



NEWSLETTER

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African Centres of Excellence



Headlines



50 PhD and MSc students in Data Science complete a two-day seminar on Machine Learning

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ACEITLMS conducts community outreach activities in Primary and Secondary schools

Master's students pursuing different STEM programs at African Centre of Excellence for Innovative Teaching and Learning Mathematics and Science (ACEITLMS) have conducted outreach programs in primary and secondary schools to equip science teachers with skills on the use of practical based lessons in Mathematics and Science education.

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ACEIoT held the first face-to-face International Scientific Advisory Board meeting

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ACEIoT staff and students visited Murambi Genocide Memorial in Nyamagabe District

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A Team of researchers from Kwame Nkrumah University of Science and Technology paid a courtesy visit to ACEIoT, ACEESD

On 20th, May 2022, a team of researchers from Kwame Nkrumah University of Science & Technology (KNUSTGH) paid a courtesy visit to African Centre of Excellence in Internet of Things us to explore different collaboration areas

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The first 5 ACEIoT PhD student successfully defends their final thesis

Kimutai Gibson, a PhD student from Kenya who specialized in Embedded Computing Systems (ECS) at African Centre of Excellence in Internet of Things (ACEIoT) has, on 16th June 2022, successfully defended his thesis becoming the first born of the ACEIoT PhD program.

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ACEITLMS conducts community outreach activities in Primary and Secondary schools



Learning session in Nyarugenge

The ACEITLMS Master's students together with UR-CE Bachelor's students under the supervision of the Head of Research conducted outreach programs in primary and secondary schools to equip science teachers with skills in the use of practical-based lessons in Mathematics and Science education. The outreach took place in May and June 2022 in different primary and secondary schools in the Eastern province and in the City of Kigali.

The main objective of the outreach activities is to promote the use of practical based lessons in teaching and learning mathematics and science in lower secondary schools,



Learning session

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teaching Science and elementary Technology in upper primary schools, and distribute lab-kit manuals developed in conjunction with Women for Women in Science Organization to schools and organize a tailored training for primary school teachers who did not study in TTCs.

During the outreach, Masters students practised the practical-based lessons approach in presence of teachers and gave the opportunity to them (teachers) to ask questions and more clarifications for a better understanding of the practical-based lessons approach so that they can use it themselves when teaching.

Dr. Marcellin Rutegwa, the Head of research at ACEITLMS

highlighted that this approach was inspired by the success of outreach activities between industries and universities that ACEITLMS has successfully conducted. “ACEITLMS adopted this outreach approach to spread innovative teaching and learning mathematics and science to schools in Rwanda and in countries from where its both Master and PhD students collect data”, he noted.

Outreach activity is a way that was sought of to improve the attitude of students towards STEM through industrial collaboration for integrating school science and real-world. With outreach approach, the learning environment



Learning session

of the regular classroom is extended with new elements via the unique collaboration with the industry and higher education.

This activity is partially supported by WS2 that provided model of lab manual kits and funds to purchase materials and consumables to use during the implementation of the practical. WS2 is an international initiative unifying and supporting graduate and professional-level women and allies in science, technology, engineering, and mathematics (STEM), while providing outreach to elementary and secondary level students.

ACEIoT staff and students visited Murambi Genocide Memorial in Nyamagabe District



Visiting team paid tribute to victims of Genocide against Tutsi

On May 23rd, 2022, the Centre staff and students visited Murambi Genocide Memorial in Nyamagabe District where they toured different rooms where the remains of the victims are laid and witnessed how the innocents Tutsi were killed.

The main objective of the visit was pay tribute to the victims, learn more about the history of the Genocide against the Tutsi in 1994 reflect on the history of Rwanda and commit to ensure the genocide never happen again.

As students in IoT, they were also interested to find the best way they can apply IoT technologies to contribute to the preservation of the history.

At the site, staff and students were briefed on how the then authorities called for all Tutsi to be gathered at Murambi technical school to get protected but later, they were all murdered.

