POSITION DESCRIPTION

Position Title: Research Officer/Postdoctoral Research Fellow (State Estimation on Recorded Data)
Organisation Unit: School of Information Technology and Electrical Engineering
Position Number: NEW
Type of Employment: Full-time, fixed-term 2 years
Classification: Academic Research 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 (45), the US News Best Global Universities Rankings (52), QS World University Rankings (51), 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 secured a greater share of Australian Research Council grants in 2016 ($24.5 million) than any other university nationally.

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 230,000-plus alumni. The University has about 7,000 academic and professional staff and a $1.7 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 will have further success in this area as an important strategic aim going forward.

School of Information Technology & Electrical Engineering

It is an exciting time to get involved with the School of Information Technology and Electrical Engineering, located on UQ's St. Lucia campus. The School is ramping up its investment in teaching, research and engagement to create an inspiring, diverse and flexible workplace. The direction is backed by a bold, new strategic vision to ensure the School is at the forefront of meaningful research outcomes and pedagogy across its core impact areas of health, data, automation and energy. Boasting strong student enrolments in professionally accredited programs, combined with world-class researchers and facilities, the School is focused on strengthening its position in the global computer science and engineering communities. By attracting the brightest minds and fostering a truly innovative and collaborative work environment, the School will develop global solutions to contemporary issues and mentor the leaders of tomorrow.

The School recognises and values equity and diversity, and encourages applications from any individual who meets the requirements of this position irrespective of gender, sexuality, race, ethnicity, religion, disability, age or other protected attributes. The School strives to provide an inclusive working environment, and along with the University is committed to supporting staff with family and caring responsibilities by providing policies, programs and initiatives to help balance work and family responsibilities.

Details of the School may be accessed on its website at http://www.itee.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

The University of Queensland Enterprise Agreement outlines the position classification standards for Levels A to E.

DUTY STATEMENT

Purpose of Position

This position is part of a technology implementation project in the area of electric power distribution network monitoring. The aim is to make an existing network monitoring algorithm, implemented in Java, generally available to three participating distribution network operators to help determine the most likely operational state of their networks from past and real-time measurement data.

The primary purpose of this position is to assist the software development team in developing the functionality to automatically define, execute and analyse the results of state estimation runs, so that they can be automated. The secondary purpose is to assist in
developing new and increasing the precision of existing network element models, such as distribution transformers, overhead lines and cables.

**Duties**

Duties and responsibilities include, but are not limited to:

**Primary duties:**
- Design, implement and test demonstration setups for state estimation problem for different available data scenarios and derive building rules for them.
- Assist the software developers in debugging state estimation runs by verifying the obtained results and investigating possible causes for divergence.
- Design, implement and test required data processing of input data to be used (e.g. aggregation, plausibility check, or other).
- Design, implement and run state estimation precision evaluation test with the support of the software developers.
- Select, implement and test suitable bad data detection, identification and rejection techniques with the help of the software developers.

**Secondary duties:**
- Develop, implement and test electrical models of relevant network components (e.g. distribution transformers, overhead lines and cables).
- Assist software developers in defining, implementing and testing suitable data structures to capture and store the required model parameters.

**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 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 Dr Olav Krause, School of Information Technology and Electrical Engineering.


**SELECTION CRITERIA**

**Essential**
- Degree in Electrical Engineering (PhD preferred), specialising in Electric Power Systems, or related area, with strong focus on power flow analysis. Detailed knowledge in distribution system modelling (including transformers).
- Ability to work collaboratively with colleagues.

**Desirable**
- Demonstrated experience with Power System State Estimation.
- Professional experience in working for a distribution network service provider, preferably in the area of system state estimation and/or load modelling.
- Developed industry liaisons and professional contacts.
- Basic experience in Java development.

Please refer to the [Criteria for Academic Performance policy PPL 5.70.17](https://www.uq.edu.au) when developing the duties and selection criteria for academic roles.

**Seminar**

Applicants invited for interview may be expected to present a seminar in conjunction with the selection interview process.

**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.