INFORMATION FOR CANDIDATES

Postdoctoral Research Associate Position in Underwater Wireless Optical Communication.

Heriot-Watt University
School of Engineering and Physical Sciences
Vacancy Reference Number: IRC25192
Salary scale:HWU Grade 7
Duration: 18 Months with 12 month probation

Location: Riccarton Campus (Heriot-Watt University, Edinburgh, UK)

We are currently recruiting a Postdoctoral Research Associate to work with a leading team of experts from Heriot-Watt University in Underwater Wireless Optical Communication system (UWOC). This is joint project between Advanced Optical Communication and Imaging Lab (AOCIL) and the Ocean System Lab of Heriot Watt University as part of ORCA Hub project.

This is a rare opportunity to work on Underwater Wireless Optical Communication networks, as part of a collaborative team, and to establish yourself as a researcher.

The research in the Advanced Optical Communication and Imaging Lab (AOCIL) is mainly focus on high speed optical communication and signal processing technologies, including optical code based high speed secure optical communication and underwater wireless optical communication (UWOC). We have developed the world first OCDMA prototype (jointly with NICT of Japan), published over 100 papers on these topics in recent years including 4 OFC postdeadline papers. We are recognised as one of the leading research teams in these fields. The team has very active international collaborations with leading research teams in Japan, China, Europe as well as research groups within the UK.

The ORCA Hub is a multimillion-pound programme aimed at addressing the offshore energy industry's vision for a completely autonomous offshore energy field.
Led by the Edinburgh Centre for Robotics (Heriot-Watt University and the University of Edinburgh), in collaboration with Imperial College London and the Universities of Oxford and Liverpool, ORCA Hub brings together internationally leading experts with over 30 industry partners to create a multi-disciplinary consortium with unique expertise in:
• Subsea, ground and aerial robotics
• Human-machine Interaction
• Innovative sensors for Non Destructive Evaluation and low-cost sensor networks
• Asset management and certification

Person specification

The ideal candidate will have the following skills.
Essential:

- Hold a PhD, or equivalent research experience
- Experimental background on optical communication system/digital signal processing
- Demonstrated ability to publish in major international journals in the field.
- Ability to carry out independent research
- Ability to work in a team
- Excellent written and oral presentation skills
- Software programming skills appropriate for both simulation work (matlab and/or high-level languages, such as Java and C++) and algorithmic development for embedded platforms.

Desirable:
Previous experience in Underwater Wireless Optical Communication/wireless optical communication/high-speed fibre optical communication systems is preferable.

Supervision:
You will be supervised by **Prof. Xu Wang**.

Duties and Responsibilities of Post
The PDRA is going to carry out experimental investigation on high speed UWOC system based on advanced modulation and signal processing technologies. The PDRA will closely collaborate with researchers from the Ocean System Lab to demonstrate the system in practical sensor systems.

The Research Associate and Investigators will closely collaborate: there will be regular meetings throughout the project, as well as larger project management meetings that the Research Associate will be expected to attend.

The Research Fellow/Associate shall:

- take responsibility for co-ordinating his or her own work within the framework defined by the project, and as defined by the Investigators;
- organise his or her own work and time in order to meet the deadlines and milestones as defined within the project, or as modified after discussion with the Investigators;
- keep the Investigators and other relevant individuals informed of progress;
- collaborate with Investigators in writing research proposals to seek further funding and technology pull through;
- interact with PhD/MSc/FY students who will be collaborating on the project;
- interact with other Research Associates and Ph.D. students working on related projects;
- support the reporting of progress to our sponsors and industrial partners via reports, website updates and any other means as defined by the investigators;
- engage positively with industrial collaborators during targeted visits to understand their needs and communicate effectively the results of the research undertaken;
- support the organisation of workshops and conferences as necessary;
- support the development of technology demonstrators for your work and the collaborative work undertaken with other Ras;
- Participate in the setup and maintenance of a shared code and data base to foster collaborative work with other RAs in our research group.

The hours of work are 37.5 hours per week. However, a degree of flexibility is required and additional hours may occasionally be required in discussion with the Investigators (for example, leading up to report and publication deadlines).

