POSITION DESCRIPTION

Position Title: Computational Geoscientist
Organisation Unit: School of Earth and Environmental Sciences
Position Number: NEW
Type of Employment: Full Time, Fixed Term for 1 year
Classification: Research Academic Level A

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://uniqest.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 part of the Faculty of Science and is located on the St Lucia campus (Brisbane) of the University. It has 104 academic staff, and 23 administrative and technical staff. There is a large contingent of research appointments and the School has been active in establishing a range of adjunct positions in order to promote engagement with leaders in government and the professions.

SEES hosts world-class facilities, which include a state-of-art planning studio, GIS computer laboratories, sample preparation facilities and a complex analytical infrastructure 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. (see https://sees.uq.edu.au/research/analytical-facilities for details).

A recently built geomicrobiology laboratory provides culturing facilities for aerobic and anaerobic microorganisms, including a coy anaerobic chamber, a photosynthetic growth chamber, fluorescence microscopy, and sample preparation for SEM and TEM analyses of bacteria-mineral interactions. In addition, the School maintains close links with the Centre for Microscopy and Microanalysis, a Major National Research Facility that provides access to electron microscopes (SEMs and TEMs), electron microprobes, X-ray diffractometers, nano-SIMS, surface analysis capabilities, and a host of other modern analytical instrumentation.

Further information and details on the research interests of academic staff in the School of Earth and Environmental Sciences can be found on the web at http://www.sees.uq.edu.au/.

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.

DUTY STATEMENT

Primary Purpose of Position

To engage as a Computational Geoscientist within the School of Earth and Environmental Sciences to enhance and support software infrastructure for large-scale geophysical data inversion within the NCRIS Simulation Analysis and Modeling Infrastructure Project for Australian Earth and Geospatial Science, see http://www.auscope.org.au/.

Objectives of the project include:

- Development of scalable solution methods for large-scale, three-dimensional, geophysical inversion problems in particular 3D magnetotellurics using parallel supercomputers.

- Efficient implementation of numerical schemes to solve relevant partial differential equations using parallel computers provided as part of Australia’s high-performance supercomputer infrastructure.
• Delivery of state-of-the-art software components for large-scale inversion and numerical simulations to the geoscience community in Australia and overseas.

Duties

Duties and responsibilities include, but are not limited to:

Research

• Develop scalable solution methods for large-scale geophysical inversion in 3D.
• Apply geophysical inversion to field data in collaboration with scientists in Australia and overseas.
• Contribute to the preparation of scientific papers, project reports and other research outputs.
• Make presentations to team members and the research community.
• Participate in the development of research proposals for emerging grant opportunities.
• Develop effective timelines and milestones based on goals of the project.
• Communicate efficiently with other team members, students, and your supervisor.

Service and Engagement

• Foster the School’s relations with industry, government departments, professional bodies and the wider community.
• Attend School based meetings and Seminars.
• 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 Associate Professor Lutz Gross, School of Earth and Environmental Sciences.
SELECTION CRITERIA

**Essential**
- PhD in the area of geophysics, applied mathematics or scientific computing.
- Theoretic and applied research experience in geophysical data inversion, preferably in electromagnetic methods.
- Track record of publications in the field of geophysical data inversion.
- Demonstrated knowledge in the theory and application of numerical methods.
- Demonstrated experience in programming in python.
- Ability to work collaboratively with colleagues and stakeholders in a multi-disciplinary research team.

**Desirable**
- Experience in software developments using C++, OpenMP and MPI.
- Demonstrated experience in agile software development.
- Experience in or knowledge of using parallel computers to solve complex science problems.
- Track record of developing research proposals in the area of geophysics.

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 and actively encourages applications from those who bring diversity to the University. Please refer to the University’s Diversity and Inclusion webpage (http://www.uq.edu.au/equity) for further information and points of contact if you require additional support.

This role is a full-time position; however flexible working arrangements may be negotiated.

Accessibility requirements and/or adjustments can be directed to the contact person listed in the job advertisement.