



1ST INTERNATIONAL CONFERENCE ON TECHNOLOGICAL ADVANCEMENT IN EMBEDDED AND MOBILE SYSTEMS (ICTA-EMOS)

CONFERENCE PROGRAMME

VENUE: ARUSHA INTERNATIONAL CONFERENCE CENTER

DATES: 24TH – 25TH NOVEMBER 2022

All Times are Local (Arusha, Tanzania), EAT

TIME	EVENT	ROOM	RESPONSIBLE
THURSDAY 24TH NOVEMBER 2022			
Arrival and Registration			
7:00 – 8:15			
8:15 – 8:30	Welcome Remarks	Mbayuwayu hall	Chair, ICTA-EMoS Organizing Committee (Prof. Anael Sam, Prof. Jorge Marx Gómez)
8:30 – 8:50	Statement for partners: <ul style="list-style-type: none"> • DAAD • GIZ 		- Lars Gerold, - Godje Bialluch,
8:45 – 8:55	Welcome Remarks ; - NM-AIST, CENIT@EA Host Institution - Executive Secretary, IUCEA		- NM-AIST Vice Chancellor - Prof Gaspard Banyankibona
9:00 – 9:30	Opening Remarks from the Chief Guest		Hon. Dr. Peter MATHUKI Secretary General – EAC
9:30 – 10:00	Keynote address “Safe and Secure AI as an Enabler for future Mobility Services”		Prof. Frank Köster from German Research Institute DLR (AI Centre)
10:00 – 10:30	Health Break, Networking and Sponsors Exhibition		
10:30 – 11:00	Keynote address “Project Management in Data Science Projects”	Main Conference Hall	Prof. Jorge Marx Gómez
Tutorials and Workshops – Parallel sessions			
11:30 – 13:00	Tutorial on Embedded Systems	Mbuni Room	Prof. Kisangiri Michael & the Embedded Systems Club – CENIT@EA
11:30 – 13:00	Tutorial on Mobile Systems	Themu Room	Dr. Mussa Ally & the Embedded Systems Club – CENIT@EA
11:30 – 13:00	Sustainability of the ICT centers of excellence in East Africa	Kololo Room	Mr. Ben Ruhinda Senior Systems Officer and IUCEA dSkills@EA Project Coordinator



TIME	EVENT	ROOM	RESPONSIBLE
11:30 – 13:00	Workshop on Academia – Industry engagement: “Developing strategies for Academia – Industry engagement for sustainable development”	Mbayuwayu hall	Dr. Judith Leo (Outreach and Industrial Coordination Unit – CENIT@EA)
13:00 – 14:00	Lunch Break (Karafuu Lobby), Networking and Sponsors exhibition		
14:00 – 15:00	Sponsors exhibition, Poster session and Group Photos		

Paper presentations – Parallel sessions

Session I – Smart Systems Development

Venue: Kololo Room, Session Chair: Prof. Anael Sam, Dr. Elizabeth Mkoba

15:00 – 15:15 (Online)	Mobility Transition & Quality of Life (MobiLe)– The development of a qualitative model for conveying significant interdependencies in the complex transport system Sreedhar Kokkarachedu and Jorge Marx Gómez
15:15 – 15:30	Concept integration of APQC’s Process Classification Framework (PCF) and Enterprise Architecture Frameworks with Signavio Hans-Jürgen Scheruhn and Pranta Nath
15:30 – 15:45	Smart Solution for Optimized Mass Customization Process in Smart Phone Industry Ankita Dixit, Jaideep Singh, Abhinav Dixit, Karan Guleri and Harpreet Kaur
15:45 – 16:00	Assessment of ICT Infrastructure in Rural Areas to Support use of Websites to Disseminate Crops Production and Management Information: Case of Tanzania Victor Ngessa, Kisangiri Michael, Kelvin Mtei and Mawazo Magesa
16:00 – 16:15 (Online)	Analysis of the measurements of cycle path surface quality as collected by three different technologies Jana Klemp, Jorge Marx Gómez, Johannes Schering and Steven Soetens
16:15 – 16:30	A Brief Introduction into (De-)Coupling Lifecycles in Net-Centric Systems-of-Systems Johann Schütz and Jorge Marx Gómez

