

PROFILE

Currently a PhD candidate at the University of Cambridge. My research interests lie primarily in the areas of Computer Security (techniques used for surveillance and defence mechanisms against surveillance) and Artificial Intelligence (applications to security and forensics).

EDUCATION

PhD in Computer Science

*Fitzwilliam College, University of
Cambridge
Cambridge, UK*

Oct 2017 - Oct 2021

Supervisor(s): Prof Ross Anderson

Thesis: The power of a crowd: on behavioural manipulation of robotic herds

Initially funded by: Department of Computer Science and Technology, University of Cambridge

Currently funded by: Bosch Research Foundation (Bosch-Forschungstiftung im Stifterverband)

Awarded College Senior Scholarship in recognition of academic achievements

MPhil in Advanced Computer Science (distinction)

*Darwin College, University of
Cambridge
Cambridge, UK*

Oct 2016 - Jun 2017

Supervisor(s): Prof Ross Anderson and Dr Laurent Simon

Thesis: Inferring smartphone PINs and text through acoustic side-channels (89%)

Classes: Computer Security – Principles and Foundations, Computer Security – Current Applications and Research, Advanced Operating Systems, Affective Computing, Advanced Topics in Computer Systems, Chip Multiprocessors (audit), Social and Technological Network Data Analytics (audit), Digital Signal Processing (audit).

Study Abroad

*University of California San Diego
San Diego, CA, USA*

Sep 2014 - Jun 2015

Classes: Software Engineering, Theory of Computability, Database Systems Principles, Operation Systems, Artificial Intelligence, Computer Vision, Data Mining and Prediction Analytics, Search and Reasoning in Artificial Intelligence, Computer Security (audit).

BSc (Hons) in Computer Science

*University of St Andrews
St Andrews, UK*

Sep 2012 - June 2016

Supervisor(s): Prof Simon Dobson

Thesis: Can Centrality Measures Adopted From Graph Theory Explain the Slowdown in Street Networks? (95%)

Classes: Object-Oriented Programming, Internet Programming, Foundation of Computation, Advanced Computer Science, Advanced Internet Programming, Advanced Programming Projects, Computer Architecture, Distributed Systems, Component Technology, Computer Security, Logic and Software Verification, Artificial Intelligence Practice (MSc-level course).

BSc in Engineering and Technology (dropped)

*State University of Aerospace
Instrumentation
St Petersburg, Russia*

Sep 2010 - Aug 2011

Classes: Mathematical Logic and Theory of Algorithms, Mathematical Analysis, Analytical Geometry, Discrete Mathematics, Information Theory, Computational Mathematics, Linear Mathematics, Physics, Programming foundations, Astronomy.

Received full scholarship.

PUBLICATIONS **The Taboo Trap: Behavioural Detection of Adversarial Samples** with Yiren Zhao, Robert Mullins and Ross Anderson.

To compress or not to compress: Understanding the Interactions between Adversarial Attacks and Neural Network Compression with Yiren Zhao, Robert Mullins and Ross Anderson.

Stats Dont Lie: Finding the Missing Ransomware with Alessandro Rietmann and Ross Anderson. Submitted to Symposium on Security and Privacy (S&P 2019).

Tendrils of Crime: Visualising the Diffusion of Stolen Bitcoins with Mansoor Ahmed and Ross Anderson. Accepted to be presented at The Fifth International Workshop on Graphical Models for Security(GramSec 18).

Bitcoin Redux with Ross Anderson, Alessandro Rietmann and Mansoor Ahmed. Presented at 17th Annual Workshop on the Economics of Information Security (WEIS 18).

Hearing your touch (Poster) presented at Spring School on Hardware Security organised by the Research Institute in Secure Hardware and Embedded Systems (RISE 2018). Stipend was given.

Making Bitcoin Legal with Ross Anderson and Mansoor Ahmed. Presented at International Workshop on Security Protocols 2018 (SPW18).

Hearing your touch: Inferring smartphone PINs and text through an acoustic side-channel with Laurent Simon, Jeff Yan and Ross Anderson. Submitted to 18th Privacy Enhancing Technologies Symposium (PETS 18).

Computational Analysis of Valence and Arousal in Virtual Reality Gaming using Lower Arm Electromyogram with Hatice Gunes. Presented at the Affective Computing and Intelligent Interaction 2017 Conference (ACII 17).

