

ALL ABOUT ELVIS

"I love challenges and I really enjoy mathematics and algorithms. I love starting with a concept, analysing it, doing the configuration, building circuits, doing my own trouble-shooting and finally getting to the end product. Doing the course at the University of Pretoria has made it possible for me to go out and create a product from scratch."

– Ntombi Banda

As an exchange student, she built windmills in Norway. At the end of her third year, this time as an International Association for the Exchange of Students of Technical Experience (IAESTE) exchange student, Ms Ntombi Banda successfully completed an internship programme with the Laser Centre Leoben in Niklasdorf, Austria, and has since been invited back.

Last year, as a final-year computer engineering student at the University of Pretoria, Banda earned the respect of her peers and the University's academic staff alike with her design and implementation of laboratory customised courseware by making use of the National Instrument Educational Laboratory System, also known as NI ELVIS.

The NI ELVIS is a LabVIEW-based design and prototype environment for college and university engineering laboratories, which combines all the instruments in software and can easily be customised to meet the diverse needs of students. Banda's project forms part of the collaboration between the Department of Electrical, Electronic and Computer Engineering of the University of Pretoria and National Instruments. Due to the success of her project, it is set for implementation at the University of Pretoria.

Recognising the probability of a decline in quality education as a result of the increase in student numbers and the subsequent



workload on instructors, Banda, under the supervision of Mr Saurabh Sinha of the University of Pretoria and Mr Hutton of National Instruments, set out to design and implement interactive courseware that can interface with laboratory electronic devices. This interactive courseware envisages an increase in the number of students, without necessitating an increase in the instructor workload; yet it is sensitive to upholding the quality of education.

Some of the engineering challenges she had to address in her project included the capability of characterising electronic components placed on the NI ELVIS prototype board; the efficient design of storage data in the database, which impacts on the speed of the system and the storage space of the student data in the server; and the fact that NI ELVIS is a new piece of equipment under revision. Furthermore, since the system has to be used for different courses, she needed to create a generic solution to determine required values of the different practical assignments.

→ Back: Prof. Gerhard Hancke, Programme Coordinator: Computer Engineering, University of Pretoria; front (from left): Mr Saurabh Sinha, (senior lecturer, Department of Electrical, Electronic and Computer Engineering, University of Pretoria), Ntombi Banda, and Mr Michael Hutton (National Instruments SA).

Not only has the project tested her technically, but it has also exacted a focus on the project and product management aspects, such as time management and quality management. "When I started with the project, I knew nothing about LabVIEW. I like to figure things out."

Banda also believes in giving back to the community. Being a member of the Executive Committee of Women in Engineering (WIE) gives her the platform to encourage the involvement of women in fields affiliated to science, engineering and technology. 🌐