Funded PhD Student Position

Innovative Solutions in Wireless Communications and Low Power Sensing

Institute of Sensors, Signals and Systems, School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, UK.

Project Description

This PhD project seeks to address global challenges in sustainability through the development of low-power, low-cost wireless sensor systems that are battery-free, environmentally friendly, and capable of advanced sensing. These innovative systems aim to reduce electronic waste while providing scalable solutions for critical applications, such as precision agriculture, energy-efficient communications, and environmental monitoring.

Leveraging advanced materials and additive manufacturing techniques, including 3D printing and inkjet printing, the research will explore new frontiers in the design and fabrication of wireless sensors, enabling unprecedented functionalities and performance. These systems will integrate technologies such as RFID/backscatter communication, Bluetooth, cellular networks, and RF energy harvesting while incorporating multisource energy harvesting from solar, kinetic, and RF sources. Furthermore, cutting-edge advancements in software-defined radios (SDRs) and satellite communication will be applied to enhance connectivity and operational efficiency in remote or challenging environments.

This research aims to push the boundaries of what is possible with sustainable, next-generation technologies, aligning global goals for reduced environmental impact and increased accessibility to innovative solutions.

The recruited student is expected to begin work immediately on the above, building on the robust framework and plan of action established by the supervisor, Dr. S. Daskalakis (www.daskalakispiros.com). Students will benefit from the excellent state-of-the-art resources available at the School of Engineering and Physical Sciences, Edinburgh campus. These include advanced wireless communication laboratories (equipped with EDA tools, modern VNAs, VSGs, VSAs, source-meters, anechoic chambers, and micro-probing facilities), additive manufacturing tools like 3D printers and inkjet printers, and comprehensive electronics measurement equipment. The research will be further enriched through close collaboration with renowned faculty and industrial partners at Heriot-Watt University, as well as international collaborators from institutions such as Georgia Tech, Atlanta, USA and the University of Patras, Greece.

Scholarship: £19,237 P.A. + tuition fees waived (eligible students are exempted from income and council taxes).

Duration: 42 Months**.**

Location: Heriot-Watt University, Edinburgh Campus, UK.

Deadline: Position is available until filled.

Supervision team

Spyridon Daskalakis, Assistant Professor, Heriot-Watt University will be the first supervisor of the student throughout this PhD program (Website).

George Goussetis, Professor, Heriot-Watt University, an eminent academician, and scientist, with expertise in wireless communications and microwave engineering, and similar will co-supervise the student in relevant domains (Website).

Release date: April 2024.

To apply please send your motivation letter, CV, and recommendation letters (optional) to s.daskalakis@hw.ac.uk. Feel free to reach if you have questions.

Candidate description and eligibility

A highly motivated candidate with an MEng (or M.Tech)/BEng (or B.Tech) degree or equivalent in electronics and/or electrical engineering, with a strong passion for electronics and embedded systems, communication and signal processing is sought herewith.

Desirable: In addition to above qualifications, expertise and interest in Machine Learning and EDA tools would be advantageous.

Funding notes

Essentially UK based students are supported in this scheme, however international students are also encouraged to apply and maybe considered in absence of UK students with a good match to the project. International students please see English language requirements for EU/overseas applicants: https://www.hw.ac.uk/study/entry/english-language-requirements.htm

Final terms and conditions of the studentship is subject to be confirmed with the Heriot-Watt University HR department once the final shortlisting and interview is held.

Other benefits: Heriot-Watt University Edinburgh campus is a vibrant social community in addition to great research and learning atmosphere, and provides several outstanding facilities, including for healthcare, sports, and social well-being.

Please visit for more information: https://www.hw.ac.uk/uk/edinburgh/facilities.htm