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ONGOYE TERTIARY TIMES

Bringing nuclear education to UNIZULU

NALEDI HLEFANE

THE University of Zululand's (UNIZULU) Department of Physics recently held Nuclear Technology Week 2024 – a hybrid event aimed at exposing the department's students, together with learners from high schools surrounding the institution, to entry-level knowledge on nuclear physics and technology.

Nuclear physics entails the study of the properties and behaviour of atomic nuclei. It has multiple useful applications, including in medical diagnosis and treatment (X-rays and radiotherapy), nuclear power and archaeology, among others.

The week-long event was held in partnership with the Moscow Engineering and Physics Institute (MEPhI) and sponsored by Rosatom, a global pioneer in nuclear technology. It entailed back-to-back lectures that focused on nuclear power plant and research reactor safety, structural materials used in nuclear engineering, and radiation biology.

The lectures were conducted by nuclear physics experts Professor Maxim S Staltsov, Professor Dmitrii Samokhin and Professor Alla Udalova – from the National Research Nuclear University MEPhI.

"The idea of this course is to involve students in the nuclear field; to show them that it is a vast and interesting field which isn't as dangerous as most have been led to believe. With the correct knowledge, one will find there are many applications and uses of nuclear physics. With knowledge, you get rid of phobia," clarified Professor Udalova.

According to Dr Zipho Ngcobo, a lecturer in the Physics Department and the event convener, the overarching goal of hosting the event was linked to "internationalisation of teaching and learning and exposing postgraduates to high-level standards of experts in the top nuclear technology". This was also in alignment with the vision of the Faculty of Science, Agriculture and Engineering to develop skilled graduates for private and public workplaces, locally and abroad.

Dr Ngcobo also expressed that through the lectures, his department hoped to inspire the participating students to play an active role in finding solutions to some of the societal problems facing the country, using nuclear technology.

Following the course, students had great reviews about the richness of the content. Thembeka Ntombela, a Master's in Physics student and lab assistant in the Physics Department, said that the short course was an eye-opener. Also pursuing his Master's in Physics, Muzomuhle Mlotshwa shared that attending the lectures was beneficial for him as his study is based on nuclear physics.

Upon completion of the short course, participants were assessed and provided certificates of competence.

The recent Nuclear Technology Week 2024 saw students in the Physics Department gaining knowledge on nuclear physics and technology. The knowledge was imparted by three professors from the National Research Nuclear University MEPhI in Russia.

SCHOOL OUTREACH PROGRAMME

The Nuclear Technology Week programme included a high school outreach component that saw a handful of learners from Dlangezwa High School, Ongoye Secondary School and Qhakaza High School educated about nuclear physics and technology. In this instance, the visiting professors imparted knowledge through an interactive, fun group game that entailed answering multiple choice questions based on the two topics. With UNIZULU being at the forefront of "promoting and developing nuclear education and nuclear technology transfer", Dr Ngcobo said a responsibility was thus placed on the institution to inspire pupils and show them that "nuclear is not just about bombs and that there are many useful technologies that are based on nuclear, including those in cancer treatments and power generation".

Professor Vetrimurugan Elumalai – a prolific researcher

NALEDI HLEFANE

PROFESSOR Vetrimurugan Elumalai, a University of Zululand (UNIZULU) academic, has a simple motto in life: "hard work never fails".

He is convinced that when you develop the ability to put complete dedication and hardwork towards your profession, with the support of a good team, you can achieve the best results.

When considering that he has recently been awarded the South African Research Chairs Initiative (SARChI) in hydrology under Tier 1, it is evident that his devotion to his academic work has indeed yielded favourable results.

The Research Chairs initiative is the brainchild of the Department of Science and Technology and the National Research Foundation (NRF) aimed at strengthening and advancing public universities' capacity, to produce high-quality postgraduate students, research and innovation outputs.

The main objective of the SARChI in hydrology, according to Prof Elumalai, is to maintain sustainable water resource management through research and academic excellence.

Professor Vetrimurugan Elumalai

Prof Elumalai joined the institution in 2013 as a senior lecturer in the Department of Hydrology. He teaches undergraduate, Honours and Master's students as well as provides supervision and guidance to research students within the field of hydrology/hydrogeology. He has produced good undergraduate results and gradually increased the postgraduate intake in his department through student outreach.

Prof Elumalai also conducts various research projects of his own, organises various scientific research engagements at both national and international level, and participates in these events all around the world to share and gain knowledge in his field. He also writes and publishes research articles, book chapters, posters, reports and books from the outcomes of his research. Due to his strong scholarly presence, Prof Elumalai collaborates with many researchers nationally and internationally.

He was drawn to the hydrology field because of the water scarcity issue confronting the globe. His personal conviction is that "every human should have access to clean and safe water" – and he has therefore vowed to utilise his scientific knowledge in order to address the world's most pressing water challenges. He understands, however, that in order to successfully tackle these matters, a larger group of hydrology experts is required.

