NEWSLETTER
Issue 4: October 2020 - June 2021

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Image source: IMF EAC 2016 report
CENIT@EA 6th JOINT STEERING COMMITTEE (JSC)

15th October 2020, Online Meeting

CENIT@EA held its sixth JSC meeting to discuss the progress of the centre, financial and communication strategy, students matters and future activities. Among deliberations of the meetings included:

DIGITAL SKILLS ACCELERATOR EVENTS

Digital skills accelerator is a CENIT@EA initiative aimed at imparting industry relevant skills and competencies among individuals in the EAC nations. The initiative funds different professional training opportunities. In this period, two sessions were funded, and a total of 50 individuals participated.

Android & Mobile Application Training, 15th October - Tanzania & Burundi, 26th Nov. 2020 - Rwanda & Uganda

A total of 50 unemployed graduates from Tanzania and Burundi participated in the training where some participants joined virtually at the Nelson Mandela African Institution of Science and Technology. Equally in Rwanda and Uganda, 50 unemployed graduates participated in the second organized digital skills event.
CENIT@EA organized a six days summer school sessions facilitated by True Maisha Company. The summer schools involved two parallel sessions on: Leadership and Change Management, and Social Innovation through Social Entrepreneurship. The training also involved site seeing for Internet of things (IoT) Trap development at Ngorongoro Conservation Area. The training involved 50 participants from NM-AIST, The Open University of Tanzania (OUT), Muhimbili University of Allied Science (MUHAS), University of Dar es Salaam (UDSM), Oxfam GB and Tanzania Agricultural Research Institute (TARI).

**YouLead Summit**  
25th Nov. 2020, EAC Secretariat, Arusha

CENIT@EA Young Professionals participated in the YouLead Summit at East African Community (EAC). The summit aimed at informing youth on opportunities for digital innovation and solution for digital transformation of industries in EAC. Participants had the opportunity to present on digital skills and innovation in their areas of work and studies. Equally, students had an opportunity to share their experiences during company internships as part of the EMoS Master’s program.
CAPACITY BUILDING ACTIVITIES

Innovation Promotion Training
14th - 18th Dec. 2020, NM-AIST

CENIT@EA organized a 5 days innovation promotion training held at NM-AIST and facilitated by Sahara Ventures. The training aimed at stimulating lecturers to promote innovation to their students and manage the overall innovation process so as to have a successful innovation.

Entrepreneurship Training
25th - 29th Jan 2021, NM-AIST

CENIT@EA organized a 5 days entrepreneurship training held at NM-AIST and facilitated by True Maisha Company. The training included 30 participants, selected from NM-AIST, University of Dar es Salaam, University of Nairobi and Institute of Accountancy Arusha.

Data Science Online Training
08th - 26th Feb. 2021,

CENIT@EA supported 5 NM-AIST CoCSE faculty members to attend a virtual Train the Trainer workshop in Data Science organized by IBM. The training aimed at equipping participants with skills on data science concepts, technologies and use cases. The trainers are then expected to use this knowledge to enrich their teaching experiences and transfer the compounded knowledge to students.
15th January 2021, NM-AIST

NM-AIST welcomed 30 new students 3rd cohort intake for EMoS Master's programme. These students are CENIT@EA scholarship beneficiaries. All 6 EAC nations are well represented in this cohort with 43:57 female to male ratio.
CENIT@EA organized an online guest lecture on Embedded System with Zipline company. The session aimed at equipping EMoS students with knowledge on embedded software reliability and applications in a real world. The guest speaker was Mr. Lieven Leroy, Embedded Flight Systems Lead at Zipline and expert in Embedded Software Development and Engineering.

