2013.
	❖ Dahshan, H. M. and **Irvine, J**, An elliptic curve secret sharing key management scheme for mobile ad hoc networks, Security and Communication Networks, 4, 12, p. 1405–1419. December 2011
Selected Invited Talks	**IEEE VTS Distinguished Lecturer**, 2011-2015. Tour of Malaysia & Singapore July 2014.
	Invited Speaker, at IEEE Intelligent Transportation Systems Conference on **Standards for 5G Connected Vehicles**, Rio de Janeiro, Brazil, November 2016
	Invited Panelist, at International Cooperation for Education about Standardisation (ICES2016), Frankfurt, Germany, October 2016
	Invited Speaker, at Capstone Design Conference 2016 on **Engineering Standards**, Columbus, Ohio, June 2016
	Invited Speaker, at Workshop on 'Smart meter roll-out: Sharing the UK's capabilities', Bangalore, India, September 2015
	External PhD and **MPhil Examiner** in the UK (Universities of Bradford, Edinburgh (five times), Essex (twice), Heriot-Watt, Surrey (twice) and London (7 times), Eire (Limerick and Waterford Institute of Technology), Germany (University of Kassel), Denmark (Aalborg University, twice) and Spain (Miguel Hernández University of Elche)
Selected Professional Activities	Professional Committees
	Working Group Chair, IEEE Blockchain Initiative Steering Committee (2018)
	Chair, IEEE Standards Education Committee (2014-5, 2017-8)
	Member, IEEE Future Directions Committee 2017-8
	Board Member, IEEE Vehicular Technology Society (2003-2020); President 2008-9
	Member, IEEE Publication Services and Products Board 2014-15
	Event Organisation
	Finance Chair, IEEE NIST Global Blockchain Summit, Washington, September 2018
	General Co-chair, IEEE 5G Summit, Glasgow, May 2018
	General Co-chair, IEEE VTC 2015-Spring, Glasgow, May 2015
	TPC Chair or Co-chair of three international conferences. **Publications Chair** of 12 conferences includes IEEE ICC and VTC**.**

Dr. Robert Atkey

Education Ph.D. in Informatics: *Substructural Simple Type Theories for Separation and In-place Update*.
Supervisor: Dr. David Aspinall. Examiners: Dr. John Power (Internal), Dr. Nick Benton (External).
University of Edinburgh, Edinburgh,

Employment

- April 2015-date: **Lecturer and Chancellor's Fellow**, U. of Strathclyde.
  Research into logically based concurrent programming languages and formal methods for security. (*Symphonic software*), leading to an ongoing KTP project.
- January 2015-March 2015: **Teaching Fellow**, U. of Edinburgh.
- August 2014-December 2014: **Senior Research Fellow (Grade 8)**, U. of Edinburgh/Heriot-Watt U.
  Researcher employed on EPSRC platform grant to write Computer Security-oriented grant proposals.
- October 2011-July 2014: **Senior Engineer**, Contemplate Ltd.
  Lead analysis architect and developer on industrial strength static analysis tool *ThreadSafe*.

Funding Obtained

- Knowledge Transfer Partnership (KTP) 10614 with Symphonic Software (Edinburgh). Value: £151,412.00.
- EPSRC Follow-on Fund grant EP/G006032/1 "Resource Static Analysis" (Researcher Co-Investigator, PI: Dr. David Aspinall), 1st March 2009–31st May 2010. Value: £101,255.
- Assisted Prof. Neil Ghani and Dr. Patricia Johann in writing proposal "Logical Relations for Program Verification". This grant was funded as EPSRC grant EP/K023837/1. Prof. Ghani can confirm that I developed the applications and impact sections of the proposal, which were crucial to its success.

Publications

The most prestigious venues in my field are the conferences POPL (where I have 3 publications), ICFP (where I have 1 publication), LICS (1 publication), and the journals LMCS (2 publications), and JFP (2 publications).

