

## POSTGRADUATE OPPORTUNITIES 2022

Closing date: 30 September 2021

\*Master's: R150,000 | \*PhD: R180,000 | Internships: R110,000  
(Per year, full-time)

### Who are we?

MuST is a **machine learning** research group, with a focus on **deep learning**, one of the key technologies driving current innovation in artificial intelligence. Our research is aimed at understanding and improving deep learning tools, as well as applying these tools in selected domains with external partners. Our theoretical work studies the generalisation ability and the interpretability of these models from novel perspectives. Our application domains are diverse, ranging from speech processing, space weather prediction and whale call analysis to industrial applications of deep learning. MuST forms part of the Faculty of Engineering at NWU.

We are a distributed research group: we have a student lab in Potchefstroom, a satellite research lab in Hermanus, and we collaborate with students and co-researchers spread across South Africa and abroad.

MuST is the Deep Learning node of CAIR, a South African research network that conducts foundational, directed and applied research into various aspects of AI.



MuST researchers collaborate with other institutions on specific topics.



### Application process

To qualify for a **Master's bursary**, you should have completed/be busy with the final year of a relevant undergraduate degree (BEng, BSc), have a solid mathematical background, and be eager to learn. For a **PhD bursary**, you should be in possession of, or have met the requirements for a Master's degree in Electronic Engineering, Computer Engineering, Computer Science or a related field.

Our **internship** programme offers a year of hands-on training in a supportive environment in preparation for entering the Master's programme in 2023. The same prerequisites as for Master's students apply.

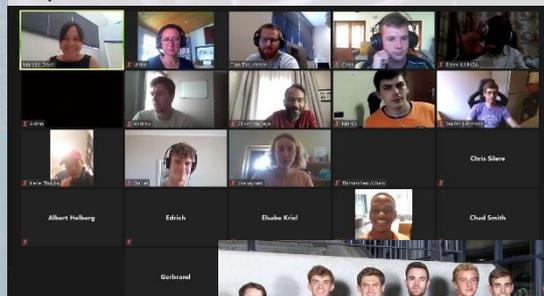
\*This amount **includes** the [NWU postgraduate bursary](#). As the size of the NWU bursary is not always known in advance, we ensure that the total adds up.

### Postgraduate studies at MuST

As a MuST student, you will either study the essence of the learning process of different types of deep networks, or apply and improve these techniques in the context of a specific application domain. In practice, you will work with MuST researchers on one of our research projects, using popular deep learning tools (such as *PyTorch* and *TensorFlow*) to explore specific questions on new and existing data sets. You will learn about machine learning algorithms, development of software and the design and interpretation of machine learning experiments.

You will have the opportunity to attend conferences to gain exposure to related research in our domain, and present your work to peers. MuST supports its students to attend local events, with more senior students presenting their work at international conferences.

You will also contribute to group-oriented activities (such as joint software development) and may participate in other MuST R&D projects, such as those we do for industry partners. Studies at MuST in itself is a group-oriented activity: the group meets weekly, each study is part of a bigger project and every student researcher contributes to the growing collective understanding of deep learning. In addition to learning how to do good research, MuST students acquire various skills essential to succeeding in a professional work environment.



MuST's annual deep learning bootcamp: 2020 (right) and 2021 (top).