This is why he encourages his students to pursue postgraduate qualifications as he believes "producing young researchers in hydrology will have a large impact on the water and agricultural sectors".

The professor elaborates that water quality and quantity are affected by many causes, including the geology of an area, rainfall pattern and variation, human-made impact and climate change. Due to these effects, the quality of life is affected. The need for exploration of hydrology and production of young hydrologist is critical in the current scenario.

Prof Elumalai's research is largely in the areas of groundwater quality and quantity, geochemistry, ground water modelling, subsurface and ground water interaction, impact of climate change on water resources and sustainable water resource management.

Pro Elumalai's scholarship has taken him to global heights of academia. As a result, UNIZULU has been able to establish memoranda of cooperation with a number of universities abroad. This includes Université de Neuchâtel, Switzerland; University of São Paulo, Brazil; Curtin University, Malaysia; Anna University, India; and UPN Veteran Jawa Timur, Indonesia. Prof Elumalai's work is part of UNIZULU's commitment to excellence. This can be achieved by working with the best in the world.

As part of growing national and institutional capability, Prof Elumalai has taken it upon himself to expose students to institutions abroad. Under his watch, UNIZULU postgraduate students found themselves in far-off places like Switzerland, China, India, Mexico and Brazil, among others.

Prof Elumalai was born and raised in Cuddalore, South India. He obtained his undergraduate and Master's degrees in geology from the University of Madras, India. He also has a PhD in Hydrogeology from Anna University, India. In 2013, when he was 33, he moved to South Africa with his immediate family, and joined UNIZULU as a senior lecturer. He was promoted to Associate Professor just two years later.

In 2020, he was promoted to Full Professor. A C2 NRF-rated researcher, Prof Elumalai received the "Emerging Researcher" and "Highest Publication" awards in 2018 at the Vice-Chancellor's Excellence in Teaching and Learning Awards. In the 2023 instalment of the awards ceremony, he received three awards in the Excellence in Research, Special Award of SARChi Chair, as well as Recognition categories.

UNIZULU students impress at DIRISA Datathon Challenge

NALEDI HLEFANE

A TEAM of six University of Zululand (UNIZULU) students who participated in the recent Data-Intensive Research Initiative of South Africa (DIRISA) Student Datathon Challenge took second and third positions in the technical and research poster segments of the competition, bagging a total of R34 000 in cash.

In addition, the six gained elementary knowledge on developing software applications – incorporating data sciences, artificial intelligence and other leading-edge technologies to devise innovative and creative solutions to the country's pressing socioeconomic issues.

DIRISA is one of the three pillars of the National Integrated Cyber Infrastructure System (NICIS). The NICIS is a national initiative of the Department of Science and Innovation implemented by the Council for Scientific and Industrial Research (CSIR).

The Student Datathon Challenge forms part of the NICIS and DIRISA's efforts to foster the development of human capacity in cyber infrastructure and the application of cyber infrastructure in contributing to the transformation of this sector.

The challenge primarily targets university students, who form university teams that are pitted against others. Competing for cash prizes in the research and technical segments, teams are tasked with formulating groundbreaking solutions to the socioeconomic matter chosen for that year, through analysing open data. They first attend a five-day preparation programme where they are introduced to topics such as Google Colab, Python and Pandas, data exploration, and data visualisation, among others.

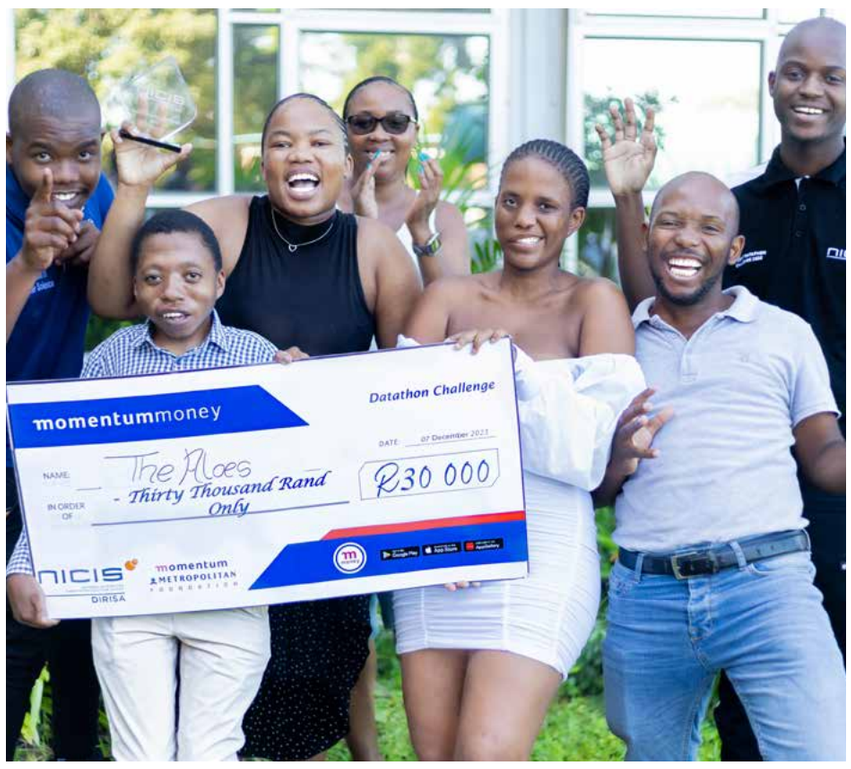
In this year's challenge, participants tackled youth unemployment. Team UNIZULU, whose group name was the Aloes, was divided into two sub-teams. Four members dealt with the technical aspects, while the remaining two created the research poster.

