



Faculty of Engineering

School of Electronic and Electrical Engineering

University Academic Fellow

Embedded Systems and Ultrasound for Robotics

With a vision and drive to develop a prestigious internationally competitive research portfolio as well as a passion for undertaking research-led teaching you will make a significant impact on the performance, stature and profile of research and student education at The University of Leeds.

This University Academic Fellowship (UAF) is a tenure track equivalent post for future academic leaders which provides an excellent opportunity to establish an academic career at a research intensive University and play a key role in our ambitious plans for the future.

You will embark on a structured five year development programme, successful completion of which will lead to your appointment as a grade 9 Associate Professor.

You will build on the outstanding track record of the Instrumentation and Ultrasound group (led by Steve Freear) which has excellent research in ultrasound sensing and therapeutics for medical applications and a significant portfolio of industrially-funded research in the area of industrial inspection and monitoring. Over the REF 2014 period, the group attracted a research portfolio in excess of £3M. Sources of funding varied with EPSRC (EP/I000623/1 Engineering therapeutic microbubbles and EP/K029835/1 Sound bullets for enhanced biomedical ultrasound systems) supporting blue skies medical research. The microbubble project focussed on a new therapeutics for colorectal cancer, which is a strong interdisciplinary theme at Leeds. The group was successful in a Leverhulme Fellowship application (Nano-bombs for breast cancer diagnosis). The group has a rapidly-developing portfolio of patents with 5 recent submissions.

A significant strand of the research relates to ultrasonic instrumentation underpinned by embedded system design – particularly advanced digital signal processing hardware using FPGA platforms. The group has successfully attracted significant sources of industrial funding due to the broad technology appeal, including: National Grid, BP, PACE, Speir Hunter, GL DNV, Ardent, MMI Engineering, Sellafield, TSB and fostered 4

KTPs. Embedded systems is recognised as a broad platform that brings together elements of signal processing, sensing, computing, robotics and communications. This broad technology platform can therefore allow a fertile mix of high risk fundamental research balanced with more applications-driven industrially-funded research.

The main focus of your research will be on embedded systems for ultrasonics in surgical and inspection robotics. This is already a research topic featured in the *National Facility for Innovative Robotics Systems* and this post will strengthen and expand this theme. Surgical and inspection robotics are two of the three key areas of research of the new Centre for Mechatronics & Robotics.

Ultrasonic techniques have applications not only in diagnosis but also in therapeutics. Therefore the group is already part of the recent robotics activity which will combine robotic positioning systems with targeted therapies for breast cancer involving high intensity focussed ultrasound (HIFU) and photoacoustics. The group received circa £150k equipment investment through the robotics Facility to stimulate this activity, which builds on a significant investment in laboratory infrastructure.

Career Pathway: Tenure track equivalent post requiring successful completion of a 5 year probationary period leading to appointment to grade 9 Associate Professor.

University Grade 8 (£38,511 to £45,954)

For informal enquiries about the role please contact Dr Steve Freear, School of Electronic and Electrical Engineering, tel: +44 (0)113 343 2087, email: S.Freear@leeds.ac.uk.

Ref: ENGEE1002

Click here for further information about working at the University of Leeds www.leeds.ac.uk/info/20025/university_jobs

Job Description

Reports to: Head of School

Main Duties and Responsibilities

Research, Innovation and Impact

- Pursue a programme of individual and collaborative research, resulting in high quality publications and a national and international profile and engaging with industry as appropriate to attract and co-ordinate major initiatives.
- Promote the integration of your own research area with other research interests and themes, in the school, faculty and University.
- Attract research income on an individual and collaborative basis according to an agreed plan, as appropriate to the field or discipline, to support high quality research activity.
- Develop a strategy to ensure that your research has the potential for impact beyond academia.

Student Education

- Undertake research-led teaching at undergraduate and/or postgraduate level, with engagement in continual improvement in response to student and other feedback.
- Contribute to the design, development and planning of modules and policy within the subject area as required.
- Work in line with the University's Partnership agreement and with our students as members of a learning community to provide outstanding education and an excellent student experience.

