

## Engineering, Built Environment and Information Technology



# Learn more about the Deep Learning Indaba from Dr Vukosi Marivate

By Primarashni Gower

Dr Marivate is the ABSA Chair of Data Science at the University of Pretoria and co-founder of the Deep Learning Indaba.

### Dr Marivate's background

'I hold a BSc and MSc in electrical engineering from the University of the Witwatersrand and a PhD in computer science from Rutgers University (USA), with a focus on developing machine learning/artificial intelligence methods to extract insights from data.'

'What interests me is the intersection between machine learning and natural language processing.'

'I run a research group called Data Science for Social Impact, and I use local challenges as a springboard for research. I have worked on projects in science, education, energy, public safety and utilities.'

### What is your role as ABSA Chair of Data Science at UP?

'We expand data science practice, do interdisciplinary data science research and build the research community both within and beyond the University.'

### What exactly is machine learning and data science?

'Machine learning is a subset of artificial intelligence that deals with developing machines that can learn patterns from data.'

'Data science looks at using data (small and large) to better understand our world. It is multi-disciplinary because we take on challenges across numerous fields.'

'Data scientists try to provide solutions to problems. We approach problems looking through the lens of data, and we find ways to use appropriate modelling (machine learning, statistics and graph mining) to tackle those problems and find solutions.'

### Data science is used in multiple ways

'Data is abundant, but data also causes problems, eg when one uses data to build tools. Our team is working on methods that can make it easier to build automated tools that can process local language data for tasks such as understanding communication on chat groups, automated labelling of local language data and discovering patterns in local language texts.'

'We need to better understand what factors lead to improved performance for primary and secondary school education. We use machine learning models to predict performance, but for policymakers, we have to be able to explain how these methods actually work and how they make their decisions.'

'Machine learning is an interesting field of research. We need to understand issues such as cyber-safety challenges, the detection of anomalies or fraud; we need to find methods to identify threatening content online (misinformation, fake news, online harassment) and ways to prevent it too, of course.'

### How much progress has South Africa made in terms of machine learning and data science, in comparison to Africa and the rest of the world?

'We have a growing community. South Africa has one of the more advanced machine learning/data science communities on the African continent, but we still have to find ways to collaborate across institutions and with industry to create a solid foundation for sustainability.'

'We do not have large university departments with plenty full-time PhD students, so we need many more students in computing and in machine learning, artificial intelligence and in data science. There are many opportunities for students interested in these fields. Through the Deep Learning Indaba, we are connected to a range of people who are doing great work in these fields.'

### What advice would you give to prospective university students about this field?

'There are so many opportunities in this area, and if you keep on learning you can advance very quickly. The University has a number of opportunities for those interested in data science including a master's degree in IT in big data science.'

### Contact information

Website <https://dsfsi.github.io>



↑ Dr Vukosi Marivate