Journal Papers: Refereed

1. **Robert Atkey** and Patricia Johann. Interleaving data and effects. *Journal of Functional Programming* 25. 2015.
2. **Robert Atkey**, Patricia Johann and Neil Ghani. Refining Inductive Types. *Logical Methods in Computer Science* 8(2:9). 2012.
3. **Robert Atkey**. Amortised Resource Analysis with Separation Logic. *Logical Methods in Computer Science* 7(2). 2011.
4. **Robert Atkey**. Parameterised Notions of Computation. *Journal of Functional Programming* 19:(3 & 4), pages 355-376, July 2009.

Conference Papers: Invited

5. **Robert Atkey** and Donald Sannella. ThreadSafe: Static Analysis for Java Concurrency. In *Proc. 15th Intl. Workshop on Automated Verification of Critical Systems (AVoCS 2015)*, volume 72 of *Electronic Communications of the EASST*, 2015.
6. David Aspinall, **Robert Atkey**, Kenneth MacKenzie and Don Sannella. Symbolic and Analytic Techniques for Resource Analysis of Java Bytecode. In Martin Wirsing, Martin Hofmann and Axel Rauschmayer, editors, *Proceedings of 5th International Symposium on Trustworthy Global Computing (TGC 2010)*, volume 6084 of *Lecture Notes in Computer Science*, pages 1–22. Springer, 2010.

Conference Papers: Refereed

7. Daniel Hillerstrm, Sam Lindley, **Robert Atkey**, and KC Sivaramakrishnan. Continuation Passing Style for Effect Handlers. In Dale Miller, editor, *2nd International Conference on Formal Structures for Computation and Deduction (FSCD 2017)*, volume 84 of Leibniz International Proceedings in Informatics (LIPIcs). 2017.
8. **Robert Atkey**. Observed Communication Semantics for Classical Processes. In Hongseok Yang, editor, *Programming Languages and Systems - 26th European Symposium on Programming, ESOP 2017*, volume 10201 of *Lecture Notes in Computer Science*, pages 56-82. 2017.
9. **Robert Atkey**, Sam Lindley and J. Garrett Morris. Conflation Confers Concurrency. In Sam Lindley, Conor McBride, Phil Trinder and Don Sannella, editors, *A List of Successes That Can Change the World: Essays Dedicated to Philip Wadler on the Occasion of His 60th Birthday*, *Lecture Notes in Computer Science*, Springer 2016.
10. **Robert Atkey**, Neil Ghani, Fredrik Nordvall Forsberg, Timothy Revell, and Sam Staton. Models for Polymorphism over Physical Dimensions. In Thorsten Altenkirch, editor, *13th International Conference on Typed Lambda Calculi and Applications (TLCA'15)*, Leibniz International Proceedings in Informatics (LIPIcs), pages 45–59. 2015.
11. **Robert Atkey**, Neil Ghani and Patricia Johann. A Relationally Parametric Model of Dependent Type Theory. In *Proceedings of the 41st ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL 2014)*. 2014.
12. **Robert Atkey**. From Parametricity to Conservation Laws, via Noether's Theorem. In *Proceedings of the 41st ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL 2014)*. 2014.
13. **Robert Atkey**, Patricia Johann and Andrew Kennedy. Abstraction and Invariance for Algebraically Indexed Types. In *40th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL 2013)*. 2013.
14. **Robert Atkey** and Conor McBride. Productive Coprogramming with Guarded Recursion. In *18th ACM SIGPLAN International Conference on Functional Programming (ICFP 2013)*. 2013.

15. **Robert Atkey**. Relational Parametricity for Higher Kinds. In Patrick Cgielski and Arnaud Durand, editors, *Computer Science Logic (CSL'12) - 26th International Workshop/21st Annual Conference of the EACSL, volume 16 of Leibniz International Proceedings in Informatics (LIPIcs)*, pages 46–61. 2012.