Comparing Relational and Graph Databases for Pedigree Datasets with Graham Kirby, Conrad de Kerckhove, Jamie Carson, Alan Dearly, Christopher Dibben, Lee Williamson. Presented at Population Reconstruction Workshop 2014 (PRW 14).

**WORK
EXPERIENCE**

Visiting Research Scholar *ICSI, University of California Berkeley*
Jul 2018 - Sept 2018 San Francisco, USA

Crime Analysis research under the supervision of Dr Sadia Afroz.

Supervisor for University of Cambridge Undergraduates *University of Cambridge*
Jan 2018 - Jun 2018 Cambridge, UK

Supervision for Part IB Security, Part IA Software and Security Engineering, Part II Security II and Part I Operating Systems. Overall I did about 100 hours of supervisions.

Part II project supervisor *University of Cambridge*
Sep 2017 - Jun 2018 Cambridge, UK

Supervision of Part II project (like a Bachelors thesis) in the topic of Security, DSP and Machine learning.

Research Intern *University of Cambridge*
Jul 2017 - Sep 2017 Cambridge, UK

Systems research under the supervision of Dr Robert Watson.

Research Assistant *University of St Andrews*
May 2016 - Sep 2016 St Andrews, UK

Computer Vision research under the supervision of Dr Ognjen Arandelovic.

Research Assistant *University of St Andrews*
May 2016 - Sep 2016 St Andrews, UK

Experiment reproducibility research under the supervision of Prof Ian Gent and Dr Chris Jefferson.

Bright Mind Intern *Microsoft Research*
Jun 2015 - Sep 2015 Cambridge, UK

Worked in Systems and Networks Research group under supervision of Dr Christos Gkantsidis on Software Defined Network optimisation and software testing.

Application Developer Intern *JPMorgan and Chase*
Jun 2014 - Sep 2014 Glasgow, UK

Software development along with the introduction to the financial sector and business analysis.

Research Intern *University of St Andrews*
Jun 2013 - Aug 2013 St Andrews, UK

Development of software using Java with Hibernate, Spring. Usage of different types of databases, including MySQL, pl/pgSQL, neo4j, MariaDB. Analysis, adaptation, and optimisation of different algorithms. Practical experience of operating Jenkins, Logging, Unit Testing, Mock Testing, Test Driven Development, Bash-scripting, working in a team, presenting work in a readable format, meeting tight deadlines.

OTHER EXPERIENCE

Help with organisation of FIPR 20th anniversary conference *University of Cambridge*
Sep 2017 - Sep 2018 Cambridge, UK

Helped with conference organisation.

Security group representative *University of Cambridge*
Sep 2017 - Sep 2018 Cambridge, UK

Security group representative to the Graduate forum at the Department of Computer Science and Technology, University of Cambridge.

Laboratory Demonstrator *University of St Andrews*
Sep 2015 - May 2016 St Andrews, UK

Helping 1st and 2nd year Computer Scientists with concepts, related to Computer Networks, Object-Oriented Programming, Functional Languages, Scripting languages.

Student Mentor *University of St Andrews*
Sep 2015 - May 2016 St Andrews, UK

Mentoring one 1st year and one 2nd year Computer Science students. Helping with concepts, related to Computer Networks, Object-Oriented Programming, Functional Languages, Scripting languages.

JPMorgan Spring Week *JPMorgan and Chase*
May 2013 - May 2013 London, UK

An insight into investment banking and technologies used in the financial sector. Introduction to business analysis techniques and technology stack utilised by the bank.

JPMorgan Code for Good

Nov 2013 - Nov 2013

JPMorgan and Chase

London, UK

Development of a system to access the Internet for the places in Africa where there is only GSM signal available. The software written included Android application and sms-based system. Technologies used: Java (Android part), Python Django (Server-side for the application), Bootstrap (UI), sms-server. Team took the *first place*.

Hackathon organisation

Nov 2013 - Nov 2013

University of St Andrews

St Andrews, UK

Organisational work associated with running a hackathon.

Cyber-security Hackathon

Oct 2013 - Oct 2013

University of Edinburgh

Edinburgh, UK

Development of two-step level biometrics-based authentication system, that can be inserted into any system. That involved usage of OpenCV, Ruby On Rails, Python Flask. St Andrews team took the *second place*.