Academic Leadership

- Contribute to the management of the school by taking on appropriate leadership, management and administrative responsibility.
- Lead academic initiatives and projects in research and student education which facilitate school, faculty and/or University development.
- Participate in the recruitment, management and development of staff as well as acting as a mentor to less experienced colleagues.
- Contribute to the development of the discipline or research area, e.g. through organisation of conferences or membership of key bodies setting the strategic direction of the area.

General

- Contribute to the development and achievement of University, faculty and school strategy within the context of an international, research-led

university.

- Become a specialist in the field, developing and maintaining an external profile as appropriate to the discipline.
- Maintain own continuing professional development.
- Carry out the duties of the post in accordance with the University policies, procedures, values and standards, including the Leadership and Management standards.

This job description provides a framework for the role and it may be necessary for a University Academic Fellow to undertake any duties commensurate with the post as might reasonably be required.

Person Specification

Essential

- A PhD (or equivalent qualification) in a relevant field.
- A clear and compelling academic plan that will deliver academic and more general impact at an international level, in order to meet the criteria for progression to Associate Professor within the 5 year probationary period.
- Significant proven research experience within the academic discipline with a developing record of internationally excellent publications.
- A track record of gaining competitive research funding.
- Experience of presenting at national and international conferences and/or symposia.
- Evidence of building strong working relationships within and, as appropriate, beyond your own discipline and to contribute to successful projects and collaborations.
- The potential and commitment to undertake high quality and innovative teaching and gain a higher education teaching qualification or award.
- Experience of delivering and engaging with student education where opportunities have existed.
- A high level of interpersonal and communication skills, and a strong ability to communicate effectively in writing and verbally with students, academic and external audiences.
- The ability to lead projects and organise, balance and prioritise work commitments.

Desirable

- Success in gaining significant independent research funding.
- Experience of leading on projects and initiatives, including managing resources and conflicting priorities within challenging circumstances.
- A growing track record of successful and innovative teaching at both Undergraduate and/or Postgraduate level.
- Experience of involvement in postgraduate research supervision.
- Experience of working collaboratively with external partner organisations.
- Experience of mentoring less experienced colleagues.

The Faculty of Engineering

The Faculty of Engineering is one of the largest faculties at the University of Leeds, and one of the largest engineering groupings in the UK; having over 700 staff, 3,000 students and an annual turnover of around £60m.

Our vision is that the Faculty of Engineering will be ranked in the top 5 in the UK and the top 50 in the world by 2015, contributing to enhancing industrial competitiveness and the quality of life through the integration of our world-class research and education.

A critical part of our vision is the recruitment and retention of excellent staff. We are committed to all aspects of staff development and to recognising and rewarding excellence and commitment.

Within the Faculty of Engineering our approach is to:

- encourage, reward and promote excellence to achieve and sustain our international standing in higher education;
- invest in our facilities to create world-class spaces for both student education and research;
- further grow our recognised centres of research excellence; and,
- expand our innovation activities to ensure the maximum value is realised from all aspects of our research and education activities.

The Faculty is currently ranked 7th in the UK for the quality of its research (latest Research Assessment Exercise); with 75% of the Faculty's research rated as internationally excellent or world leading.

As a member of the 'Russell Group' of leading UK research-intensive universities we are committed to maintaining the highest standards of research, innovation and student education. Our research feeds directly into our teaching ensuring that our courses are at the forefront of thinking in their respective fields.

The range and scope of our research is extensive and covers all of the major engineering disciplines – civil, mechanical, electronic and electrical, chemical engineering and computer science – including cross cutting themes such as energy, materials, medical engineering and artificial intelligence, with theoretical, experimental and modelling work underpinning all areas.