16. **Robert Atkey**. The Semantics of Parsing with Semantic Actions. In Nachum Dershowitz, editor, *Proc. Twenty-Seventh Annual ACM/IEEE Symposium on Logic In Computer Science (LICS 2012)*. 2012.

17. **Robert Atkey**, Neil Ghani, Bart Jacobs and Patricia Johann. Fibrational Induction Meets Effects. In Lars Birkedal, editor, *Foundations of Software Science and Computational Structures (FoSSaCS)*, volume 7213 of *Lecture Notes in Computer Science*, Springer 2012.

18. **Robert Atkey**, Patricia Johann and Neil Ghani. When is a Type Refinement an Inductive Type?. In Martin Hofmann, editor, *Foundations of Software Science and Computational Structures (FoSSaCS)*, volume 6604 of *Lecture Notes in Computer Science*, Springer, 2011.

19. **Robert Atkey**. Amortised Resource Analysis with Separation Logic. In *Proceedings of ESOP 2010: 19th European Symposium on Programming*, volume 6012 of *Lecture Notes in Computer Science*, Springer, 2010.

20. **Robert Atkey**, Sam Lindley and Jeremy Yallop. Unembedding Domain-Specific languages. *ACM SIGPLAN 2009 Haskell Symposium*. 3rd September 2009.

21. **Robert Atkey**. A Deep Embedding of Parametric Polymorphism in Coq. In *4rd Informal ACM SIGPLAN Workshop on Mechanizing Metatheory*. 2009.

22. **Robert Atkey**. Algebras for Parameterised Monads. In *3rd Conference on Algebra and Coalgebra in Computer Science, CALCO 2009*, volume 5728 of *Lecture Notes in Computer Science*, pages 3–17. Springer 2009.

23. **Robert Atkey**. Syntax For Free: Representing Syntax with Binding using Parametricity. In *Typed Lambda Calculi and Applications, TLCA 2009*, volume 5608 of *Lecture Notes in Computer Science*, pages 35–49. Springer, 2009.

24. **Robert Atkey**. CoqJVM: An Executable Specification of the Java Virtual Machine using Dependent Types. In *Types for Proofs and Programs, International Workshop, TYPES 2007, May 2-5, 2007, Revised Selected Papers*, volume 4941 of *Lecture Notes in Computer Science*, pages 18–32. Springer, 2008.

25. **Robert Atkey**. What is a Categorical Model of Arrows?. *Electronic Notes in Theoretical Computer Science* 229(5), pages 19–37. Elsevier, 2008.

26. **Robert Atkey**, Kenneth MacKenzie and Chris Paton. Secure Execution of Mobile Java using Static Analysis and Proof Carrying Code. In *UK e-Science All-Hands Meeting 2007*.

27. **Robert Atkey**. Specifying and Verifying Heap Space Allocation with JML and ESC/Java2. In *8th Workshop for Formal Techniques for Java-like Programs (FTfJP2006)*, July 2006.

28. **Robert Atkey**. Parameterised Notions of Computation. In *Proceedings of Workshop on Mathematically Structured Functional Programming (MSFP 2006)*, BCS Electronic Workshops in Computing, July 2006.

29. **Robert Atkey**. A λ-calculus for Resource Separation. In *Automata, Languages and Programming: 31st International Colloqium, ICALP 2004*, volume 3142 of *Lecture Notes in Computer Science*, pages 158–170. Springer, July 2004.

Teaching

- 2016-2017: Delivery of CS316 (3rd year functional programming)
- January 2015-March 2015. **Teaching Fellow**. 4th year *Automated Reasoning*. U. of Edinburgh.
- November 2014. Guest lecturer for 4th year course *Advances in Programming Languages*, U. of Edinburgh.
- 2005 and 2006. Taught course *Logic and Computation* for 1st year Informatics PhDs, U. of Edinburgh.

