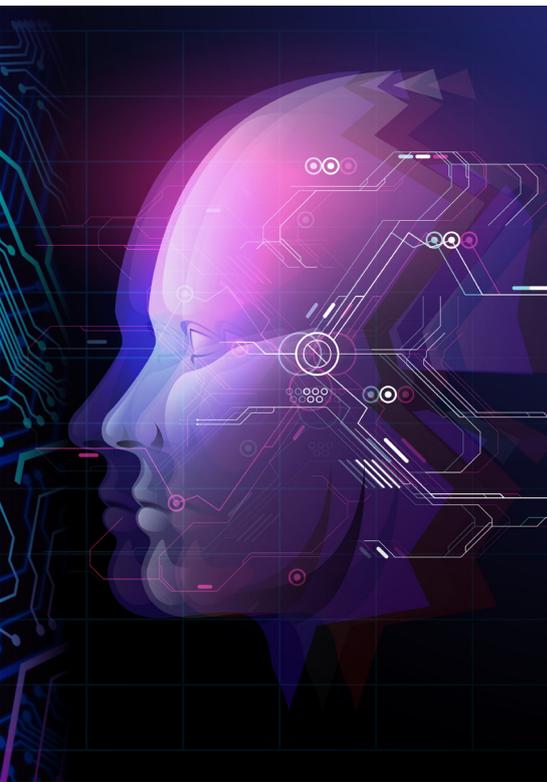


# MultiChoice Chair in Machine Learning addresses global skills shortage

Prof Pieter de Villiers

The ongoing global COVID-19 pandemic has highlighted the advantages of a digital society. Increased online activity has demonstrated how large volumes of data travel all over the world every second of the day. Machine learning (ML) and artificial intelligence (AI) are two elements of the Fourth Industrial Revolution (4IR) that assist humans with tasks where underlying patterns in and insights into large volumes of data are not obvious.





**MULTICHOICE HAS IDENTIFIED SEVERAL OPPORTUNITIES AND PROJECTS TO APPLY ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING AT VARIOUS POINTS THROUGHOUT ITS VALUE CHAIN. THIS INCLUDES CONTENT CREATION, UNDERSTANDING WHAT CONTENT TO OFFER CUSTOMERS (RECOMMENDER SYSTEMS), CUSTOMER SERVICE AND IMPROVING INTERACTIONS WITH CUSTOMERS.**



In recognition of the key role that AI – and specifically machine and deep learning – will play in unlocking a truly digital future, MultiChoice South Africa partnered with the University of Pretoria (UP) to sponsor the MultiChoice Chair in Machine Learning. This research chair, which is located in the Faculty of Engineering, Built Environment and Information Technology, strives to address the global skills shortage in machine learning development skills. In this regard, Africa can excel, given its unique challenges and opportunities.

The Chair is jointly located in the School of Information Technology and the School of Engineering, with Prof Nelishia Pillay, Head of the Department of Computer Science, and Prof Pieter de Villiers, a lecturer in the Department of Electrical, Electronic and Computer Engineering and Head of the Department's Signal Processing and Telecommunications Research Group, as co-chairholders.

The agreement entered into between UP and MultiChoice South Africa in 2018 was aimed at the pursuit of joint collaboration and research for common and mutual benefit. The Chair subsequently undertakes academic and applied research, as well as human resource development in the field of machine learning, which is applied to several advanced topics of interest to MultiChoice.

MultiChoice has identified several opportunities and projects to apply AI and ML at various points throughout its value chain. This includes content creation, understanding what content to offer customers (recommender systems), customer service and improving interactions with customers.

These challenges and opportunities are addressed through postgraduate master's and PhD projects that propose novel

and creative ML approaches to solve real-world problems, while providing students access to pressing real-world industry research problems and realistic data. Several exciting ML-related research projects are currently underway or have been completed within the Chair in the application domain of satellite broadcasting and video streaming.

Topics include, but are not limited to, the automated genre labelling of motion picture (movie) trailers, the automated analysis of audio and video content to extract meaningful and descriptive metadata, the automated generation of closed captions through automated audio processing, automated audio and video segmentation for scene skipping, automated movie trailer creation, and even the forecasting of weather-related impacts on DSTV service delivery. Some of these projects address Big Data challenges, where the volume, velocity, variety, veracity and value (the 5 Vs of Big Data) of video and audio content have become so overwhelming that it is impossible for humans to process.

As machine learning is a very specialised field, the partnership between MultiChoice and UP is a forward-looking way to nurture and improve these skills in South Africa, while addressing problems of research and commercial interest through interesting collaborative projects. Benefits of this collaboration have already been realised by students who have performed vacation work at MultiChoice, and a master's graduate of the Chair who has been offered employment at MultiChoice.

Early in 2020, several MultiChoice staff members attended a course on machine learning that was presented under the umbrella of the Chair at UP, further demonstrating the benefits of this collaboration. ➔