



CEDAT

Newsletter

March-April 2019

Irish Ambassador Launches Innovation Labs at netLabs!UG



The Irish Ambassador to Uganda, His Excellency William Carlos, has launched four new Innovation laboratories belonging to netLabs!UG, a research center under the Department of Electrical and Computer Engineering, College of Engineering, Design, Art and Technology (CEDAT), Makerere University. The new laboratories are: EPA Ireland Core Networking Lab, The Marconi Society Machine Learning Lab, The Uganda MikroTik Academy and The Wireless and Advanced Networking Lab.

At the event held on April 10 2019, H.E. Carlos encouraged research

staff and students to seize the opportunity to carry out useful research and solve local problems. “Make use of any opportunity that comes. An opportunity just gives a clear understanding of what you want,” he said. He was happy to note that the labs would spur innovative research and convert ideas into real solutions to local problems. He was happy to note the cordial relationship between Makerere University, particularly netLabs!UG, and Irish institutions. Through Eng. Diarmuid Ó Briain who is a netLabs!UG senior researcher and also a faculty member within the Department of Electrical and Computer Engi-

neering, the Department has established a strong partnership with the Irish Embassy as well as Irish companies and the Institute of Technology Carlow.

Most of the lab equipment at the research center was generously donated by The Marconi Society, Computer Facilities Technical Services and The Irish Embassy. netLabs!UG now has the capacity to carry out research in the areas of Artificial Intelligence (AI) and Deep Learning, Big Data, Internet of Things, Advanced Routing and Switching, Wireless Communications and Networking, Software Defined Networks (SDN) and Software Develop-



and for nurturing students to fully benefit from these resources.

The labs are already being used to design and test innovations that promise to have a profound impact on our local industries. For example, two student researchers, Ms. Olivia Nakayima and Ms. Gorret Namulondo are carrying out research using Artificial Intelligence (AI)

ment among others capabilities. The Research Center also prides itself in having the capacity and expertise to carry out practical network installations and deployments. Eng. Dr Dorothy Okello, the Principal Investigator of netLabs!UG, thanked the Ambassador for making time to officiate at the launch of these important laboratories. She called on students, research staff and faculty members to fully utilize the labs. She congratulated five researchers of netLabs!UG who have received MikroTik training and are now certified trainers. She also thanked the Marconi Society and other donors for their donations.

Speaking at the event, the Deputy Principal of CEDAT, Dr Venny Nakazibwe, thanked the Irish Em-

bassy and the Irish partners for the

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donation of equipment and for their continued support and partnerships with netLabs!UG and Makerere University at large. She said the laboratories would create a wide base of knowledge for students and staff at the research center and the College at large. She thanked Eng. Ó Briain and other staff for their energy and commitment to finding support and resources for the center

to identify common diseases in passion fruits way earlier than humans can. They have created an algorithm that classifies and detects diseases based on the image inputs of leaves and fruits. Currently, their innovation can identify woodiness, leaf blight and brown spot and test case studies have been performed at various passion fruit farms in Masaka, Luwero and Hoima districts. This innovation will help farmers to improve yields and enhance their household incomes. This is just one of many other projects that are currently being carried out at the Center.

Public Lecture on Promoting Localized Energy Self-sufficiency for Sustainability

CEDAT hosted Professor Chetan Singh Solanki for a public lecture at CEDAT, and a session for training participants on assembling a solar lamp, the GGSY, which was designed in commemoration of the 150th birthday of Mahatma Gandhi.

The Gandhi Global Solar Yatra (GGSY) is planned to promote self-sufficiency in energy for sustainability, mainly for those who lack access, by providing complete, cost-effective, reliable, and sustainable solar energy access while protecting the environment, creating livelihood and empowering locals. The yatra is planned to sensitize the key policymakers and non-governmental officials towards solar energy. In GGSY, the plan is to travel to about 50 countries, where energy access is an issue. The main objective of the GGSY is to provide hands-on training for millions of Student Solar Ambassadors on 2nd October 2019. The other objectives of the GGSY are to promote the localized energy self-sufficiency through 24X7 decentralized solar solutions.

