Stellenbosch University adds data engineering degree to BEng stream

The Faculty of Engineering at Stellenbosch University will introduce a new BEng degree in Data Engineering from February 2020. This degree is a new specialisation stream in the existing undergraduate degree in Electrical and Electronic Engineering, the BEng (E&E).

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"The purpose of this new specialisation in Data Engineering is to prepare our students for the fourth industrial revolution where the world of work has fundamentally changed and there is a deluge of data that needs to be structured, modelled and analysed. The purpose is to enable data-led organisations to discover the underlying knowledge and make well-informed decisions," says Prof Wikus van Niekerk, Dean of Engineering at SU.

What is data engineering?

Data engineering encompasses all tasks required to make data available for analytics, knowledge discovery and decision-making processes. Data engineers develop and maintain an organisation's data pipeline systems, and implement algorithms to transform data into a useful format for analysis.

Tasks include the collection of data, storing data, data synchronization, data transformation, data cleansing, data governance, and the development of data models.

Data engineers must have technical skills, including a deep knowledge of database design and multiple programming languages. Furthermore, they need excellent communication skills in order to present their findings in a manner that can be easily understood by an audience.

Specialised programme

From the first year of study, the Data Engineering specialisation is built on the solid foundation of Mathematics, Statistics, Computer Science and Artificial Intelligence. The specialisation also introduces new undergraduate modules in Data Engineering that cover topics such as Big Data Platforms, Probabilistic Graphical Models for Machine Learning and Fundamentals of Deep Learning and Artificial Intelligence. Students will develop the engineering skills to create mathematical, physical and statistical models of real-world systems, including data systems.

Upon obtaining the qualification, Stellenbosch University's new Data Engineers will be able to integrate these knowledge areas to critically analyse complex systems in order to engineer innovative solutions to real-world problems to effect fundamental societal impact. This will be demonstrated by students successfully completing a capstone project related to Data Engineering in their final year of study.

The existing BEng programmes and specialisations will have a limited exposure to Data Science, but the new specialisation in Data Engineering will go into depth into the mathematical and statistical fundamentals of Data Science.

New school

This initiative supports the soon-to-be-established School for Data Science and Computational Thinking at Stellenbosch University.

"The school will work across all our faculties in an interdisciplinary way and will span the entire academic project, from under- and postgraduate training to research and specialist consultation. The Faculty of Engineering will play a key role in the new school because it has always been future focused with cutting-edge research," SU Rector and Vice-Chancellor Prof Wim de Villiers adds.

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