Professional Activities and Visits

- (future) General chair of *Off the Beaten Track* workshop, co-located with POPL 2018, Los Angeles, USA, January 2018.
- Invited speaker at ABCD (A Basis for Concurrency and Distribution) project meeting at University of Glasgow, January 2017.
- Programme Chair of *Off the Beaten Track* workshop, co-located with POPL 2017, Paris, France, January 2017.
- Invited speaker, University of Cambridge Computer Lab Logic and Semantics Seminar, July 2016.
- Invited speaker, *Off the Beaten Track* workshop, St. Petersburg, Florida, USA, January 2016.
- Invited speaker, *CHoCoLa* seminar, ENS-Lyon, November 2015.
- Invited speaker, *Mathematically Structured Functional Programming* workshop, Grenoble, France, April 2014.
- Visitor at the Programming, Logic and Semantics group, ITU Copenhagen 5th-9th March 2012. Hosted by Prof. Lars Birkedal and Dr. Rasmus Møgelberg.
- Invited attendee at Dagstuhl Seminar 10351 *Modelling, Controlling and Reasoning About State*, organised by Dr. Amal Ahmed, Dr. Nick Benton, Prof. Lars Birkedal, Prof. Martin Hofmann.
- Invited Speaker at SICSA Summer School on Formal Reasoning & Representation of Complex Systems, a satellite event of VSTTE2010 conference, Heriot-Watt University. 14th-15th August 2010.
- Visitor at the Programming Languages and Tools group, Microsoft Research Cambridge, 9th-11th April 2008. Hosted by Dr. Nick Benton and Dr. Andrew Kennedy.
- Programme committee member: MSFP 2012, Workshop on 75 years of the λ-calculus (2012), PLPV 2013, TYPES 2015, POPL 2016, HOPE 2016, ESOP 2017, ICFP 2017.
- External reviewer for: *(Conferences/Workshops)* CSL (2009, 2011, 2012), FOSSACS (2010, 2012), POPL (2010, 2011, 2012, 2013), LICS (2006, 2013), ESOP (2007,2008,2010), ICFP (2010,2011,2012,2013,2014,2016), TPHOLS (2009), CMCS (2012), TGC (2006), Haskell (2011), TYPES (2006), WGP (2009), PCC (2008), APLAS (2013), ITP (2011) *(Journals)* TCS (2009,2011), JFP (2009, 2010, 2014(2), 2016), LMCS (2009), MSCS (2011, 2015), Acta.Inf.(2008), JAR (2016).
- Grant reviewer for EPSRC (2012,2017); and Estonian Science Foundation (2011).

George S Weir

Areas of expertise – Information Assurance

Education

> **Ph.D. (Philosophy)**, University of Edinburgh
> **MA Hons,** University of Glasgow

Current Posts Held

> Lecturer in Computer Security, University of Strathclyde, UK
> Adjunct Professor, Simon Fraser University, Canada
> Senior Research Affiliate, Canadian Network for Research on Security & Society

Grants

> MoE Cybersecurity Research Studentships award, Value £673,000 for UoS, 2014--2022

Selected Publications (out of 85 papers)

