Dr. Oliver Buckley

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I am an experienced academic and software developer with a wealth of knowledge from both industry and academia. I have worked across a range of research projects, initially as a postdoctoral researcher and now as a Principal Investigator. I have been involved in successful research funding bids, with a range of funders, worth in excess of £2 million since 2016.

Education

08/2014 – 06/2017 **Cranfield University – PGCert in Academic Practice**

09/2004 – 05/2009 **University of Wales, Bangor – PhD Computer Science**
Thesis title: Haptic and Visual Soft Tissue Deformation Using a Particle-Based Approach

09/2000 – 06/2004 **University of Liverpool – BSc Computer Science (Hons)**
Achieved 1ˢᵗ Class Honours

Employment History

01/2018 – Present **University of East Anglia – Senior Lecturer in Cyber Security**
- Principal investigator on 'A Platform for Responsive Conversational Agents to Enhance Engagement and Disclosure (PRoCEED)', a multidisciplinary project focusing on trust and disclosure to chatbots. This is an EPSRC funded project worth in £407,000.
- Principal investigator on 'Collecting and Leveraging Identity Cues with Keystroke Analysis', a project analysing the keystrokes of an individual to infer identity data such as name, email address or nationality. The project is worth £100,000 and is funded by the Centre for Research and Evidence on Security Threats, an ESRC research hub.
- Co-investigator on the People Powered Algorithms for Desirable Social Outcomes project, an EPSRC funded project worth in excess of £900,000.
- Recently launched a new MSc Cyber Security, which I designed and developed. I am the course director for this new programme.
- Module organiser for two modules – Introduction to Cyber Security and Developing Secure Software. I designed and developed both of these modules.
- Supervisor for seven PhD students across a range of topics relating to cyber security, privacy and trust.
- Supervision of both undergraduate and postgraduate dissertations across a range of topics from core computer science through to software engineering and cyber security.
- Outreach and engagement activities including an invited presentation at the Norwich Science Festival.
- Holder of a British Science Association Media Fellowship where I worked with Sky News, writing and researching science-based stories. I had 14 stories published on the Sky News website across a range of topics.

08/2014 – Present **Cranfield University – Lecturer in the Centre for Electronic Warfare, Information & Cyber**
- An active member of the Information Operations research group where I worked closely with the MoD, DSTL and other branches of the government.
- Taught on the MSc Cyber Defence and Information Assurance, MSc Cyber Security Operations and MSc Information Capability Management courses.

- Taught in a blended learning environment for both full-time and part-time students at an exclusively postgraduate institution.
- The students were typically serving in the military or in related government positions.
- Designed, delivered and managed several modules including: Software Engineering, Cyber Attacks, Threats and Opportunities, Data-Led Decision Support and Data Modelling Storage and Management.
- Supervised 15 MSc projects to completion.

07/2013 – University of Oxford – Postdoctoral Researchers in the Cyber Security
08/2014 Centre
- Postdoctoral researcher on the Corporate Insider Threat Detection (CITD) project, funded by the Centre for the Protection of National Infrastructure (CPNI). This multidisciplinary project brought together psychologists, computer scientists, and members of the Said Business School to develop novel methods of insider threat detection. This work made use of machine learning, psychological indicators and other human behavioural factors to highlight potential threats.
- Taught on several modules including: Databases and Concurrent Programming.
- Supervised a number of MSc and BSc projects during my time at the University of Oxford.

11/2012 – National Trust – Analyst Programmer
07/2013
- Responsible for developing and maintaining the National Trust's portfolio of web applications in an Agile development methodology in a DevOps environment.
- Front-end and back-end of these applications using Java, Spring, Hibernate and JavaScript.
- Worked closely with Business Analysts and other areas of the business to design and develop innovative software solutions.

07/2011 – Diamond Light Source – Software Engineer
11/2012
- Software engineer at Diamond Light Source, the UK's synchrotron facility.
- Worked closely with beamline scientists to develop software solutions to facilitate experiments in Macromolecular Crystallography.
- Maintained and developed a large software platform, GDA, using Java and Python.

05/2010 – eMediaTrack – Senior Software Engineer
07/2011
- Worked as part of this innovative start-up company developing cloud computing and virtualisation software using Java.
- Lead the development of the web-based user interface for Nereus, eMediaTrack's cloud computing platform, to enable the control and monitoring of the software.
- Nereus was used as part of the Square Kilometre Array (SKA) project.

07/2009 – Centre for Ecology and Hydrology – Bioinformatician
05/2010
- A member a team developing and supporting a custom Linux distribution (BioLinux) based on Ubuntu.
- Developed custom software packages to aid in the analysis of bioinformatics data, while also leveraging existing software to form data analysis pipelines.

11/2007 – Oxford Brookes University and Nominet – KTP Research Fellow
07/2009
- Worked as part of Nominet's Advanced Projects Team to research and develop potential abuses of their WHOIS system.

- Researched and developed innovative data mining and visualisation solutions to provide an interactive platform to identify potential cases of service abuse.

Grants
Collecting and Leveraging Identity Cues with Keystroke Analysis (CLICKA), Centre for Research and Evidence on Security Threat, £100,000.
A Platform for Responsive Conversational Agents to Enhance Engagement and Disclosures, EPSRC, £407,000
Transforming Data Protection via the development of AI integrated privacy management systems for lawyers, Innovate UK, £357,000
People-Powered Algorithms for Desirable Social Outcomes, EPSRC, TIPS2.0, £906,000
Understanding Insider Threats using Natural Language Processing, DSTL, Military Cyber PhD Call, £125,000
Agent-Based Modelling of Offensive Actors in Cyberspace, DSTL Military Cyber PhD Call, £125,000
Collecting and Leveraging Identity Cues from Keystroke Analysis (CLICKA). CDE Enduring Competition, £56,000.

