



Background:

Two one-year scholarships, each worth NZD30,000 stipend + domestic tuition fees with NZD13,000 performance top-up, are available at School of Engineering, University of Waikato, New Zealand. These scholarships are part of a cross institutional collaborative project funded by New Zealand's Biological Heritage National Science Challenge.

The funded projects focus on a 'proof of concept' demonstration of the capability of image analysis to strengthen biosecurity surveillance in New Zealand. The projects develop imaging acquisition, data storage and processing as well as computational intelligence that can be used to detect changes in plant health in urban vegetation as an early indicator of the presence of unwanted pests or diseases of biosecurity concern. The project aims to create an efficient large area coverage image-based surveillance system that applies automation in knowledge intensive processes such as data acquisition, image processing, stress and disease recognition and anomaly detection. This enables prioritization of human inspection of suspect symptoms to improve the early detection of invasive pests

Project 1: Urban Vegetation Imaging Surveillance System

Design and develop specification for the sensing, data communication, data storage system. The system is expected to attach easily to vehicles, collect high quality images of urban vegetation while moving at urban speed. In addition, the housing should operate reliably under various New Zealand weather conditions and rough handling expected of urban outdoor environments. Regular on-road system testing and data collection at the identified sites is part of the duty.

Skillsets: mechanical/mechatronics CAD design and manufacturing, system integration, digital image processing and analysis, working knowledge of machine learning, New Zealand class 1 driver license.

Project 2: Digital twin and data fusion for vegetation monitoring

Design a software platform that integrates information, meteorological data augmentation and facilitate model building to convert information into knowledge. Tasks include privacy blurring, building digital twin from the urban vegetation data. Combine GIS data and plan species recognition algorithms to detect anomalies.

Skillsets: Knowledgeable in programming, computer vision and machine learning. Working knowledge on GIS and major data science platforms.

Eligibility criteria:

- Student must be in the final year of a BE(Hons) or equivalent qualification in the relevant engineering disciplines.
- Full-time
- Domestic/International/PR students

Value and tenure:

- NZD30,000 stipend + domestic tuition fees with NZD13,000 performance top-up
- Tenure of 1 year.

Application documents required:

- CV
- 2 references (Academic and/or Character)

Contact and email address for applications:

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Closing date:

1 April 2022