ACEIoT held the first face-to-face International Scientific Advisory Board meeting



Participants to the meetings shared experiences

On 9th May 2022, ACEIoT held the International Scientific Advisory Board meeting. The Board is comprised of high-profile individuals with track records in terms of expertise, research, academic leadership & management in areas relevant to ACEIoT's core business and programs.

The International Scientific Advisory Board has the main responsibility to provide strategic orientation and guidance on matters pertaining to research excellence, quality postgraduate teaching and PhD supervision.

The Board has among other responsibilities to support ACEIoT in securing research grants & scholarship, advise on efficient business model & sustainability plan for the Centre, increase the Centre visibility at national, regional & international level through advocacy and networking.

50 PhD and MSc students in Data Science complete a two-day seminar on Machine Learning



PhD and MSc students pose for a group photo after the training

5 0 PhD and MSc students have completed a two – day seminar on 1st and 2nd June 2022 where they were equipped with skills in Machine Learning. The seminar was organised by the African Centre of Excellence in Data Science (ACEDS) and Prof. Bethany Hedt from Harvard University. Facilitators were Siona Prasad Harvard University's student and Monique Abimpaye ACE-DS's student.

This was organised through the existing framework where ACE-DS students collaborate with other sister institutions to maximize the benefit of collaboration between partner Universities.

The seminar was organised in order to increase PhD and MSc students' capacities in machine learning related concepts to be used in data processing and analysis.

Through the seminar, students were introduced to the Machine Learning and Data Processing, Downloading Python and necessary packages

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Apart from providing skills at Master and PhD level, ACE-DS frequently provides different short courses in data science related areas to sharpen professionals in the field of data science.

This is one of the ACE-DS mission, which is to train a critical mass of African Data Scientists through Postgraduate training, professional courses and Research.

Energy actors discuss opportunities in the energy sector in Rwanda



A young incubatee exhibiting his energy innovation

On 17th May 2022, ACE-ESD and partners in the energy sector have had a forum where they discussed the opportunities around energy efficiency in Rwanda across various sub-sectors, shared experience and lessons learned on promoting energy efficiency from the global south, barriers, and solutions to accelerate energy efficiency in Rwanda.

The event was organized to discuss existing untapped opportunities, deliberate on the best way to explore them, showcase success, and identify solutions to achieve faster, broader gains towards sustainable energy for All.

The event was organized as a sideline event for the sustainable energy for all forum and took place at the

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Convention Center from 17th to 19th May 2022.

During this meeting, 15 young innovators being incubated at the Grid Innovation and Incubation Hub showcased their energy initiatives

and got feedback from partners in a bid to nurture their initiatives to become viable products to be on the market.

This has also been an opportunity for other private innovators to produce energy fuel (renewable energy) from municipal waste. These innovations revolve around advancing Rwanda's sustainable energy transition efforts.



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The GIIH incubated scoops the first innovation award in the regional competition



The winner Gilbert Ndayisenga receiving the award

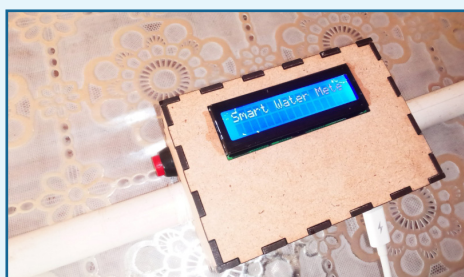
The Smarter Water Meter, an innovation being incubated at Grid Innovation and Incubation Hub (GIIH) has scooped the first award in the EAC Digital Innovations and Business Resilience competition. The Grand Final took place on 17th May 2022 in Kampala, Uganda.

This competition was organized by the Digital Skills for an Innovative East African Industry project as a part of the technical Development Cooperation between the German Government under the Germany Federal Ministry for Economic Cooperation and Development (BMZ) and the East African Community.

The Smart Water Meter is an innovation that monitors water consumption through its digital water monitoring platform, predicts water demand, and provides real-time notifications.