1. Samar Albladi and George R S Weir, User Characteristics that Influence Judgment of Social Engineering Attacks in Social Networks, Human-centric Computing and Information Sciences, 2018.
2. George R S Weir, Andreas Aßmuth and Nicholas Jäger, Managing Forensic Recovery in the Cloud, Cloud Computing 2018, The Ninth International Conference on Cloud Computing, GRIDs, and Virtualization, IARIA, Barcelona, Spain, February 2018.
3. Mahmoud Nasreldin, Heba Aslan, Mohamed Rasslan and George Weir, Evidence Acquisition in Cloud Forensics, IEEE International Conference on New Paradigms in Electronics & Information Technology (PEIT'17), 5 - 8 November 2017, Alexandria, Egypt.
4. S. M. Albladi and G. R. S. Weir, Personality Traits and Cyber-Attack Victimisation : Multiple Mediation Analysis, in Joint 13th CTTE and 10th CMI Conference on Internet of Things – Business Models, Users, and Networks. Copenhagen, Denmark, 2017.
5. Haya Alsharani and George R S Weir, Hybrid Arabic Text Steganography, International Journal of Computer and Information Technology, Vol.6 issue 6 (November 2017), 2017.
6. Samar Albladi and George R S Weir, Competence Measure in Social Networks, In the 51st International Carnahan Conference on Security Technology, Madrid, October, 2017.
7. Yazeed Alkhurayyif and George R S Weir, Readability as a Basis for Information Security Policy Assessment, Seventh IEEE International Conference on Emerging Security Technologies, Canterbury, UK, September 2017.
8. George R S Weir and Andreas Aßmuth, Strategies for Intrusion Monitoring in Cloud Services, Cloud Computing 2017, The Eighth International Conference on Cloud Computing, GRIDs, and Virtualization, IARIA, Athens, Greece, February 2017.
9. Fathiya Al Izki and George Weir, Management Attitudes Toward Information Security in Omani Public Sector Organisations, Cybersecurity and Cyberforensics Conference (CCC 2016), University of Jordan, Jordan, IEEE.
10. Karen Renaud and George Weir, Cybersecurity and the Unbearability of Uncertainty, Cybersecurity and Cyberforensics Conference (CCC 2016), University of Jordan, Jordan, IEEE.
11. Andreas Aßmuth, Paul Cockshott, Jana Kipke, Karen Renaud, Lewis Mackenzie, Wim Vanderbauwhede, Matthias Soellner, Tilo Fischer and George Weir, Improving Resilience by Deploying Permuted Code onto Physically Unclonable Unique Processors, Cybersecurity and Cyberforensics Conference (CCC 2016), University of Jordan, Jordan, IEEE.

12. G.R.S. Weir, R. Frank, B. Cartwright and E. Dos Santos, Positing The Problem: Enhancing Classification of Extremist Web Content Through Textual Analysis, International Conference on Cybercrime and Computer Forensics 2016 (ICCCF 2016), Vancouver, Canada, IEEE.
13. Najla Etaher and George R S Weir, Understanding children's mobile device usage, International Conference on Cybercrime and Computer Forensics 2016 (ICCCF 2016), Vancouver, Canada, IEEE.
14. Samar Albladi and George R S Weir, Vulnerability to Social Engineering in Social Networks: A Proposed User-Centric Framework, International Conference on Cybercrime and Computer Forensics 2016 (ICCCF 2016), Vancouver, Canada, IEEE.
15. George R.S. Weir, 'The Limitations of Automating OSINT: Understanding the Question, Not the Answer', in R. Layton and P. Watters (Eds), Automating Open Source Intelligence, 159-169, Elsevier, 2015.
16. George R S Weir, 'Quantifying sexually explicit language', in R Smith, RC-C Cheung & L Lau Yiu-Chung (eds), Cybercrime Risks and Responses: Eastern and Western Perspectives, 2015.

Teaching and Supervision
Dr Weir has taught a variety of courses at undergraduate and postgraduate levels, including: Computer programming, Human-Computer Interaction, Multimedia, Computer Security, Enterprise Networking, Digital Forensics and Web Applications Engineering. In 2016, as a visiting professor and sessional instructor, he taught two classes in the School of Criminology, Simon Fraser University, Canada. He is a visiting lecturer on the MSc in Information Security at the School of Computing, University of Colombo, Sri Lanka. In 2018 he was appointed as an Adjunct Professor in Criminology, School of Criminology, Simon Fraser University, Canada.

At Strathclyde, he is currently supervising twelve PhD students, working mainly in the area of information security. He has served as an external examiner for twelve PhDs and two MPhils, at the following institutions: University of Glasgow, London South Bank University, University of East Anglia, University of East London, University of Southampton, Kingston University, University of Ballarat, Australia, Deakin University, Australia and Federation University, Australia.

