NEWSLETTER

African Centres of Excellence

Headlines

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

50 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)

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Dr. Kayihura calls on staff to be more proactive to preserve the UR legacy

Acting Vice Chancellor Dr. Muganga Kayihura Didas has called on members of staff to diligently apply their abundant knowledge and skills for community benefit through improvement of institutional performance . He argued this will ultimately preserve the UR legacy.

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

On 9th May 2022, ACEIoT held the International Scientific Advisory Board meeting.

ACEIoT staff and students visited Murambi Genocide Memorial in Nyamagabe District

On May 23, 2022, the Centre staff and students visited Murambi Genocide Memorial

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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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Dr. Kayihura calls on staff to be more proactive to preserve the UR legacy

Learning session in Nyarugenge

Acting Vice Chancellor Dr. Muganga Kayihura Didas has called on members of staff to diligently apply their abundant knowledge and skills for community benefit through improvement of institutional performance. He argued this will ultimately preserve the UR legacy.

Dr. Kayihura Muganga made the call on Thursday during his visit to UR College of Science and Technology, the host of two Centres of Excellence, ACE-ESD and ACEIoT, where in the company of Dr. Ndikumana Raymond, DVC for Strategic Planning and Administration, interacted with the academic staff. Touring the college facilities, he engaged staff in a discussion of different mechanisms that would uplift UR performance.

In his remarks Dr. Kayihura Muganga said UR staff, more so the academic fraternity, are doing very important things in execution

> **" Principal Dr. Gatare highlighted some challenges which include insufficient staff, yet assured the Vice Chancellor of his effort to get the best out of the personnel in place "**

of the University mandate. He however pointed out that much more can and should be done, singling out enhancement of the collaboration and communication as aspects with great potential to boost performance.

The Vice Chancellor said that the entire UR will as a whole perform well if individual members of staff perform better. He insisted that each and every member of staff should think and come up with a particular one thing or two that people will remember them for soon or later.

"UR has been here for eight years now, but people still talk more about the National University of Rwanda, yet you have been doing great things that largely almost remain hidden. We really recognize what you are doing, but there are still much more to do, especially in terms of communication and collaboration.

"Let people within UR and outside of it know what we are doing to support the University."

The Principal of UR College of Science and Technology Dr. Ignace Gatare commended the new management for the visit and acknowledged that though great things have been done, there is always room for improvement. He said that continuous discussions will keep UR teams organized in a way which will make it easier to find solutions to existing challenges.

Principal Dr. Gatare highlighted some challenges which include insufficient staff, yet assured the Vice Chancellor of his effort to get the best out of the personnel in place.

On their part, the academic staff appreciated the initiative by the new University leadership to come down for interactive discussions with staff aiming at finding ways to raise performance. This kind of spirit, Dr. Gatare reiterated, will without doubt make a huge difference in CST output going forward.

www.aceesd.ur.ac.rw

ACE-DS to establish Data-Driven Incubation Hub (UR/DDIH)

Learning session in Nyarugenge

The African Centre of Excellence in Data Science (ACE-DS) is set to establish the Data -Driven Incubation Hub to bridge the gap in academia-industry collaboration specifically in data-driven researches.

The Hub will build on the successful profile of Center of Excellence in Data Science, Internet of Things, other schools in science and engineering, as well as existing industrial-academia collaborations.

> " This hub will be part of Data Science Center and it is elaborated in vision of the country and university to be a globally attractive knowledge community within applied information technology and innovation hub for sustainable growth "

The establishment of the Hub is motivated by the fact that Big data analytics has become a trend in research as decision makers in business in health, etc, needs to generate knowledge that guide their work and predict the future out of a lot of data collected in their daily work.

"This hub will be part of Data Science Center and it is elaborated in vision of the country and university to be a globally attractive knowledge community within applied information technology and innovation hub for sustainable growth", noted Dr. Ignace Kabano, the Head of Training at ACE-DS.

The Hub will serve as the place for development of data-driven research area through industrial-academia that has industrial impact and business value, establishment of a nationally leading and internationally recognized data-driven research environment, capacity building (people and competence) at the university within the areas of primarily big data analytics, data mining, machine learning, decision support systems, and data collection systems and creation of a tangible academia-industry collaboration among others.

www.aceds.ur.ac.rw

Learning session in Nyarugenge

Twenty female young graduates trained in business, entrepreneurship, Internet of things (IoT)

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

5 Twenty females young graduate graduates are undertaking a four-month training to build their IoT related business and entrepreneurship skills capacity in ICT. The training is also meant to enhance ICT skills for job creation and competition through small business ideas.

The training is organized by the African Centre of Excellence in Internet of Things (ACEIoT) with the federal assistance award from the USA Embassy in Kigali through the project being implemented jointly with NARADA LTD.

Participants to this training are graduates and undergraduates from ICT, Electrical and electronics engineering in the area of Business and Entrepreneurship.

