POSITION DESCRIPTION

Position Title: Senior Research Officer in Remotely Sensed Image Processing Systems, Data Analysis and Science
Organisation Unit: School of Earth and Environmental Sciences
Position Number: NEW
Type of Employment: Full Time, Fixed Term for 2 years
Classification: Academic Level B

THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver knowledge leadership for a better world.

UQ ranks in the world’s top universities, as measured by several key independent ranking, including the Performance Ranking of Scientific Papers for World Universities (43), the US News Best Global Universities Rankings (52), QS World University Rankings (47), Academic Ranking of World Universities (55), and the Times Higher Education World University Rankings (60). UQ again topped the nation in the prestigious Nature Index and our Life Sciences subject field ranking in the Academic Ranking of World Universities was the highest in Australia at 20.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience – the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland’s highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia’s Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 50,000-plus strong student community includes more than 13,000 postgraduate scholars and more than 12,000 international students from 144 countries, adding to its proud 240,000-plus alumni. The University has about 7,000 academic and professional staff and a $1.8 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city. The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation activities, have built scale and focus in research areas in neuroscience, biomolecular and biomedical sciences,
sustainable minerals, bioengineering and nanotechnology, as well as social science research.

UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+ (see http://uniquest.com.au/our-track-record).

UQ has a rapidly growing record of attracting philanthropic support for its activities and this will be a strategic focus going forward.

Organisational Environment

The School of Earth and Environmental Sciences is a vibrant, multidisciplinary School with extensive teaching and research programs covering the fields of Geology, Geography, Environmental Management, Occupational Health and Safety Sciences and Planning. The School offers a wide range of undergraduate programs including Bachelor’s degrees in Arts (Geography) and Science (Geological and Geographical Science), a Bachelor of Environmental Management and Environmental Science, Occupational Health and Safety Science and a Bachelor of Regional and Town Planning. Honours in Geology, Geography, Geophysics, and Computational Earth Sciences. Coursework masters degrees are offered in Mineral Resources, Environmental Management, Geographic Information Science, Occupational Health and Safety Science and Urban and Regional Planning and the School also contributes to the multi-school Master of Development Practice. The School offers postgraduate training in research via the Master of Philosophy and Doctor of Philosophy and currently has over 150 students enrolled in these degrees. The School has a strong research profile and enjoys an excellent success rate in nationally competitive grants and has a strong record of high quality publications.

Staff and Resources

The School hosts world-class facilities which include a state-of-art planning studio, GIS computer laboratories and extensive analytical infrastructure. Our facilities include high-end sample preparation facilities and a laboratory complex that includes radiogenic and stable isotopes, major and trace element geochemistry, noble gas geochemistry and geochronology, coal petrology and organic geochemistry, geomicrobiology and fluid inclusion facilities. Its Centre for Geoscience Computing conducts research on the mechanics and physics of solid earth processes, on all scales, using supercomputer simulation. Advanced computational technologies and simulation software development are applied to a wide range of industrial and environmental fields and provide a driver for innovation in the general area of simulation-assisted design, specifically in the sustainable energy, earth resources, mass mining and geotechnical sectors. Further information and details of the research interests of academic staff may be accessed on the School’s web site at http://www.sees.uq.edu.au/.

Remote Sensing Research Centre

The RSRC sits within the School and provides private and public sector organisations with techniques to turn satellite and airborne images and field survey data into meaningful maps or information from one or many points in time. These results can then be used to better understand where, how and why environments are changing, and to separate natural changes from those produced by humans (www.rsrc.org.au).

Joint Remote Sensing Research Program

The Joint Remote Sensing Research Program (JRSRP) www.jrsrp.org.au is a collaborative program that combines research, research training expertise and Infrastructure. The program is a partnership between University of Queensland and the Queensland
Department of Science, Information Technology and Innovation (DSITI), New South Wales Office of Environment and Heritage (OEH), the Terrestrial Ecosystem Research Network (TERN) Auscover (Brisbane node), Victorian Department of Environment, Land, Water & Planning (DELWP), the University of New South Wales, and the University of New England (UNE).

The program’s aim is to increase Australia’s capacity to conduct pure and applied remote sensing research to implement and assess effective environmental management policies at local, state and national scales.

Remote Sensing Centre, Queensland Department of Science, Information Technology and Innovation

The Remote Sensing Centre use satellite imagery, data from airborne platforms and field surveys for assessment and monitoring of Queensland’s landscapes. Operational programs include the state wide monitoring of groundcover, tree cover and fire scars. Detailed land use maps are updated for priority regions. Staff from the Centre also support compliance investigations into potentially illegal environmental activities and appear as expert witnesses in court. The Centre also undertakes research, to improve landscape monitoring programs and develop new applications. The operational programs and research activities are closely aligned with Queensland Government policy and planning initiatives.

