UNIVERSITY OF BIRMINGHAM | Business with Birmingham

Cyber Security and Data

Building on an established strength in the analysis of security systems, our research is concerned with all aspects of security and privacy for business and society.

Working flexibly and sustainably with industrial partners, research at Birmingham is having real-world impact on products and services, safeguarding the security and privacy of businesses, governments and individuals.

We work in conjunction with a number of national regulatory agencies, government departments, funding bodies and initiatives such as the Rail Safety and Standards Board, GCHQ, NCSC, CyberInvest and DCMS. Our researchers often participate in global collaborations with national and international academic colleagues, and partners from across a range of businesses including: HP, Microsoft, IBM, Google, Deloitte, BT, and the National Grid.

Our expertise

- Applied cryptography
- Formal verification
- Automotive security
- Internet of Things security
- Wireless security
- Cloud security
- E-voting
- Security and privacy for society
- Cyber security education

Success and impact

- The Trusted Computing Group (TCG), which consists of around 100 companies including AMD, Intel and Microsoft; has adapted a revised protocol devised by Professor Mark Ryan, who discovered two attacks targeting a hardware chip utilised in over 500 million laptops, desktops and servers globally.
- To support the National Cyber Security Strategy in its aim to enhance the cyber skills of the UK, the Department of Media, Culture and Sport has confirmed £500,000 funding, distributed between the University of Birmingham and other participating universities, to continue a pilot to help adults who want to retrain for a job in cyber security by taking a GCHQ-accredited Masters degree.
- Professor Mark Ryan was inaugurated as the HP Research Chair in Cyber Security. The position marks a five-year strategic partnership between HP and the University of Birmingham, to conduct world leading research that will tackle the future architectures and protocols for the increasing range of connected devices that forms the Internet of Things (IoT).

Key projects

Automotive security: In conjunction with industry leaders, we are improving the current and future security of next generation electronic vehicles, which integrates wireless interface to operate its immobilisers, wireless locks and GPS.

Industrial control systems: We are working alongside industrial partners and national organisations in the energy and railway sectors to perform a detailed security analysis of their system to identify and eliminate points of cyber attack, thus increasing the security of these systems of critical infrastructure.

Electronic voting: We are focusing on creating procedures that will detect potential fraud and coercion for future electronic voting systems.

Internet of Things: We are examining the security issues of internet-enabled devices such as cars, thermostats, door locks, traffic lights, trains, TVs and dialysis machines. This investigation covers the architectures and systems through which devices are accessed and information is shared and the analysis of vulnerabilities in specific devices. We are working with industrial partners to secure protocols and procedures as well as to fix security weaknesses when they are identified.

THE UNIVERSITY OF BIRMINGHAM **HAS BEEN OFFICIALLY RECOGNISED** AS AN NCSC-EPSRC ACADEMIC CENTRE OF EXCELLENCE IN CYBER SECURITY RESEARCH.

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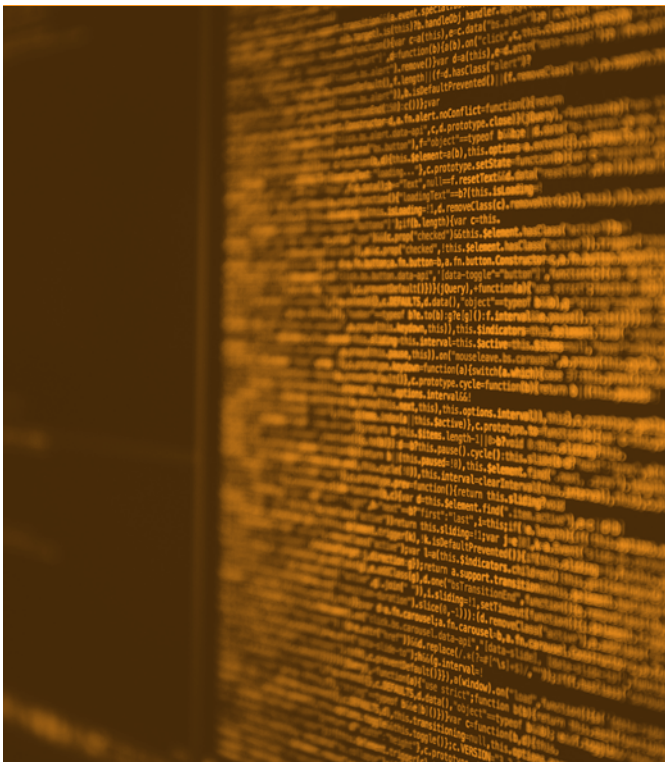

'NEXT GENERATION PERSONAL COMPUTERS AND SERVERS WILL INCLUDE PROTOCOLS THAT WERE INSPIRED BY MARK RYAN. THOSE PROTOCOLS WILL HELP INCREASE THE LEVEL OF PROTECTION OF SOFTWARE AND DATA IN THOSE PLATFORMS.'
MARK SCHILLER, EXECUTIVE DIRECTOR, TRUSTED COMPUTING GROUP

Getting in touch

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'CYBER SECURITY UNDERPINS MANY INNOVATIONS IN INDUSTRIAL CONTROL SYSTEMS. THE UNIVERSITY OF BIRMINGHAM IS WORKING CLOSELY WITH INDUSTRIAL PARTNERS IN ORDER TO IDENTIFY THREATS, DEVELOP PRACTICAL SOLUTIONS AND HELP BUSINESSES TO BECOME MORE INFORMED, MORE EFFICIENT AND MORE EFFECTIVE.'
PROFESSOR MARK RYAN, SECURITY AND PRIVACY GROUP, UNIVERSITY OF BIRMINGHAM

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