“ the water meter is installed in households to count and provide real-time water usage and provide a dashboard for water management and water demand prediction.

The water meter also sends notifications to the users in real-time, showing how much water they are using.”



Smart water meter

Gilbert Ndayisenga, the innovator, explained that “the water meter is installed in households to count and provide real-time water usage and provide a dashboard for water management and water demand prediction”.

“The water meter also sends notifications to the users in real-time, showing how much water they are using, he added.

Ndayisenga revealed that the idea came after noting that above 44% of the water produced is wasted in its distribution system notably at the household level, no data about water leakages, and the use of manual water counter as it requires water companies to tour house to house to monitor the consumption, among other challenges.

The first 5 ACEIoT PhD students successfully defend their final thesis



Kimutai defended his PhD thesis

Kimutai Gibson, a PhD student from Kenya who specialized in Embedded Computing Systems (ECS) at African Centre of Excellence in Internet of Things (ACEIoT) has, on 16th June 2022, successfully defended his thesis becoming the first born of the ACEIoT PhD program.

Kimutai defended his thesis entitled: An IoT-made Tea Fermentation Detection Model Based on Deep Learning & Majority Voting Techniques.



A PhD student pose with panelists after defending

“ I enjoyed the support I was given by the Centre mainly the given exchange opportunities to big institutions.

From the beginning when I got supervisors, it was an intensive work.”



A PhD student pose with panelists after defending

Kimutai, one of 10 PhD students making the second cohort, attributes his success to the support from the Centre and the supervisory team which was very

eager to see him moving forward.

“I enjoyed the support I was given by the Centre mainly the given exchange opportunities to big institutions.”, he noted.

Gibson, who becomes the first to defend the final thesis attributes this success to the flexible supervisory team he had. “From the beginning when I got supervisors, it was an intensive work”, he said.

“I had to meet them several times and had to provide a report of what I have been doing at the end of every three months. Briefly my supervisors were very flexible and ready to provide positive feedback any time I need them”, he added.

Kimutai commended all partners who have made his journey a success.

Apart from Kimutai, four others students successfully defended their thesis namely Mr. Peace Bamurigire, Mr. Evariste Twahirwa, Mr. Martin Kuradusenge and Mr. Kambombo Mtonga.

Congratulations to them.



A PhD student pose with panelists after defending

A Team of researchers from Kwame Nkrumah University of Science and Technology paid a courtesy visit to ACEIoT, ACEESD



After discussions, participants posed for a group photo

On 20th, May 2022, a team of researchers from Kwame Nkrumah University of Science & Technology (KNUSTGH) paid a courtesy visit to African Centre of Excellence in Internet of Things us to explore different collaboration areas under an existing partnership with University of Rwanda.

After fruitful discussions with researchers at University of Rwanda's College of Science & Technology, the guests toured the newly acquired IoT lab, which is supposed to serve the IoT sector in the region.

“The Kwame Nkrumah University of Science and Technology (KNUST) has signed a Memorandum of Understanding with the University of Rwanda for collaborative activities in digital development and energy.”

The Kwame Nkrumah University of Science and Technology (KNUST) has signed a

Memorandum of Understanding with the University of Rwanda for collaborative activities in digital development and energy.

The KNUST Engineering Education Project (KEEP), an Africa Centre of Excellence at KNUST and the African Center of Excellence in Internet of Things (ACEIoT) together with the African Centre of Excellence in Energy for Sustainable Development (ACEESD) at the University of Rwanda will be the main implementers of the activities captured under the MoU.

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ACEESD, ACEIoT, Coventry University organize Summer School on Smart Local Energy Systems



Summer school session at ACEESD

ACEESD, ACEIoT, Coventry University have organized a three-day summer school for postgraduate Masters and PhD students, and early career researchers where they got the opportunity to learn from leading researchers in IoT and Energy. The summer school took place from 27th through 29th June 2022.

The main objective of the summer school was to provide participants with the necessary understanding of the development of sensing systems from concept to deployment, with a particular focus on Contiki, that can aid the design of Smart energy systems.