French Training
Jan. - Mar. 2021, NM-AIST
CENIT@EA organized a 3 months French language training which was open to the NM-AIST staff and students. The training was conducted at NM-AIST. The facilitators for the training were four EMoS students from Burundi i.e., Mr. Salama Ndayisaba, Mr. Armel Bizoza, Mr. Deo Irankunda and Mr. Jesus Irakomeye. 50 participants registered for the training, 15 were able to complete.
Supervisory Visits for 1st Cohort Students in Industrial Placements
Jan. - Feb. 2021

CENIT@EA in collaboration with GiZ team visited 1st cohort students who were attached to different companies/institutions for outreach/internships. Industrial placement is a good opportunity for students to get acquainted with different industries, learn professional ethics in practise and create meaning connections and solutions.
In effort to forge Academia-Industry collaboration, to strengthen digital transformation initiatives in the EAC region, CENIT@EA and National Bank of Commerce (NBC) met with the aim of discussing opportunities for innovation transfer and knowledge exchange through outreach and internships opportunities for students, as well as collaboration in teaching, learning and research activities.
CENIT@EA team celebrated international day of women and girls in Science and international women’s day where students through social media platforms shared different quotes to encourage and motivate women and girls. Additionally, CENIT@EA in collaboration with GIZ team participated in celebrating International Girls in ICT Day where CENIT@EA students conducted an online event to encourage girls in ICT by sharing their journey in tech.

Women in STEM,
Enjoy What you do!
CENIT@EA congratulates 2nd cohort student Mr. Thon Malek of South Sudan for winning a prestigious international award offered by the National Geographic Society, USA. Under the assistance of Dr. Judith Leo, Mr. Malek will implement a remote learning on the use of ICT applications for wild life conservation in South Sudan. CENIT@EA is all about addressing practical challenges at societal and industrial levels and for such initiatives, we celebrate the effort and challenge other students to be proactive in pursuing solutions to practical everyday challenges.

Recipient: Mr. Thon Malek  
Theme: Remote learning on the use of ICT Applications for Wild Life Conservation in South Sudan  
Awarding body: The National Geographic Society

Innovation Stories of East Africa, Regional Workshop  
18th April 2021.

On celebrating innovation week in Tanzania, Digital Skills for an Innovative East African Industry (dSkills@EA) conducted a dialogue between innovation hubs in East Africa on the need to create a platform for collaboration and exchange of best practices. The event was virtually conducted and moderated by GiZ.
OFFICIAL START - SECOND PHASE OF THE PROJECT

Project Name: Digital Skills for an Innovative East African Industry (dSkills@EA)

Official signing of dSkills@EA
17th May 2021, EAC Secretariat - Arusha

17th May 2021 marks the official start of the new project, Digital Skills for an Innovative East African Industry (dSkills@EA), after the successful signing of the agreement between Germany Ambassador - Tanzania, Regine Hess and the EAC Secretary General, Dr. Peter Mathuki.

Kick-off Meeting for dSkills@EA
19th May 2021, Arusha

The start of the new project included a kick-off meeting among partners of dSkills@EA. The meeting discussed the joint work plan and the respective partner roles in fulfilling the objectives of the project.
CENIT@EA curriculum incorporates group project assignments. These group project activities combine classroom knowledge, personal and group discussions in accomplishing a specified task. It is an opportunity for students to work on a problem/challenge relevant to the society and/or industry. Students are expected to conduct literature review on the subject matter, formulate and implement solutions relevant to the subject matter. It is an opportunity to exercise teamwork and agree to disagree. Group projects are evaluated based on their relevance, methodological approach, team thinking and generally thinking outside the box to come up with meaningful solutions to everyday challenges. Within this newsletter period, 2nd cohort students worked on their group project, in among their research interest areas highlighted in figure below.
CENIT@EA 2\textsuperscript{nd} COHORT GROUP PROJECTS

\textbf{Smart Card Management System for Water Sale Based on RFID}

Addressing the problem of water scarcity in low income communities, EMoS students developed a smart card management system based on RFID technology to deduct the amount of water dispensed from the user card.