Xolo Sibaya, who was on the research sub-team, explained that through analysing the data, the Aloes discovered there was a huge job creation gap that contributed majorly to the prevalence of unemployment.

"We also found that SMEs create the most employment in developing countries and that funding was one of the main obstacles faced by them regarding job creation. These revelations guided the team to developing a model of a web application that connected SMEs with other SMEs for collaboration; connected SMEs with funders; and had a function that leveraged AI to analyse the quality of an SME's business plan in order to increase the chances of them securing funding and mitigating the effects that exist. The aim of our solution was to enable these enterprises that already create the most jobs to further generate employment," Sibaya said.

The uniqueness of the proposed solution earned them a quick nod from the judging panel. The technical sub-team won R30 000 courtesy of Momentum, while the research sub-team received a R4 000 cash prize sponsored by Spectrum.

This achievement, noted technical sub-team members Simphiwe Majola and Nonjabulo Khuzwayo, was testament to the fact that hard work yields favourable results. The team sacrificed sleep and a meal in preparation for their presentations on the official day of the competition. "The fact that we were able to learn in six months what the other university teams study as part of their degrees, and then win, was amazing. The whole experience was great; we got good exposure," Majola said.



From left: Wandile Ntombela, Xolo Sibaya, Simphiwe Majola, Nombuso Sibeko, Nonjabulo Khuzwayo, Mlamuli Shozi and Gift Mogkoko. Picture: Samkele Sokhela

Having witnessed the Aloes' determination and tireless efforts throughout the competition, Nombuso Sibeko, a lecturer in the Computer Science Department who mentored the team, said she couldn't be prouder of the students. She added that their victory was well-deserved.

UNIZULU Choir to 'drop' two albums

NALEDI HLEFANE

THE University of Zululand (UNIZULU) Choir is eagerly anticipating the double release of its albums, "Umkhonto ka Shaka" and "In Collaboration With", which will be distributed on multiple music streaming platforms on March 1.

The release comes just days after the official launch – a convivial affair attended by various members of UNIZULU together with music industry and media personnel, and held at Umfolozi Hotel Casino Convention Resort in Empangeni.

According to the choir conductor Dr Bhekani Buthelezi, producing two musical offerings was a strategic move to reach the choir's different fan bases. "We firstly have a typical choral audience that likes our choir singing opera songs, hymns and general choral songs. Secondly, we have an audience that likes our choir for popular music. Most have seen us on television programmes; at different shows, singing with different renowned artists," he explained.

It took more than two years of meticulous planning, composing, arranging, rehearsing and recording to create the albums. Each record explores a different genre, showcasing the flexibility and vocal prowess of the choristers. The album "In Collaboration With" is a compilation of songs featuring a few of the artists the choir has collaborated with over the years. The sound is a fusion of Afro-Jazz, Afro-Soul and Afro-Pop with dynamic choir harmonies. The second album is entirely choral, with a collection of old traditional songs that have been freshly arranged to infuse the classic UNIZULU Choir panache.

"With uMkhonto ka Shaka, the creative vision was that these old songs must sound fresh and feel young; must be familiar yet with a twist; and the vocal range stretched so that it can reflect the greatness of our choir while also sounding easy on the ear. We had the best music director, Syanqoba Mthethwa, who is also a music director for Joyous Celebration. He excelled, as expected," an elated Dr Buthelezi said.

"With the second album, the brief was that we sing these songs in a way that no choir has done before. We worked very hard under the guidance and mentorship of Dr Lindelani Mkhize, whose ear is extremely sharp and arrangement skills are unmatched. It was such an honour working with him."

While the choristers are targeting sales with their new offerings, the recognition and appreciation of the UNIZULU brand is the primary goal. Their aspiration is to contribute to creating a positive narrative about the institution.

On behalf of the choir, Dr Buthelezi expressed his heartfelt gratitude to UNIZULU management for the moral and financial support, the Students Services Department for their logistical support, the Communications and Marketing Division for consistently promoting the choir, and the UNIZULU community for the perpetual support both physically and socially. Finally, he thanked Dr Mkhize and Mthethwa for their contributions on the production front as well as the featured artists who dedicated their time to the projects.

Both albums can be pre-saved or pre-added on Apple Music, iTunes Store, Spotify, Tidal, Deezer, Amazon Music and Soundcloud ahead of their release.