QUBIC
The Australian Research Council Centre of Excellence in Quantum Biotechnology

Automated Image Analysis for Live-Cell Quantum Sensing

Institution	University of Technology Sydney
Project details	Advances in live-cell quantum sensing are enabling researchers to monitor biological processes with unprecedented sensitivity and spatial resolution. However, these experiments often generate large volumes of microscopy images, creating a significant bottleneck in data processing and interpretation. This project will focus on developing and evaluating automated image analysis workflows for live-cell quantum sensing datasets. The student will work with real experimental imaging data generated within Institute for Biomedical Materials and Devices (IBMD), a multidisciplinary research group at the University of Technology Sydney (UTS). Using computational tools and coding techniques, the student will explore methods for image preprocessing, feature extraction, data visualization, and quantitative analysis. Throughout the internship, the student will gain hands-on experience in scientific programming and data analysis while contributing to efforts that improve the efficiency and reproducibility of image-based quantum sensing research. The project provides an excellent opportunity for students interested in the intersection of biotechnology, data science, and computational research.
Who can apply	This project is suitable for undergraduate students with interests in one or more of the following areas: • Data Science • Computer Science • Biomedical Data Analysis • Biotechnology Preferred skills include: • Basic programming experience (Python preferred but not essential) • Interest in image processing, data analysis, or machine learning • Ability to work independently and learn new computational techniques • Strong problem-solving and analytical skills
Contact / Project supervisors	Yitong Zhao, Prof. Jiajia Zhou