Students: Rahab Uwamahoro, Aina Kipendaroho, Avith Habonimana and Frank Nyange
Supervisors: Dr. Neema Mduma and Dr. Mussa Ally

\textbf{Web-mobile Students Information Management System a case of NM-AIST}

On ensuring effective and efficient service delivery at the Nelson Mandela African Institution of Science and Technology (NM-AIST), EMoS students improved an existing student management information system to reduce workload and physical contact among users. The developed system generates customized reports and automate forward and backward communication.

Students: Thon Malek Garang, Angela Mseke, Happyness Chikusi, Stanley Manyonyi
Supervisors: Dr Shubi Kaijage and Dr. Edith Luhanga
**CENIT@EA 2\textsuperscript{nd} COHORT GROUP PROJECTS**

**NM-AIST E-Office** - Traditional method of moving files from one office to another is hectic and it takes time. EMoS students developed an electronic management system to make the process easier for NM-AIST community.

Students: Yvonne Uwamahoro, Magdalena Bahati, Armel Bizoza, Alphonsina Shiyo  
Supervisors: Dr. Dina Machuve and Dr. Neema Mduma

**Mini Smart Library Direction System**

Manual method of searching books in a library shelves is stressful and takes time, EMoS students developed a mini smart library direction system in order to make the process easier.

Students: Dominic Makjak Deng, Annettte Mandari, Angerlo Bidal  
Supervisors: Dr. Edith Luhanga and Dr. Neema Mosha
Smart Electronics Billboards

EMoS students developed a smart electronic billboard which displayed university announcements, seminars, awards and projects to improve communication approach at the Nelson Mandela African Institution of Science and Technology (NM-AIST) which mostly rely on emails and website.

Students: Yvonne Iradukunda, Innocent Ciza, Emmanuel Ronoh, Salama Ndayisaba
Supervisors: Dr. Kisangiri Michael and Dr. Devotha Nyambo

Comprehensive Security System based on IoT

EMoS students developed a security system to act as an early warning tool for preventing the industrial hazard outbreaks.

Students: Abel Nshimiye, Kisakyake Ng’ondya, Jesus de la Paix Irakomey, Elibariki Sumari
Supervisors: Dr. Anael Sam and Dr. Judith Leo
Designing of an Automatic Railway-Road Crossing System

Accidents are the major cause of death, EMoS students designed an automatic railway-road crossing system with a gate, traffic lights and siren in order to alert road users once the train is approaching.

Students: Christina Mariki, Gilbert Minja, Libere Nkuzimana, Zirakwiye Innocent
Supervisors: Dr. Mussa Ally and Dr. Neema Mduma

Smart Masai Cattle Grazing System

Who doesn’t know how Maasai are very sensitive with their cattle? EMoS students developed smart cattle grazing system in order to monitor cattle and send timely updates to the herdsmen.

Students: Lule Joseph, Zuhura Msisi
Supervisors: Dr. Shubi Kaijage and Dr. Ramadhani Sinde
Electrical Consumption Information in The Smart Houses

Electricity is the essential source of energy in our daily life. EMoS students developed an advanced technology of monitoring electric energy consumption of appliances in the household.

Students: Florian Rwegoshora, Hamis Msimbe, Daniel Wilson, Juma Salim
Supervisors: Dr. Ramadhani Sinde and Dr. Kisangiri Michael

Industrial Air Quality Monitoring System

Air pollution poses a major threat to health and climate. On addressing this problem, EMoS students developed a digital solution based on wireless sensor network to control air pollution in oil and gas industries.

Students: Mathiang Dut, Chantal Iribagiza, Kevin Iriho, Joseph Muriu Kiguta
Supervisors: Dr. Mussa Ally and Dr. Judith Leo
Dissemination of project activities is very essential as it communicates with a wider audience. MSc. EMoS students actively participate in creating posters, presentation and papers as means to demonstrate and disseminate their work. 8 first cohort students disseminated their project findings in reputable journals. We commend their efforts and sensitize other students to get more involved in scientific writing and disseminate their projects activities and findings to a wider audience in order to educate and promote their developed/innovated concepts and processes.