Ms Aline Munezero graduated from the University of Technology and Arts of Byumva (UTAB) pursuing a Bachelor Degree in Renewable Energy. She said she joined the training to specifically gain skills in entrepreneurship as she is eager to become entrepreneur as soon as she completes her studies.

> " I have been interested by this training because I wanted to deepen my knowledge in internet of things and I hope the skills I get will contribute to the project I am working on for my master program "

"In addition to gaining more skills in IoT or ICT in general, I want to be an entrepreneur once I complete my studies. I hope, during this training, I will get enough skills in entrepreneurship which will be of great use once I become entrepreneur", she said.

The training attracted both undergraduate and postgraduate students. Ms Helene Kombe joined the African Centre of Excellence in Internet of Things (ACEIoT) from the Democratic Republic of Congo. She is pursuing the master of Science in Internet of Things: Embedded Computer Systems. She said she felt interested to join as she expects to increase the skills she already have in Internet of things.

"I have been interested by this training because I wanted to deepen my knowledge in internet of things and I hope the skills I get will contribute to the project I am working on for my master program", she said.

PhD and MSc students

"I am happy that I am getting even more than what I expected", she added. Trainees are being equipped with leadership skills and are provided with information on available opportunities for employment through networking with successful females.

It is expected that this will be the opportunity to enable them to produce their small business projects in IoT and be able to manage them.

www.aceiot.ur.ac.rw

The ACEITLMS and SAKURA-SHA K.K jointly organized a one-day workshop on 19th august 2022 dedicated to the mathematics teaching method utilizing hand-made teaching/learning tools

A young incubatee exhibiting his energy innovation

The African Centre of Excellence for Innovative Teaching and Learning Mathematics and Science (ACEITLMS) in collaboration with SAKURA-SHA K.K, a private company registered in Japan have jointly organized a one-day on 19th August 2022 at UR-CE Remera Campus training of teachers and lecturers on Mathematics teaching method utilizing hand-made teaching/learning tools.

During the workshop, the invited participants from UR-CE / ACEITLMS and from other institutions and schools partnering or covered by the SAKURA-SHA K.K activities in Rwanda were introduced and trained on mathematics teaching methods using enhanced hands-on activities including the use of Interactive Mathematics (IM). This was done through interactive lectures and practical activities mainly delivered by experienced staff from UR-CE and SAKURA.

This is one of the outcomes of the Memorandum of understanding that ACEITLMS has signed with SAKURA to improve the quality of teaching and

> **" This is one of the outcomes of the Memorandum of understanding that ACEITLMS has signed with SAKURA to improve the quality of teaching and learning of mathematics in Rwanda basic education through the use of the SAKURA SANSU, an Interactive Mathematics (IM) software. "**

learning of mathematics in Rwanda basic education through the use of the SAKURA SANSU, an Interactive Mathematics (IM) software.

During the workshop, the following topics were discussed, and the participants got involved actively in the workshop: Introduction of handmade teaching tools and creating them, How to use the teaching tools in a class lesson, The Effect of Interactive Mathematics (IM) Software on Grade-5 School Learners' Performance, Future education and ICT.

The workshop also featured an exciting combination of keynote lectures, paper presentations, and practical involvement of local teaching learning materials among other forms of information sharing.

In his closing remarks, the CEO of SAKURA-SHA K.K highlighted that mathematics is a common language all over the world and is the foundation of STEM education.

At the end of the workshop, three persons were awarded the certificate as master trainers of interactive mathematics software.

Cooking stove is one of exhibited innovations

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ACEIoT in new move to attract external IoT Lab users

The winner Gilbert Ndayisenga receiving the award

The University of Rwanda is set to upgrade and rehabilitate the existing labs to be more beneficial to not only the University but also to the community at large. The Vice Chancellor Dr. Didas Kayihura Muganga made remarks on Thursday while touring different facilities at UR, College of Science and Technology and found out that most of the labs are serving specifically for teaching purpose yet they can be a source of income for the university.

In his visit at UR College of Science and Technology, the Vice Chancellor toured different labs that are used during the practical activities. At the African Centre of Excellence in Internet of Things, he toured the newly acquired IoT Lab which is unique in the region.

The Centre management briefed him about how the lab operates, its

> " **All these labs should be generating income through consultancy for instance. We need to expose them to the public and ensure they are generating income**"

advantage of being unique in the region and how it is particularly benefiting students who are now conducting research projects as they are getting ready to complete their studies.

Marie Ritha Umutoni, is a Master student specializing in Embedded Computer Systems.

She says as she is conducting research, there are some devices that she will use to have her project complete and all these devices are found in the lab. "My project is about being able to classify moving objects like animals without using a camera... the devices I will use are found here", she explains.

The Vice Chancellor noted that the labs are very beneficial not only to the university but also to the public at large. "All these labs should be generating income through consultancy for instance. We need to expose them to the public and ensure they are generating income", he said.

He tasked the management to put in place mechanisms of marketing this lab so that the public can be aware that we have a lab of this kind which is unique in the region.

