

POSITION DESCRIPTION

Position Title:	Postdoctoral Research Fellow/Research Fellow in Concurrent Software Verification
Organisation Unit:	School of Information Technology & Electrical Engineering
Position Number:	NEW
Type of Employment:	Full-time Fixed term for a period of approximately 3 years
Classification:	Research Academic Level A or 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://uniquet.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.

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.

Our people are our greatest asset. We offer collaborative, inclusive work and study places, which are enriched by the significant diversity of our staff, students and community. We genuinely believe that creativity and innovation flourishes in an environment where people feel supported, valued and empowered. Mutual respect, inclusivity and accountability are at the cornerstone of UQ's culture.

The School is committed to supporting the career growth of women researchers and have a number of initiatives to support women in developing and achieving a fulfilling research career at the School.

Details of the School may be accessed on its website at <http://www.itee.uq.edu.au/>.

Information for Prospective Staff

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.

Further 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

Primary Purpose of Position

A Postdoctoral Research Fellow/Research Fellow is required to contribute to innovative research within the general scope of the design and verification of concurrent systems as part of an ARC Discovery Project under the supervision of the chief investigators, Prof. Ian Hayes and Dr Larissa Meinicke.

The aim of this project is to provide design and verification methods for correct, efficient and secure concurrent computer software, in a manner that supports both modular design and compositional reasoning, and that has mechanised support using modern theorem provers to help eliminate human error and automate the verification task.

The role of the Postdoctoral Research Fellow/Research Fellow is to participate in innovative research developments, conduct original research within the general scope of correct and secure concurrent software, provide research input to other staff and research students where relevant, participate and/or lead interactions investigators Dr Brijesh Dongol (Surrey University, UK), Dr Peter Höfner (Data61, Sydney) and Prof. Cliff Jones (Newcastle University, UK), and provide support in literature review and research document preparation.

Duties

Duties and responsibilities include, but are not limited to:

Research

- Undertake research on problems within the scope of the project, including providing mechanised support for the theories using an interactive theorem prover.
- Prepare research publications and progress reports.
- Participate in regular meetings to discuss project objectives, methodology and outcomes.
- Participate in interactions with research collaborators and in supervising student projects.

Teaching and Learning

- As a 'Research focussed' position there is no formal requirement for undergraduate teaching. However it is encouraged that you actively seek teaching opportunities
- Contribute to supervision at honours and postgraduate level and participate in events to attract postgraduate students.

Service and Engagement

- Perform a range of administrative functions in the School
- Foster the School's relations with industry, government departments, professional bodies and the wider community.
- Any other duties as reasonably directed by your supervisor

For Appointment at Level B

Duties as listed above, in addition to the following:

- Engage in independent and/or team research programs including external funding, and achieve national recognition and impact in the research area.
- Conduct research and publish scholarly papers in both academic peer-reviewed and professional journals that contribute to the School's strategic research strengths.
- Supervise students at undergraduate and postgraduate level
- Work with colleagues and postgraduates in the development and conduct of joint research projects, especially projects that are interdisciplinary and contribute to the strategic direction of the School. ^[1]_[SEP]

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 Helen Huang within Information Technology and Electrical Engineering.

SELECTION CRITERIA

For Appointment at Level A

- A PhD (or progress towards PhD) in Computer Science, Software Engineering or closely related field
- Demonstrated expert knowledge formal methods of software development.
- Experience with formal methods for concurrent systems such as the rely/guarantee approach or concurrent separation logic.
- Experience in using an interactive theorem prover such as Isabelle/HOL.
- Demonstrated high-level written and oral communication skills.
- Experience in conducting research projects.
- Publication of research findings in peer reviewed journals/conferences.
- Experience in student project supervision.
- Ability to work effectively both independently and as a member of a team.

- Ability to develop industry liaisons and professional contacts

For Appointment at Level B

- PhD (or equivalent degree or accreditation and standing) in Computer Science, Software Engineering or closely related field
- Demonstrated teaching skills at undergraduate and postgraduate levels
- Ability to successfully deliver outputs to industry
- Evidence of a contribution to research, including successful external grant applications
- An ability to establish effective relationships and to represent and promote the school at a university and wider community level, including industry, government and professional bodies.

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 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.