During this period, participants understood the latest results, trends, activities and applications in IoT and WSN, gained insights

“ The main objective of the summer school was to provide participants with the necessary understanding of the development of sensing systems from concept to deployment, with a particular focus on Contiki, that can aid the design of Smart energy systems.”

on designing wireless intelligent systems in the energy setting, became familiar with Contiki basics, key features and compile a simple application among other skills.

Geoffrey Twesigye, a Master student at African Centre of Excellence in Internet of Things (ACEIoT) who attended the school noted that he got additional skills especially in Contiki operating systems which is the one for networked, memory-constrained systems with a focus on low-power wireless Internet of Things devices.

With support of Coventry Professors, participants had Insights and practical hands-on tutorials on debugging and relevant applications for IoT, including the process and challenges of going from system concept through to real-life IoT deployment.

At least 40 participants attended this school (physically and online)



Summer school participants posed for a group photo

Our respective programs

African Centre of Excellence in Data Science (ACEDS) based at UR-College of Business and Economics, Gikondo



We have Day and evening Programs:

- Master/PhD of Science in Data Science in Data Mining
- Master/PhD of Science in Data Science in Econometrics
- Master/PhD of Science in Data Science in Biostatistics
- Master/PhD of Science in Data Science in Demography
- Master/PhD of Science in Data Science in Actuarial Sciences

N.B: All PhD programs are by research.



In partnership with Data Science Council of America (DASCA), we also offer certified professional Short courses:

- a. Associate Big Data Engineer (ABDE)
- b. Senior Big Data Engineer (SBDE)
- c. Associate Big Data Analyst (ABDA)
- d. Senior Big Data Analyst (SBDA)
- e. Senior Big Data Analyst (SBDA)

More details: www.aceds.ur.ac.rw

African Centre of Excellence for Innovative Teaching and Learning Mathematics and Sciences (ACEITLMS) based at UR-College of Education, Rukara



We have Day and Weekend Programs:

- Master of Education in Biology Education
- Master of Education in Chemistry Education
- Master of Education in Physics Education
- Master of Education in Mathematics Education
- PhD in Biology Education
- PhD in Chemistry Education
- PhD in Physics Education
- PhD in Mathematics Education

N.B: All PhD programs are by research.

More details: www.aceitlms.ur.ac.rw

African Centre of Excellence in Internet of Things (ACEIoT) based at UR-College of Science and Technology, Nyarugenge



We have the following Programs:

- Master/PhD in Embedded Computing Systems (ECS)
- Master/PhD in Wireless Sensor Networking (WSC)

N.B: All PhD programs are by research.

Short courses:

- a. Rapid Prototyping
- b. Blockchain Fundamentals and Applications
- c. Drone fundamentals and applications
- d. LoRA technologies
- e. IEEE GRSS Drone Sensor Deployment

More Details: www.aceiot.ur.ac.rw

African Centre of Excellence in Energy for Sustainable Development (ACEESD) based at UR-College of Science and Technology, Nyarugenge



We have the following Programs:

- Master/PhD of Science in Energy Economics
- Master/PhD of Science in Renewable Energy
- Master/PhD of Science in Electrical Power Systems

N.B: All PhD programs are by research.

Short courses:

Power Engineering, Smartgrid, Microgrid

More Details: www.aceesd.ur.ac.rw

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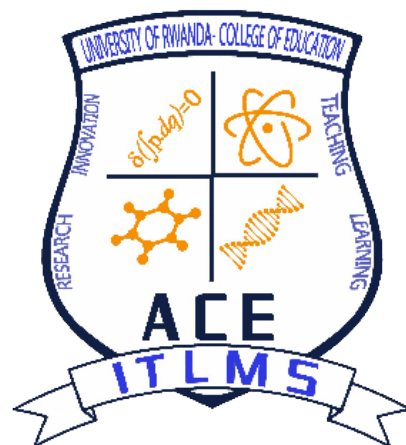
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