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UPDATES FROM GIIH

Kimutai defended his PhD thesis

Indintabwe Feeds

Indintabwe Feeds has the project of producing affordable chicken feeds. No the company has the capacity to produce 500 kilograms of chicken feeds per week and may make approximately 309,000 RWFS in sales per month. The company has created employment opportunities to the youth in Burera district.

Indintabwe feeds have been selected to represent Burera district in Orora Wihaze project.

GIIH, UNDP, partner to establish a maker space for the Innovation Hub

United Nations Development Program (UNDP) is set to fund the establishment of the conducive work environment for the Grid Innovation and Incubation Hub. The project worth USD 850,000 will see the establishment of a maker space with necessary equipment, design labs including prototyping labs, and green renovation of the building.

The project will have two phases and the first phase is expected to be completed by end this year 2022 and the second phase to be completed by June 2023.

PV Grid Power System

PV Grid Power System, is an innovation which tends to make a devise (Automatic Change Switches) that is used to connect and changes automatically sources at a very little delay time.

PV Grid has so far manufactured 14 Automatic Change Switches, have 5 permanent employees with casual workers mostly youth, and has partnered with Ellectronic Service and Spare Part (ESS LTD) a business company in Kigali.

In less than 12 months GIIH first startups have created employment opportunities to 13 permanent staff and over 50% are youth and females.

How far are the GIIH-incubated initiatives?

Gorilla Cooking Stove, the project which tends to produce a cooking stove which is more environment friendly and cost effective. So far the company employs four staff (two permanent staff and other casual staff) and has manufactured 50 stoves. The company has applied for a certification from Rwanda Standard Board (RSB).

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Thirty-three ACEITLMS MEd students from both Rukara and Remera Campus defended their research theses on 18th and 19th August 2022

After discussions, participants posed for a group photo

The Centre runs four Masters programmes, namely Master of Education in Biology Education, Master of Education in Chemistry Education, Master of Education in Mathematics Education and Master of Education in Physics Education.

MEd programmes are made of one-year course work and a second year for research after which MEd students must produce a research thesis in their respective areas/subjects of research.

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of the requirements for the completion of the MEd programme.

This is in line with the African Centre of Excellence for Innovative Teaching and Learning Mathematics and Sciences (ACEITLMS) requirements and mission to achieve research excellence, Masters theses like PhD dissertations are subjected to external evaluation that has to be carried out by academic staff and researchers from University of Rwanda and outside University of Rwanda.

During this exercise, external examiners who were selected based on their qualifications and expertise as well as internal examiners participated in Viva-voce as members of the committee for oral examination and produced comprehensive examination reports.

After discussions, participants posed for a group photo

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ACE-ESD, ACE-IoT partner with Carnegie Mellon University to host the IEEE Conference

Summer school session at ACEESD

From 22nd to 26th August, Rwanda hosted the IEEE PES/IAS Power Africa Conference 2022. The conference took place in Kigali with participants from across Africa and the world to explore energy and electric power infrastructure developments in Africa.

Under the theme, "Convergence of National and Off-Grid Systems: Roles of Renewables, Productive Use, and Electric Mobility", the conference highlighted Africa's electric mobility initiatives and featured keynote and panel sessions and its energy ecosystem were on display in exhibitions, panels and academic paper presentations.

The conference was attended by

" **Convergence of National and Off-Grid Systems: Roles of Renewables, Productive Use, and Electric Mobility", the conference highlighted Africa's electric mobility initiatives and featured keynote and panel sessions and its energy ecosystem were on display in exhibitions, panels and academic paper presentations**"

delegates from across Africa. Tutorials, keynote speeches and academic paper presentations allowed delegates to exchange and advance this field.

The conference was graced by the Minister of Infrastructure

Dr. Ernest NSABIMANA who will showcased and highlighted Rwanda's achievements and initiatives towards the national and regional sustainable energy and electric power infrastructure developments.

The IEEE PowerAfrica Conference is co-sponsored by the Power and Energy Society (PES), Industrial Applications Society (IAS) and endorsed by the IEEE Africa Council. Papers presented in the PowerAfrica conference are submitted to IEEE Xplore digital library.

Apart from presentations from students pursuing PhD programs, both Centres exhibited their programs and initiatives.

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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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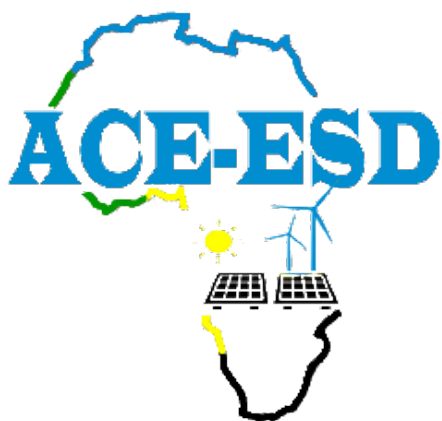**African Center of Excellence for Innovative Teaching and Learning Mathematics and Science (ACEITLMS)**

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