Current PhD Projects
Natural Language Processing for Insider Threat Detection. Funded by DSTL
Agent-Based Modelling for Offensive Cyber Operations. Funded by DSTL.
Understanding the Accidental Insider Threat. Funded by the Saudi Arabian government.
Inferring Identity Data using Smartphone Motion Sensors. Self-funded.
Visualising Cyber Security Like The Weather. Self-funded.
HoneypotBot: Identifying Malicious Actors in Cyberspace. Funded by the Faculty of Science, UEA.
Privacy and Trust in Chatbots. Funded by the School of Computing Sciences, UEA.

Teaching Responsibilities
MSc Cyber Security Course Director. I have recently developed a new MSc in Cyber Security for the University of East Anglia, where I also act as the course director. The course has been developed in line with the National Cyber Security Centre's guidelines with the ultimate aim of having the degree certified by the NCSC.

I manage the day-to-day running of the course and plan the strategic direction to ensure that it remains current relevant and engaging for the students in the fast-paced world of cyber security.

Introduction to Cyber Security. This module introduces students to the fundamental concepts of cyber security. This covers a range of topics including cyber security legislation, risk and information assurance, human aspects of cyber security, information warfare, and social engineering.

Developing Secure Software. This module focuses on the importance of developing secure and usable software while also giving students the opportunity to gain hands on experience with various threats and vulnerabilities.

Previous Teaching Responsibilities
Software Engineering. This module focused on introducing the key concepts in software development by exposing students to all elements of the Software Development Lifecycle. Students gained hands on experience of software analysis, design, development and testing.

Data-Led Decision Support. This module provides students with an understanding of the data analysis pipeline to allow them to effectively understand data and its place in the world. This module covered areas such as statistical analysis, machine learning and visualisation methods.

Data Modelling Storage and Management. The module covered the ways to manage and store data in an efficient and effective manner by introducing key database concepts such as

normalisation and database design. This also included areas such as writing queries using SQL and the use of more specialised data storage methods with NoSQL databases.

Cyber Attacks, Threats and Opportunities. This module looked at a range of cyber security threats and their possible mitigations. The module covered ethical hacking, web-based security, malware and human vulnerabilities in the security process.

Positions of Responsibility

- **Course director – MSc Cyber Security, 2019 to present.**
- **Academic lead on the Student App Internship Scheme.** This scheme provides students with the opportunity to develop a mobile app for a real customer to gain hands on experience of commercial software development.
- **British Science Association Media Fellowship, 2018**
- **External Examiner – Oxford Brookes University, MSc Computer Science for Cyber Security, December 2017 to Present.**
- **Review panel for the CREST Commissioning Call, January 2019.**
- **Visiting Fellow – Cranfield University, 2017.**
- **Visiting Research Fellow – University of Chester, 2017.**

Selected Publications

CLICKA: Collecting and Leveraging Identity Cues with Keystroke Analysis. O. Buckley, D. Hodges, J. Windle, S. Earl, *Biometrics, Behaviour and Identity Science,* In Review

Good People Do Bad Things: Why A Simple Model of Rational Security (SMORS) Doesn't Work. D. Lawrence, D. Hodges, O. Buckley, D. Ashenden, *Computers in Human Behaviour,* In Review

An Emoji Speaks a Thousand Words: Measuring the Memorability of Emoji-Inclusive Passwords. G. Prada, S. Earl, D. Taylor, O. Buckley, *Journal of Information Security and Applications,* In Review.

Understanding Insider Threat Attacks using Natural Language Processing: Automatically mapping organic narrative reports to existing insider threat frameworks. K. Paxton-Fear, D. Hodges, O. Buckley, *Human Factors Approaches to Cyber Security within Workplaces,* 2020, To Appear

The language of biometrics: Analysing public perceptions. O. Buckley, and J. R. Nurse, *Journal of Information Security and Applications*, *47*, pp.112-119. 2019.

Deconstructing who you play: Character choice in Online Gaming. D. Hodges and O. Buckley. *Entertainment Computing*, 2018

Reconstructing what you said: Text Inference using Smartphone Motion. D. Hodges and O. Buckley. *IEEE Transactions on Mobile Computing*, 2018.

Behind the Scenes: A cross-country study into third party website referencing and the online advertising ecosystem. J. RC. Nurse and O. Buckley; Human-centric Computing and Information Sciences, under review, 2017.

It's not all about the money: Self-efficacy and Motivation in Defensive and Offensive Cyber Security Professionals. D. Hodges, O. Buckley; Human Aspects of Information Security, Privacy and Trust, 2017.

Keystroke Inference using Smartphone Kinematics. O. Buckley, D. Hodges; Human Aspects of Information Security, Privacy and Trust, 2017.

User Identification using Games. O. Buckley, D. Hodges; Human Aspects of Information Security, Privacy and Trust, 3-14, 2016.

Identifying attack patterns for insider threat detection. I. Agrafiotis, J. R. C. Nurse, O. Buckley, P. Legg, S. Creese, M. Goldsmith; Computer Fraud & Security 2015 (7), 9-17

Automated insider threat detection system using user and role-based profile assessment. P. Legg, O. Buckley, M. Goldsmith, S. Creese; IEEE System Journal, 2015 [In Press]

Visual analytics of e-mail sociolinguistics for user behavioural analysis. P. Legg, O. Buckley, M. Goldsmith, S. Creese; Journal of Internet Services and Information Security 4 (4), 1-13

Understanding Insider Threat: A Framework for Characterising Attacks. J. R. C. Nurse, O. Buckley, P. Legg, M. Goldsmith, S. Creese, G. Wright, M. Whitty; Security and Privacy Workshops (SPW), 2014, IEEE, 214-228