Synergistic Activity
1. General Chair, CyberForensics, Glasgow 2017
2. Member of Evidence and Investigation Steering Group, Scottish Institute for Policing Research, 2017.
3. External examiner, MSc Forensic Computing and Cybercrime Investigation, Centre for Cybersecurity and Cybercrime Investigation, School of Computer Science and Informatics, UCD, Ireland (2014-2017).
4. Technical Programme Committee Chair, 4th International Conference on Cybercrime and Digital Forensics, Vancouver, June, 2016.
5. Award for the Promotion of Science, Canada, Sri Lanka and Australia, Japan Society 2008
6. Winston Churchill Trust Travel Fellowship, 2005
7. Member of the BCS Forensics and Cybercrime Specialist Group
8. Member of the Association of Computing Machinery
9. Member of the British Computer Society
10. Senior Member of the IEEE
11. Senior Member of the Higher Education Academy.
12. Fellow of the Winston Churchill Memorial Trust
13. Fellow of the Royal Society of Arts.

SOTIRIOS TERZIS

AREAS OF EXPERTISE – SYSTEMS SECURITY

EDUCATION

Ph.D., Trinity College Dublin
MSc Hons. and **BSc Hons,** University of Crete

EMPLOYMENT

Lecturer in Computer Security, University of Strathclyde

FUNDING

- SFC Interface Programme (3xPI, 1xco-I), £104,799, 2015 – 2018

- EPSRC DTG Grant (PI) £11,300, 2013 – 2017

- EU FET SECURE (Secure Collaboration Among Ubiquitous Roaming Entities) in collaboration with the Aarhus University, University of Cambridge, Trinity College Dublin and University of Geneva, (co-I), £191,188 of 1,037,915, 2002—2005

- EU Trust in Open Dynamic Systems (co-I), £11,520 of 240,000, 2002—2005

- Small grants: RAE, Nuffield Foundation, Carnegie Foundation, £2150, 2006 – 2007

- British Council Usable Authentication (PI), £2,042, 2014 – 2015

SELECTED PEER-REVIEWED PUBLICATIONS

1. A. Abadi, et al.: Efficient delegated private set intersection on outsourced private datasets. IEEE Transactions on Dependable and Secure Computing: 1-15, (2017)
2. A. Abadi, S. Terzis, C. Dong: VD-PSI: Verifiable Delegated Private Set Intersection on Outsourced Private Datasets. Financial Cryptography 2016: 149-168
3. A. Abadi, S. Terzis, C. Dong: O-PSI: Delegated Private Set Intersection on Outsourced Datasets. SEC 2015: 3-17
4. G. Thomson, S. Terzis: A Middleware for Pervasive Situation-Awareness. DAIS 2012: 148-161
5. M. Vella, M. Roper, S. Terzis: Danger Theory and Intrusion Detection: Possibilities and Limitations of the Analogy. ICARIS 2010: 276-289
6. S. Terzis, et al.: Middleware for pervasive and ad hoc computing. Personal and Ubiquitous Computing 10(1): 4-6 (2006)
7. C. English, S. Terzis, P. Nixon: Towards self-protecting ubiquitous systems: monitoring trust-based interactions. Personal and Ubiquitous Computing 10(1): 50-54 (2006)
8. G. Thomson, S. Terzis, P. Nixon: A model and architecture for situation determination. CASCON 2006: 380
9. C. English, S. Terzis: Gathering Experience in Trust-Based Interactions. iTrust 2006: 62-76
10. A. Nosseir, et. al.: Question-based authentication using context data. NordiCHI 2006: 429-432
11. S. Terzis, et. al.: Trust Lifecycle Management in a Global Computing Environment. Global Computing 2004: 291-313
12. P.A. Nixon, et al.: Security, privacy and trust issues in smart environments. Smart Environments: Technologies, Protocols and Applications (2004)
13. C. English, S. Terzis, W. Wagealla: Engineering Trust Based Collaborations in a Global Computing Environment. iTrust 2004: 120-134
14. V. Cahill, et. al.: Using Trust for Secure Collaboration in Uncertain Environments. IEEE Pervasive Computing 2(3): 52-61 (2003)
15. P. Nixon, F. Wang, S. Terzis: Programming structures for adaptive ambient systems. ISICT 2003: 193-198

