

Postdoctoral Research Fellowship

Project Title: Genome/transcriptome data analyses and image recognition for improved plant disease management

Scope of Research: This fellowship will be a joint appointment by the School for Data Science and Computational Thinking and the Department of Plant Pathology at Stellenbosch University. The successful candidate will have to compliment and expand existing expertise available at the university to apply data science and bioinformatics techniques to analyse fungal and plant genome and transcriptome data. A smaller research component will entail image recognition and machine learning for disease recognition. The successful candidate will be based at the School of Data Science and Computation Thinking and the Department of Plant Pathology (Faculty of AgriSciences), and will be expected to deliver at least two subsidy-bearing publications per annum. The postdoctoral fellow is also expected to assist in the training of postgraduate students, write research grants and increase awareness of data science and computational thinking by making scientific and popular presentations. The appointment will be for 3 years, and the Fellow will interact with three research groups at the Department of Plant Pathology.

Research: See addendum for research focus.

Hosts: School for Data Science and Computational Thinking, and the Department of Plant Pathology, Stellenbosch University.

Requirements:

- PhD in Bioinformatics/ Plant Pathology with the willingness to learn skills in data science (must have graduated within the last 5 years)
- Evidence of the ability to publish in internationally acclaimed journals
- Previous experience in working with students will be an advantage.

Remuneration: R350 000 per year, with an annual increase according to the salary structure of Stellenbosch University. Postdoctoral fellows are not employees of Stellenbosch University, and are therefore not eligible for employee benefits. Their

fellowships will be tax-exempted.

Commencement of duties: As soon as possible

Closing date: 9 June 2021

Enquiries: A letter of application, accompanied by a comprehensive *curriculum vitae* that includes a list of publications and the contact details of at least two referees, must be sent to Prof. Kanshukan Rajaratnam at kanshu@sun.ac.za and Prof Lizél Mostert at lmmost@sun.ac.za. Applicants should request their referees to forward confidential reports by the closing date to the same email addresses. For further details see <http://www.sun.ac.za/english/data-science-and-computational-thinking>.

Addendum

Research focus

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Genome and transcriptome analysis: The Department of Plant Pathology has generated a mass of data on genome and transcriptome sequences of plants and plant pathogens. This data has been stored and not yet utilised to its full potential. The research fellow will thus be involved in genome and transcriptome analyses of existing data, as well as population genetics analyses. Genome data will also be mined for putative markers for diagnostic purposes, annotation of mating type genes and phylogenomics.

Disease imaging: Crop disease identification, based on computerised image recognition, have been developed for limited crops and diseases globally. Crop disease photos for specific diseases and crops being researched at the Department of Plant Pathology, as well as publically available photos, will be used by the postdoctoral fellow to build reliable models for disease recognition. The downstream application of this research will aid in the development of disease recognition applications that can be used with smart phones.