CENIT@EA First Cohort Students' Published Papers


Visionary to become a world class institution dedicated to the pursuit and promotion of excellence in Science, Engineering, Technology and Innovation (SETI) and their application for economic growth and sustainable development. The NM-AIST training curricula incorporate innovation and entrepreneurship, academia-industry relations aimed at building an academia for society and industry, the institution’s development agenda. The curricula also seek to accommodate, enable, stimulate, catalyze, and harness the innovativeness and entrepreneurial qualities inherent in the young generation.

No problem can be solved in the same level of consciousness that created it. - Albert Einstein

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NM-AIST: www.nm-aist.ac.tz
CENIT@EA website: www.cenit-ea.org

THE SCHOOL OF COMPUTATIONAL, COMMUNICATION SCIENCES AND ENGINEERING
**THE SCHOOL OF CoCSE**

Information and Communication Technology (ICT) permeates all aspects of modern society: more tasks are automated, activities simplified, systems embedded in systems, machines are learning, scenario are modelled to define complex relationships, data analyzed to extract useful information, among many, supported by modern electronics miniaturization. The school of CoCSE trains students in Information Communication Science and Engineering (ICSE), Mathematical and Computer Science and Engineering (MCSE), Embedded and Mobile Systems (EMoS), Wireless and Mobile Computing (WiMC) and Information Systems and Network Security (ISNS).

The school of CoCSE hosts the Centre of Excellence for ICT in East Africa (CENIT@EA) and the Centre for High Performance Computing (CHPC).

It always seems Impossible until it’s done  
-Nelson Mandela

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**THE CENTRE OF EXCELLENCE FOR ICT IN EAST AFRICA**

CENIT@EA is among the African Centres of Excellence funded by the German government. Established as a regional centre, it trains students in EMoS, builds capacity and regional partnership and linkage towards practice oriented teaching, learning & development.

**PARTNERSHIPS AND COLLABORATION**

**THE CENTRE FOR HIGH PERFORMANCE COMPUTING**

CHPC is established to support research and learning activities. The centre is established by the collaboration between the Indian and Tanzanian government. This collaboration has also led into the establishment of WiMC and ISNS Masters programs.

**THE DEGREE PROGRAMMES & SPECIALIZATION**

**MCSE Programmes (MSc & PhD)**
- Applied Mathematics and Computational Science - AMCS
- Computer Science and Engineering - CoSE

**ICSE Programmes (MSc & PhD)**
- Information Technology System Design and Management - ITSDDM
- Electronics and Telecommunications Engineering - ETE

**CDAC Programmes (MSc)**
- Wireless and Mobile Computing - WiMC
- Information Systems and Network Security - ISNS

**CENIT@EA Programme (MSc)**
- MSc. Embedded and Mobile Systems - EMoS

**KNOWLEDGE, SKILLS AND COMPETENCIES**

MCSE programmes build competencies in mathematical and computational modelling to analyse physical systems, operating systems, computing architectures, algorithm design and development and various areas of artificial intelligence. ICSE programmes build competencies in the analysis, design, implementation, integration and management of information systems, analogue and digital electronics, IoT, circuit design, and telecommunication systems. CDAC and CENIT@EA programmes are technical programs with substantial practice oriented modules. ISNS focuses on techniques and methodologies that allow creation and management of complex information systems whereas WiMC builds on techniques employed in telecommunication and mobile systems. All programmes include core and elective modules covering many areas including emerging themes in artificial intelligence and data science.

The programmes are designed to foster problem solving approach and techniques & inter and multi disciplinarity. They build skills and competencies in both the specific areas of specialization as well as Business studies and humanities. These skills and competencies include entrepreneurship, communication, scientific writing, research skills, intellectual property, research ethics and philosophy. These programmes equip students with the necessary knowhow and pushstart/ enhance their careers as entrepreneurs, employees and inspire them to think beyond the classroom.

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