Information for Prospective Staff

Information about life at UQ including staff benefits, relocation and UQ campuses is available at - [http://www.uq.edu.au/current-staff/working-at-uq](http://www.uq.edu.au/current-staff/working-at-uq)

The University of Queensland [Enterprise Agreement](http://www.uq.edu.au/current-staff/working-at-uq) outlines the position classification standards for Levels A to E.

**DUTY STATEMENT**

**Primary Purpose of Position**

The primary purpose of the selected candidate will be to engage as a Senior Research Officer/Scientific Programmer as a part of the Joint Remote Sensing Research Program (JRSRP), within the Remote Sensing Research Centre (RSRC) at the School of Earth and Environmental Sciences

The position will be located in Brisbane and spend time at both the University of Queensland, St Lucia Campus and the Remote Sensing Centre of the Department of Science, Information Technology and Innovation at the Ecosciences Precinct, Dutton Park. Other locations may be considered.

**Duties**

Duties and responsibilities include, but are not limited to:

**Research**

- Develop systems and methods to acquire, store, manage, analyse and process remote sensing data sets for a range of landscape monitoring applications to support government programs;
- Contribute to JRSRP research tasks and the requirements of partners to implement research in their operational systems;
- Develop and maintain radiometric correction and time series analysis techniques to support mapping and monitoring of land-cover/use and biophysical properties across Queensland and New South Wales and other Australian areas, particularly working with Sentinel and Landsat satellite imagery;
- Develop systems and algorithms to support the JRSRP’s work program;
- Assist other remote sensing researchers within University of Queensland’s RSRC, Queensland’s DSITI, and New South Wales’ OEH by providing training in the use of Python, GDAL and open source tools that form part of the common software environment;
- Conduct research in collaboration with key investigators from the JRSRP including:
  - Development of methods for establishing geometrically- and radiometrically-corrected and consistent image archives for a range of mapping and monitoring programs;
  - Development and application of time series image analysis techniques to map and monitor selected land cover, land use and biophysical attributes;
  - Development of a common remote sensing software environment across the JRSRP partners to enhance research and adoption capability
- Conduct research and publish in high-quality international scientific journals, and help apply for supporting funds from government and industry bodies;
- Participate in research activities of the JRSRP, and provide research support to research staff working in similar areas;
- Liaise with the project investigators and partners, and other potential external collaborators, to acquire and process data and disseminate information and results.
- Work effectively with other staff and students in the RSRC, JRSRP and School.
- Participate in all RSRC and JRSRP meetings.
- Attend School-based meetings and seminars.

Service and Engagement

- Foster the School’s relations Remote Sensing Research Centre, Joint Remote Sensing Research Program and School’s relations with industry, government departments, professional bodies and the wider community.
- Any other duties as reasonably directed by your supervisor

Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:
- the University’s Code of Conduct
- requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or Institute/School
- the adoption of sustainable practices in all work activities and compliance with associated legislation and related University sustainability responsibilities and procedures
- requirements of the Education Services for Overseas Students Act 2000, the National Code 2007 and associated legislation, and related responsibilities and procedures developed by the University
Organisational Relationships
The position reports to Professor Stuart Phinn.

SELECTION CRITERIA

Essential
- A Degree in science, computing science, remote sensing, mathematics, physics or as deemed appropriate.
- Extensive post-tertiary experience in scientific computing and systems, preferably with a focus on biophysical remote sensing, image processing and data management.
- Demonstrated experience in software development and scientific computing for research and operational purposes.
- Demonstrated software documentation and unit testing skills.
- Ability to program in Python, C, FORTRAN, and/or similar languages.
- Experience with Linux operating systems in a high performance computing environment.
- Demonstrated research experience in the development of pre-processing corrections for low, moderate and high spatial resolution imagery.
- Statistical and/or spatial modelling knowledge and experience.
- Knowledge of cloud computing platforms and web-based data delivery applications.
- Established or developing publication record in internationally-refereed journals.
- Ability to work collaboratively with colleagues, collaborators and stakeholders within a research and operational environment.
- High-level of inter-personal and communication skills.

Qualification Verification
An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

The University of Queensland values diversity and inclusion.
Applications are particularly encouraged from Aboriginal and Torres Strait Islander peoples. For further information please contact our Australian Indigenous Employment Coordinator at: atsi_recruitment@uq.edu.au
Applications are also encouraged from women.
This role is a full-time position; however flexible working arrangements may be negotiated.