Informal Enquiries
Informal enquiries by email to **Prof. Xu Wang** (x.wang@hw.ac.uk)

The role is grade 7 (Heriot-Watt University): **£ 32,817-£ 40,322** per annum. Salary is paid monthly by direct transfer to your bank or building society account, normally on the 28th of the month.

Application Procedure
Download an application pack from our website www.hw.ac.uk/jobsor contact the Human Resources Office, Heriot-Watt University Edinburgh EH14 4AS tel 0131 451 3022 (24 hours) email hr@hw.ac.uk quoting Ref IRC25192. Another relevant PDRA opening is IRC25255.

You will be appointed either as a member of staff at Heriot-Watt University. Further details on the institution are available below.

Heriot-Watt University
As a member of staff, you will not only be part of one of the world's leading universities, but also part of one of the top employers in Edinburgh, with over 2,000 people spread across a wide range of academic and supporting roles.

The School of Engineering and Physical Sciences
The School of Engineering and Physical Science constitutes the largest school in the university, both in student, staff numbersand research income. It is a major academic grouping of international standing comprising over 100 staff in five research institutes located in Riccarton Campus on the west of the city. Research School research is organised into five Research Institutes:

- Biological Chemistry, Biophysics & Bioengineering
- Chemical Sciences
- Mechnical, Process and Energy Engineering
- Photonics and Quantum Science
- Sensors, Signals and Systems

The Institute of Photonics and Quantum Sciences (IPAQS)
The Institute of Photonics and Quantum Sciences carries out broad range of world-leading research in photonic physics, engineering photonics and quantum sciences.

IPAQS builds on Heriot-Watt's 40+ years of history in world-leading research in photonics and spans a broad range of research – from lasers and optical sensing approaches to future manufacturing methods to the fundamentals of quantum information. As our title suggests, there will be a special focus on quantum sciences and its close relationship with photonics-based technology.

Our broad research base encourages cross-fertilisation of ideas across the theoretical and experimental base of photonics and quantum sciences, giving the Institute a strong capability to manage the challenges of contemporary academic research. IPAQS presents a unified capability to industry and other collaborative partner laboratories. We maintain very strong links with industry, and currently have formal Strategic Alliances with SELEX ES, Renishaw and AWE. Our depth in relevant photonics research has led to the formation of a number of successful spin-out companies including Edinburgh Instruments, Helia Photonics and Power Photonic.

We have excellent opportunities for postgraduate research study, with over 25 academics offering PhD research opportunities and the Industrial Doctorate Centre in Photonics offering EngD degrees in conjunction with industry.

Institute for Sensors Signal and Systems (ISSS)
The Institute for sensors, signals and systems comprises 17 academic staff, 21 postdoctoral research associates, and around 40 PhD students. The Institute has a long history of signal and image processing, robotics and nano science research, and is lead by Professor George Goussetis. As part of the former Department of Electronics and Electrical Engineering, the Institute achieved a 5 rating in the last Research Assessment Exercise and has a research grant turnover of over £3M per annum. We are developing key innovations in sensor design, manufacture, integration and packaging, autonomous and distributive systems, communication system design and optimisation, tracking, recognition and classification, embedded software and hardware design. Our research has impact in several key areas, including Medicine and the Life Sciences, Robotics, Autonomous Systems and Transport, Manufacturing and Quality Control, Medicine and Health, Human-Computer Interaction and Communication, Wireless and Wired Communication Networks, Electronics and Microelectronics, Environmental Monitoring and Remote Sensing, Security, Surveillance and Defence. The Signals and Systems group within the ISSS is internationally renowned for its contributions to signal and image processing, computer vision, robotics and autonomous systems in which its research spans the major areas, including non-Gaussian, nonlinear tracking, behaviour analysisin video streams, Simultaneous Localisation and Mapping, image, speech and audio processing, Lidar and sonar signal processing, multimodal target detection and fusion. The research staff has strong multidisciplinary interests in signal processing, and theenvironment encourages interaction between members of the group and other institutions. The Institute occupies the first 3 floors of the Earl Mountbatten Building in Riccarton.