Chetan Singh Solanki is currently professor in Department of Energy Science and Engineering at



Indian Institute of Technology Bombay (IITB), India. He is an expert crystalline Si-technology, Si-nanostructures (including quantum dots), thin film Si solar cells, PV concentrator systems and carbon nanotubes.

The public lecture took place at 10:00am on Tuesday 5th March 2019 at the CEDAT Conference Hall, followed by the practical training on assembly of the GGSY.

April Babies

Mr. Titus Bikala on 02/04/2019 welcomed his twins, a boy and girl. The mother and the children are doing well. Titus is a security guard at CEDAT and works during the evening shift. We wish Ssalongo and his family the very best on their journey of parenthood.



Ms. Racheal Wesonga successfully delivered a bouncing baby boy on 25/04/2019 at Kibuli hospital. Both the mother and the child are well and in good health. Racheal is a part-time lecturer in the department of Construction Economics and Management.

Presentation on STEM by Prof. Samuel Mukasa



Prof. Samuel Mukasa visited CEDAT on 26th March 2019 at pm and delivered a presentation with the aim of attracting potential STEM graduate students to study in USA. Prof. Mukasa works in Office of the Executive Vice President & Provost University of Minnesota, USA as a Senior Executive for Global STEM Initiatives, with a particular interest in focusing on Africa.

His intriguing presentation showed the need for more scientists knowledgeable in the fields of STEM in Africa because of the high fertility and population growth rates. These will cause an increase in the demand for food, healthcare, safe water, housing and security will only increase in Africa over the next 4 decades.

Furthermore, he predicted that the 21st Century will be shaped by events and developments on the African continent for a number of

reasons including the fact that it is least explored for minerals and oil, and has plenty of other raw materials, it has a tremendous agricultural potential yet over 60% of the world's uncultivated land is in Africa and with climate change rapidly transforming the landscape and people's livelihoods, the potential for growth in the STEM workforce and manufacturers / consumers of manufactured goods is quite vast.

Prof. Mukasa also spoke about the University of Minnesota, where he comes from and introduced the different graduate programs they have to offer. He provided the audience with the different study options / opportunities available for international students, including The traditional research assistantship (RA), teaching assistantship (TA) and fellowships (FS), Emergence of Massive Open Online Courses (MOOC's), The PIRE (Partnerships for International Re-

search and Education) and PEER (Partnerships for Enhanced Engagement in Research) programs, Winter/Summer schools and webinars (AMRS, JUAMI, etc.) and Online mentoring.

He also described the entry requirements for students, outlining the GRE, TOEFL and TSE exams and the application process for prospective students. He encouraged students to apply to the University of Minnesota to pursue their graduate degree programs because the application process is quite straightforward and faculty members are readily available to provide support to students as they apply.

The Principal, Prof. Henry Alinaitwe thanked Prof. Mukasa for his presentation and for making time to come all the way to Africa, and select CEDAT as one of his stops to attract students for graduate study in the University of Minnesota. He encouraged staff and students at the talk to take advantage of this opportunity and apply for their Masters and PhD programmes at the University of Minnesota.

Located in Twin Cities of Minneapolis & St. Paul, The University of Minnesota is a major public research institution with over 140 undergraduate majors and over 200 graduate programs. It has about 31,500 undergraduate students and 16,000 graduate students. The University has more than 477,000 alumni and 90 alumni networks worldwide.

Call for Applications for Masters of Science in Internet of Things

competitive basis for eligible candidates from Eastern and Southern Africa Region (Rwanda, Kenya, Malawi, Tanzania, Ethiopia, Burundi, Mozambique, Uganda, and Zambia). There are also a few on a competitive basis for eligible regional female candidates.

Deadline for application is 15th May, 2019. Successful candidates will be notified by 31st May 2019 and the

course will begin on 15th September 2019.