16. C. English, et. al.: Trusting Collaboration in Global Computing Systems. iTrust 2003: 136-149
17. S. Terzis: Proceedings of the Third International Workshop on Middleware for Pervasive Mobile and Embedded Computing (M-MPAC 2011), Lisbon, Portugal, December 12 - 16, 2011. ACM 2011, ISBN 978-1-4503-1065-9
18. R. Meier, S. Terzis: Distributed Applications and Interoperable Systems, 8th IFIP WG 6.1 International Conference, DAIS 2008, Oslo, Norway, June 4-6, 2008. Proceedings. Lecture Notes in Computer Science 5053, 2008, ISBN 978-3-540-68639-2
19. S. Terzis: Proceedings of the 6th International Workshop on Middleware for Pervasive and Ad-hoc Computing (MPAC 2008), held at the ACM/IFIP/USENIX 9th International Middleware Conference, December 1-5, 2008, Leuven, Belgium. ACM 2008, ISBN 978-1-60558-364-8
20. P. Nixon, S. Terzis: Trust Management, First International Conference, iTrust 2003, Heraklion, Crete, Greece, May 28-30, 2002, Proceedings. Lecture Notes in Computer Science 2692, Springer 2003, ISBN 3-540-40224-1

SYNERGISTIC ACTIVITY
1. Member of the advisory board of the SICSA Cyber Nexus funded by the Sottish Government as part of the UK Cyber Security Programme.
2. Editor, Journal of Reliable Intelligent Environments
3. Editor, IARIA Intelligent Systems Journal
4. Editor, IEEE Computing Now Magazine
5. PC Member, International Conference on Enterprise Information Systems 2001 – 2017
6. PC Member, ADAPTIVE 2015 – 2017.
7. Co-chair Distributed Application and Interoperable Systems 2012
8. Co-chair Trust Management 2003
9. Co-chair and organizer of the Middleware Workshop on Pervasive and Ad-hoc Computing.
10. External reviewer: IEEE Transactions on Information Forensics & Security, the IEEE Software Magazine and Pervasive and Mobile Computing Journal, ACM Transactions on Autonomous and Adaptive Systems Journal, Journal on Systems and Software, and Journal of Information and Software Systems.
11. Director of the MSc in Forensic Informatics at the University of Strathclyde 2008-2011.
12. Chartered Information Technology Professional and Member of the British Computer Society, the ACM, and the IEEE Computer Society, and a Fellow of the Higher Education Academy.

TEACHING
- 7 PhD Students at the University of Strathclyde
- Graduate courses: Mobile Software and Applications 2012 – 2018, Mobile Systems and Applications 2006 – 2012, Concurrency 2004-2006, Ubiquitous and Mobile Computing 2006, Agents and Spiders 2006
- Undergraduate courses: Building Software Systems (3rd year module over 100 students) 2012 – 2018, Computer Architecture and Systems (2nd year module over 110 students) 2012 – 2018, Operating Systems and Systems Software (3rd year module approx. 90 students) 2007 – 2012, Distributed Programming (Final year module approx. 30) 2001 – 2012, Systems Analysis and Design (2nd year module over 150 students) 2000 – 2005

INVITED TALKS
Trust in Ad-hoc Collaboration at the 2nd EPSRC UK UbiNet workshop, Cambridge 2004.
Trust Management at the Department of Electrical and Computer Engineering, University of Thessaly, Volos 2003.