



MAKERERE UNIVERSITY



AARHUS UNIVERSITY

PhD Fellowship Advert

We are seeking to appoint a full-time PhD Fellow to undertake research in a new project on Sustainable and efficient insect production for livestock feed through selective breeding (FLYgene). The PhD fellowship will focus on **developing an Internet-of-Things (IoT) based platform for large scale identification and phenotyping of the Black Soldier Fly (BSF) in managed breeding sites within Kenya and Uganda**. The PhD position will be primarily based at Makerere University (MAK), Uganda, with at least 1 year mandatory stay at Aarhus University (AU), Denmark. The proposed work hypothesizes that it is possible to develop efficient and affordable sensor-based methods, including computer-vision, to identify BSF at family level, and record phenotypes (focusing on traits such as growth rate, protein content and fitness) for selective breeding. Methods and tools combining mechanics, electronics, computer vision systems with illumination at different spectral wavelengths of light, and machine learning for automated recognition will be investigated. Initial experiments will be done at AU in Denmark and validated at MAK. Validated methods will be implemented to generate the phenotypic data at MAK and University of Nairobi (UoN).

Prospective candidates must:

- Have an MSc. in Electrical Engineering/Electronics Engineering/Computer Engineering/Communications Engineering from MAK or an equivalent degree recognized by the MAK University Senate.
- Have related research experience
- Be skilled in electronics design, signal processing, and computer programming
- Be a highly motivated individual interested in pursuing rigorous research.
- Be committed to a long-term research career in sensors/digital signal processing/computing
- Be a person of integrity and have an eye for details.
- Possess good English language skills, both verbal and writing

Additionally:

- Experience in the application of signal processing and machine learning techniques to agricultural problems is advantageous
- A record of high-quality publication(s) in peer-reviewed journals will be prioritized.

Successful fellows will be expected to:

- Conduct high-quality research leading to practical impact and publications in high-impact journals (must be ready to work towards publishing a minimum of one quality paper per year).
- Contribute to research capacity building including training of undergraduate and MSc students in the Principal Investigator's (PI) Department.

The PI is supported with funding from DANIDA. The PI will support the successful PhD Fellow for 3 years. Funds will cover: MAK PhD tuition for 3 years, monthly stipend as per MAK rates, research supplies, conference attendance and other research-related costs such as a visit to collaborators' laboratories.

Applicants should submit an email titled "PhD Fellowship Application 2022" to: cosmas.mwikirize@mak.ac.ug and roseline.nyogarwiziakol@mak.ac.ug, with the following documentation attached in a zipped packet.

- Up to date CV;
- A PhD concept aligning with the research theme. The concept should include a background, possible research questions/hypotheses, objectives and a proposed technical approach (Maximum 3 pages-- including bibliography, font size 12pt, margin 1-inch, single line spacing);
- Certificates and/or grades for all post-secondary education, up to and including the bachelor's level;
- Master's degree/higher degree certificate, with a summary of the courses/subjects included in the degree;
- An official description of the grading system used at the issuing institution.
- Summary or links to the applicant's scientific publications (if any).

Female candidates are strongly encouraged to apply.

The applicant is fully responsible for submitting complete documentation. Without complete documentation we cannot, unfortunately, include the applicant in the assessment process. Only Short-listed applicants will be invited for interviews.

For further inquiries please contact: (1) Dr. Cosmas Mwikirize (MAK) at cosmas.mwikirize@mak.ac.ug (2), Asst. Prof. Grum Gebreyesus (AU) grum.gebreyesus@ggg.au.dk.

Closing date: Friday 15th April 2022 at 23:59 EAT. Expected start date: 1st May 2022, or as soon as possible afterward.