UTS:QSI
CENTRE FOR QUANTUM SOFTWARE AND INFORMATION

Position: Postdoctoral Research Fellow - Quantum communications using Sneakernet principles
Position ID: COMMS001

Place: Center for Quantum Software and Information, Faculty of Engineering and IT, University of Technology Sydney. Sydney, NSW, Australia

Pay scale: Base Salary Range: $125,240AUD to $148,229AUD pa (Level B) + 17% superannuation

Duration: Fixed term 2 year position with extension subject to performance and funding.

Reporting to: Prof. Simon Devitt, Research Director, Center for Quantum Software and Information.

Closing date: Applications will be considered until positions filled.

About the Centre

The mission of the UTS Centre for Quantum Software and Information (UTS:QSI) in the School of Computer Science is to research and develop software for quantum computers and to discover new information processing applications for quantum technologies. The aim is to advance quantum software science and technology to drive quantum computers into the future. The UTS:QSI's expertise in the software and information processing capabilities of quantum computing and communication technologies places it in a world leading and unique position in the Australian quantum technology research community, with a software and theory research program that complements the hardware focus of other Australian teams.

About the Roles

As the Postdoctoral Research Fellow, you will undertake research on quantum communication systems using the sneakernet model of quantum comms [arXiv: 1410.3224]. You will work with hardware models of quantum memory systems, specifically in Ion-Trap, neutral atom and donor based systems, utilising high-density quantum low density parity check codes. You will work closely with other researchers and students to develop new models of quantum networks based on sneakernet principles and adapt concrete hardware designs to inform new quantum communication systems up to and including global quantum internet type networks.

You will also be free to pursue other research endeavours of interest to the quantum technologies as scale group (www.quantumts.org) and the center as a whole. Up to 20% of your time can be focused on innovative new research unrelated to core activities of the center or the group.

Criterion: About You

The incumbent is expected to have relevant experience in developing quantum architectures for communications and computation, error-correction and fault-tolerance, measurement based quantum computing or universal computational models. A high level of competency in existing quantum communications protocols and models will be advantageous, of particular interest is the intersection of quantum information science and general relativity.

Criterion: As the successful applicant, you will have;

- A PhD Degree in Quantum Information, Quantum physics, Computer Science, Mathematics, Physics or a very closely related field
- Familiarity with relevant computer software and research & teaching practices
- Sound knowledge of python, C, C++, Julia or related programming languages
- High quality publication record in Quantum Information science
- Significant experience in attracting and managing research projects
- Ability to interact with theorists, experimentalists and software engineers and translate complex ideas to a variety of audiences.
- Working knowledge in error-correction, fault-tolerance, measurement based quantum computing, graph-states and/or cluster states.
- Working knowledge in quantum communications protocols, including QKD, Blind and distributed quantum computing and/or entanglement based sensing.
- In depth knowledge of General Relativity and the intersection of quantum information science and general relativity would be advantageous.

Remuneration/Salary

Base Salary Range: $125,240AUD to $148,229AUD pa (Level B)

This role attracts 17% superannuation (pension) in addition to the base salary.

This position is full-time and an appointment will be made on a fixed term basis for 2 years.

UTS staff also benefit from a wide range of Employee Benefits, including flexible work practices, child care centres, generous parental leave and salary packaging opportunities.

How to Apply

To apply, please submit your application directly to Prof. Simon Devitt (**simon.devitt@uts.edu.au**)**.** Your application should include:

- A cover letter (maximum 2 pages) stating your motivation for applying, as well as addressing the selection criteria found above.
- A copy of your CV

Please ensure that each document submitted includes your name and contact details and the position ID: **COMMS001**

For specific inquiries or issues with your application, please contact Prof. Simon Devitt **simon.devitt@uts.edu.au**

Positions will remain advertised until filled.

UTS:QSI
CENTRE FOR QUANTUM SOFTWARE AND INFORMATION