SPADS CENTRE FOR DOCTORAL TRAINING

Sponsor world-class research and gain competitive advantage

Fund a defence scientist for a four year in-depth project of your choice that addresses technical challenges in the defence and security sector.

THE UNIVERSITY of EDINBURGH

EDINBURGH INNOVATIONS

HERIOT WATT UNIVERSITY

CDT SPADS

> “Over the next eight years, we will support and collaborate closely with the SPADS CDT to strengthen the UK’s position at the forefront of technological innovation. This transformational initiative will equip the next generation of defence scientists, who will play a critical role in addressing future challenges and ensuring the security of our nation.”
>
> **Prof Andy Bell,** Dstl Chief S&T Officer (CSTO)

> “SPADS supports research to solve complex signal processing problems in electronic warfare. From a problem of significance within defence, a concept can be proposed and explored over several years with a PhD student using fundamental theory to assess the proposed solution. This is an excellent base for further development into products and services.”
>
> **Dr. David Sadler,** Principal Consultant Engineer at Roke Manor Research Ltd

Sensing, Processing, and AI for Defence and Security EPSRC and MoD Centre for Doctoral Training

The need for superiority in information and communication technology and artificial intelligence is central to defence and security. Significant and enduring challenges include pervasive intelligence, surveillance and reconnaissance (ISR) working across multiple sensing domains; communications; and capability that is affordable, survivable, and responsive to rapidly evolving threats in electromagnetically denied environments.

This will be increasingly underpinned by interconnected technology and sensing modalities, leveraging advances in autonomy, embedded systems, and AI. The family of interconnected technologies covered by SPADS, from sensing to knowledge and autonomous systems, spans the key tasks of sensing, processing and communications across both software/algorithms and hardware, covering both discovery and mission inspired research.

The SPADS doctoral training programme has been co-designed and co-developed with industry to train the next generation of highly professional defence scientists, including engineers, computer scientists, and mathematicians, capable of leading developments in cutting-edge and generation-after-next technologies in information and communication technology that are poised to transform not only the world of defence and security, but also civilian society.

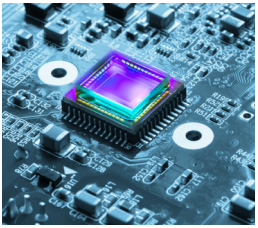
Research Themes

Sensor Signal Processing:

The theme develops Intelligence, Surveillance, and Reconnaissance concepts to derive sensor data and uses AI methodologies to fuse and process information for automated decision-making.

Multi-agent Systems and Data Intelligence:

The theme investigates the development of scalable and trustworthy multiagent decision making in complex domains under resource constraints.



Novel Computing and Beyond-CMOS hardware:

The theme develops the next generation of electronic devices, sensors and computer architectures to push the limits of energy and speed performance.

Autonomous Sensing Platforms:

The theme develops robust autonomous systems that can navigate, sense, and make complex decisions in dynamic, adverse, and contested environments.

> We gain privileged access to cutting-edge technologies and advanced research concepts. The PhD projects we currently have within the CDT directly contribute to our R&D capabilities by delivering novel machine learning and AI methodologies tailored to our applications in imaging, photonics and other technologies. This accelerates our capability to integrate state-of-the-art AI techniques within our technology development."

Dr. Robert Nicol, Technology Development Manager, STMicroelectronics

> Through the SPADS programme, we provide students with access to cutting-edge compute and AI technologies, while benefiting from the world-class research conducted at the University of Edinburgh and Heriot-Watt University. This initiative also plays a key role in strengthening our talent pipeline and paving the way for future career opportunities at AMD."

Bill Wilke, Director AMD Scotland

Benefits: more than a PhD

The University of Edinburgh and Heriot-Watt University's new Centre for Doctoral Training Programme focuses on generation-after-next technologies for information processing in defence and security, and spans the entire range **from hardware development to algorithmic AI development**. This offers a unique opportunity for the UK defence sector to develop a training environment that meets its current and future needs.

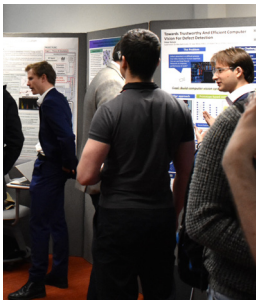
- Co-create PhD projects with experts in multiple fields
- Gain access to a large network of world-leading academics and gain early-access view of current research
- Help shape the overall research agenda at programme level
- Close student-industrial sponsor contact is built in, to ensure student education meets your staffing needs
- Rich suite of CPD ensures students understand the business, ethical, social, strategic and security context of their work
- Stay in the loop by participation in a defence and security network

How to get involved

We are looking for companies to propose or co-create with us, challenging, needs-driven projects to address some of the most strategically important areas facing the defence and security sector.

Projects must align with SPADS' research focus, and it is intended that these projects will make an original contribution to the company's activities and practices or to knowledge for the sector. Previous PhD students have worked on research projects with sponsors such as Leonardo UK, ST Microelectronics, AMD, and Saab.

We welcome projects proposed by partners, and projects co-developed with a partner and SPADS academic. Partners are also welcome to sponsor an existing unpartnered project, in which case we welcome discussions on refining the project direction.



For further information and to discuss opportunities regarding proposing a project, co-development, or sponsorship of an existing project, contact:

SPADS@ed.ac.uk.

EIL.AC/SPADSWEB

We are Edinburgh Innovations, the University of Edinburgh's commercialisation service. We bring University of Edinburgh research to industry, working to identify ideas with value, and facilitating the process of bringing them to life in real-world applications.

WE MAKE IDEAS WORK FOR A BETTER WORLD.

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