For more information, please visit the link below:

<https://cedat.mak.ac.ug/news/masters-studies-at-the-african-center-of-excellence-in-internet-of-things-aceiot/>

The Management of the University of Rwanda (UR) through its African Center of Excellence in IoT(ACEIoT) at College of Science and Technology (CST) is offering Masters programs in Internet of Things, Masters of Science in IoT-Embedded Computing Systems

(MSc. IoT-ECS) and Masters of Science in IoT-Wireless Intelligent Sensor Networking (MSc. IoT- WISeNet).

The duration of the MSc. programmes is 24 months.

There are few full and partial scholarship opportunities available on a

Public Lecture by Prof. Sridhar Bhaskar

On Tuesday, 23rd April 2019 the Department of Geomatics and Land Management hosted Prof. Sridhar Bhaskar from Texas Southern University in the USA for a public lecture. Prof. Bhaskar's lecture was on Geospatial Analysis for Environmental Health and Management. His presentation started at 2:30pm - 4:00pm and was held at the CEDAT Conference Hall.

At the end of his presentation, Prof. Bhaskar shared with his audience more information about Texas Southern University, including graduate study opportunities and how best to utilize these opportunities to further one's career in research.

Prof. Bhaskar's research interests include the application of remote

sensing and geospatial techniques for environmental planning and management, landscape ecology, human and environmental health monitoring and eco-

nomic development. He has developed several satellite models to monitor the soil and water quality, contaminant fate, environmental disasters, invasive plant species and evapotranspiration. He has also



served as a principal investigator on several research grants funded through NSF, NASA, DOE and USDA.

Public Lecture on the 4th Industrial Revolution by Prof. Tshilidzi Marwala



The Vice Chancellor of University of Johannesburg, Prof. Tshilidzi Marwala delivered a public lecture on the 4th Industrial Revolution on Wednesday 27th March 2019 at 8.30 am in the CEDAT Conference Hall.

The Fourth Industrial Revolution (4IR) is the fourth major industrial era since the initial Industrial Revolution of the 18th century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres, collectively referred to as cyber-physical systems. It is marked by emerging technology breakthroughs in a number of fields, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, the Industrial Internet of Things (IIoT), decentralized consensus, fifth-generation wireless technologies (5G), additive manufacturing/3D printing and fully autonomous

vehicles.

During his lecture, Prof. Marwala took the audience through the history of the industrial revolutions. He reminded the people present of the triggers for the different revolutions for example, the first was sparked by knowledge formulation, the second was brought about by knowledge evolution, the third by knowledge distribution. He pointed out that the motivation for the fourth industrial revolution is knowledge mutation.

Prof. Marwala then talked about the implications of the Fourth Industrial Revolution on Economics, Politics, Psychology, Medical Sciences and Engineering. In economics for example, this revolution leads to a reduction in information asymmetry. Also when human traders are replaced by artificially intelligent traders then factors such as emotion are subtracted from the markets, more decisions are made purely based on

data which makes for more efficient markets. In medical sciences, we are beginning to see more efficient diagnosis of disease, treatment and even medical implants of greater compatibility with the patients. In engineering, it is now possible to monitor the health conditions of vehicles, accurately predict lifespan of structures among others.

In Agriculture, AI-powered machine vision systems can measure crop populations and detect weeds or plant pests, and use robotic sprayers to precisely apply herbicides. Bioengineered plants are leading to greater crop yields and new medicines, such as antimalarial drugs produced from genetically modified tobacco plants.

Prof. Marwala however also pointed out some negative consequences of the 4th IR. He cited Irrelevance in the 4thIR versus exploitation of 1stIR, Increased inequality and Bounded freedom and Bounded decision making by humans. Because every day, billions of people are sharing online. They're using connected devices (phones, laptops, tablet pcs) to post images, videos, and tweets. They're sending text messages. All of this data is like food for artificial intelligence and many companies are willing to pay top dollar for this data, even if it means infringing on the privacy of their subscribers.

Obituary

On 30th May 2019, Mr. Were Gilbert from the Department of Architecture and Physical Planning lost his wife Brenda. A requiem mass was

held on Thursday May 2nd at St. Augustine chapel Makerere university at 10:00. Brenda was laid to rest thereafter at Bunamwaya at 2pm. May her soul rest in eternal Peace