The breadth of our research portfolio provides an ideal platform for multidisciplinary research, enabling us to undertake high-impact research in areas recognized as providing critical global challenges. Much of our research is linked to industry, with major collaborators throughout the UK and Europe, aligned with industry sectors such as digital technologies; energy; high value chemicals and medical technologies in order to deliver impact and innovation.

The Faculty benefits from our existing excellent facilities, supported by an ambitious multi-million pound programme of investment in both staff and facilities over the next 10 years.

Two thirds of our 3000 students are undergraduates with the rest split evenly between taught masters and research degrees. The Faculty attracts staff and students from all around the world; one third of students are from outside the UK and representing over 90 different nationalities. Our focus is on providing research-led teaching and supervision, inspiring our students and through this helping them to achieve their goals and ambitions.

There is a friendly atmosphere and student-focused approach to undergraduate and postgraduate education. We pride ourselves on the professionalism of our staff and the quality of the research environment, promoting excellence by offering a range of cutting edge programmes, many in conjunction with industrial sponsors and collaborators.

School of Electronic & Electrical Engineering

The School of Electronic and Electrical Engineering, with 50 academic and research staff and 400 students, has over 100 years experience in both world-class research and undergraduate/postgraduate teaching. The School is regarded to be the top electronic and electrical engineering department in the UK (2008 Research Assessment Exercise) with an exceptional 80% of research rated as internationally excellent or world leading.

The School comprises two internationally leading research institutes: the *Institute of Integrated Information Systems (I3S)* and the *Institute of Microwaves and Photonics (IMP)*:

The *Institute of Integrated Information Systems (I3S)* has an established international reputation for excellence across a broad range of research, with substantial funding from a wide variety of sources and strong industrial collaboration. Current activities include projects in signal processing for communications, communications theory, sensor networks, ultrasonics, optical communications, and communication networks. One major current activity, in collaboration with the University of Cambridge, is the £5.9M 'INTelligent Energy awaRE NETworks' (INTERNET) project, which aims to reduce the carbon footprint of ICT networks by at least an order of magnitude, along with a corresponding reduction in non-renewable energy consumption.

The *Institute of Microwaves and Photonics (IMP)* carries out research into microwave and terahertz technology, photonics, nanotechnology and quantum electronics. The School has a long established expertise in microwave engineering, which has been built over the last decade to develop world-leading positions in THz frequency science and technology, in addition to semiconductor, biological and quantum electronic nanotechnology.

The School has a strong track record in student education across the full range of undergraduate, postgraduate taught masters and research degrees, covering the spectrum from renewable energy systems through to nanotechnology. Our high research ratings enable us to attract high calibre staff and students, and to invest to provide excellent teaching, research and laboratory facilities. This wealth of expertise and investment ensures that students receive the best quality of education, with

students taught by leaders in their field accessing world-class and cutting edge learning and teaching.

University Values

All staff are expected to operate in line with the University's values and standards, which work as an integral part of our strategy and set out the principles of how we work together. More information about the University's strategy and values is available at <http://www.leeds.ac.uk/comms/strategy/>.

Additional Information

The University offers generous terms and conditions of employment, a wide range of benefits, services, facilities and family friendly policies. Full details are available on the Human Resources web pages accessible at www.leeds.ac.uk/hr

The Partnership

The Partnership has been developed by students and staff and describes the mutual expectations of us all as members of the University of Leeds community. More information about the Partnership is available at <http://partnership.leeds.ac.uk>

Disclosure and Barring Service checks

A Disclosure and Barring Service (DBS) check is not required for this position. However, applicants who have unspent convictions must indicate this in the 'other personal details' section of the application form and send details to the Recruitment Officer at disclosure@leeds.ac.uk.

Disabled Applicants

Disabled applicants wishing to review access to the building are invited to contact the department direct. Additional information may be sought from the Recruitment Officer, email disclosure@leeds.ac.uk or tel + 44 (0)113 343 1723.

Disabled applicants are not obliged to inform employers of their disability but will still be covered by the Equality Act once their disability becomes known.

Further information for applicants with disabilities, impairments or health conditions is available in the applicant guidance.