UNIVERSITEIT VAN PRETORIA
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YUNIBESITHI YA PRETORIA

FABI

Masters Bursaries available 2025:
Using Machine Learning with Remote and Proximally Sensed Data for Detecting Damage from Forest Insect Pests and Pathogens

A Masters bursary is available for the 2025/2026 academic years for a candidate representing previously disadvantaged population groups. Applicants must have South African ID (citizens or permanent residents only).

Remote and proximal sensing, and the interpretation of the data it produces, is currently undergoing a revolutionary phase of development. High resolution sensors and their platforms are becoming feasible in even relatively low value applications, while AI and machine learning (ML) algorithms being developed in the environmental sciences offer considerable savings in interpretation costs, which also come with significantly improved resolution and precision. Sensors commonly used in the industry include RGB and multispectral cameras, based on UAV/drones or terrestrial / mobile platforms.

Applications of ML methods on such data include assessments of insect pest and pathogen damage which can be used to develop techniques for monitoring and early detection of insect pests and diseases in plantation forests. Early detection and ongoing monitoring of insect pests and diseases is an important component of integrated pest management programs to inform various management decisions to reduce the economic impact of pest and diseases in the forestry industry.

The position will include both field work and computer data analysis, and provide an opportunity to develop and apply remote sensing skills. Actual project content will be finalized with the successful candidates and collaborators within the remote sensing satellite lab. FABI and the satellite laboratory bring together world class expertise in tree health biotechnology and remote sensing to create a unique multidisciplinary research environment, aimed at developing next-generation research leaders in precision pest management and sustainability.

Required qualifications: Candidates should have BSc honours or equivalent degree, ideally in Entomology, Ecology, Plant Pathology, Data Science, Computer Science, or Geoinformatics; demonstrated analytical/statistical abilities with a good working knowledge of programming in languages like Python and R and writing skills; experience in remote sensing will be advantageous; ability to work independently and as part of a team; good communication skills.

Where: The successful candidate will be based at the Forestry and Agricultural Biotechnology Institute (FABI, www.fabinet.up.ac.za) at the University of Pretoria. As these are industry sector funded projects, the successful candidates will be expected to hold normal office hours at their place of work.

Compensation: A full scholarship is offered for a two-year period.

Application Process: Email the following to Dr Michelle Schröder (michelle.schroder@fabi.up.ac.za) **by 15 November 2025:** (1) A cover letter that includes your research interests (2) CV, including contact information for three references combined into one document.

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