Session II – Artificial Intelligence Tools and Applications

Venue: Mbayuwayu Hall, Session chair: Prof. Jorge Marx Gómez, Dr. Neema Mduma

15:00 – 15:15	Extraction of Numerical Facts from German Texts to enrich Internal Audit Data Gerrit Schumann and Jorge Marx Gómez
15:15 – 15:30	Machine and Deep Learning Applications in the Context of Pig Precision Livestock Farming: A Systematic Literature Review Jan-Hendrik Witte, Johann Gerberding, Sven Lampe and Jorge Marx Gómez
15:30 – 15:45 (Online)	CNN With Attention Guided Concatenation for Improved Image Restoration Gladys Mange, Ronald Waweru, Michael Kimwele and Jorge Marx Gómez
15:45 – 16:00	Evidence Based Practices on Co-Operative Societies Information Record Management George Germinous and Mussa Dida
16:00 – 16:15	Developing Proof of Concepts for Sustainable Smart Solutions with the Google Design Sprint and LEGO® Serious Play® Marius Wybrands, Barbara Rapp, Andrea Klahsen and Florian Grubitzsch
16:15 – 16:30 (Online)	Data Requirements for the Analysis of a Company’s Car Fleet Bettina Steden and Jorge Marx Gómez

Session III – Ethics in Information Systems and Cognitive Informatics

Venue: Mbuni Room, Session chair: Gerrit Schumann, Dr. John Tarus

15:00 – 15:15	A KPI system to measure bicycle attractiveness of a city Johannes Schering and Jorge Marx Gómez
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TIME	EVENT	ROOM	RESPONSIBLE
15:15 – 15:30 (Online)	Analysis of Bicycle Use in Germany Cities Based on Smartphone App-generated Data Firdaous Hebbal, Johannes Schering, Jorge Marx Gómez and Jana Klemp		
15:30 – 15:45 (Online)	Barriers to Using Open Data in the Innovation Process Ifeoluwapo Fashoro, Antonieta Alcorta de Bronstein and Jantje Halberstadt		
15:45 – 16:00 (Online)	Multilevel Trustworthiness for improved Process and Network Security in Critical Infrastructures and Domains Hermann Strack, Marlies Gollnick, Sebastian Karius, Robin Kopitz, Meiko Lips and Sandro Wefel		
16:00 – 16:15 (Online)	Competencies for Southern African Computing Sciences Graduate in the Fourth Industrial Revolution Rexwhite Tega Enakrire, Brenda Scholtz and Yakobi Khulekani.		
16:15 – 16:30	Evaluating the Impact of Energy Pricing Policies on Households Consumption Behaviour in Light of Global Pandemics Using Theoretical System Dynamic Model Mohamad Hamed and Jorge Marx Gómez		
Session IV – Wireless and Mobile Computing			
Venue: Themis Room, Chair: Prof. Kisangiri Michael, Dr. Godfrey Justo			
15:00 – 15:15	A Machine Learning Internet of Things (IoT) –Adaptive Smart Cloud Farming System for Small-Scale Farmers in Tanzania Alcardo Alex Barakabitze and Ames Robert		
15:15 – 15:30	IoT and health systems in developing countries: A review Doudou Dione, Idy Diop, Demba Faye, Ibrahima Gueye and Sidi Mohamed Farssi		
15:30 – 15:45	Performance Comparison between Massive MIMO Based Network and Conventional LTE Network for High-Speed Broadband Connection in Rural Areas of Tanzania Marko Mwalongo and Kilavo Hassan		
15:45 – 16:00	A Machine Learning-Based IoT Environmental Monitoring Platform for Data Centres Wayne Steven Okello, Silas Mirau, Michael Kisangiri, Andrew Katumba and Edwin Mugume		
16:00 – 16:15	IoT-Based Control AND Monitoring System of a Solar-Powered Brushless DC Motor for Agro-Machines Gilbert Minja, Jema Ndirwile and Shubi Kaijage		
16:15 – 16:30	Real-time IoT-based Air quality monitoring and health hazards indicator system for mines region Daudi Flavian, Ramadhani Sinde and Michael Kisangiri		
16:30 – 17:00	Announcement & Promotion of ICTA-EMoS sponsors	Main Conference Hall	Chair, ICTA-EMoS Organizing Committee



FRIDAY 25TH NOVEMBER 2022

Session Ia – Smart Systems Development

Venue: Kololo Room, Session Chair: Prof. Anael Sam, Dr. Elizabeth Mkoba

9:00 – 9:20	Development of user-friendly digital library resource discovery tool to mitigate learners' technical hitches Agrey Kato, Eric W. Steinhauer, Elizabeth Ludovick Temba, Michael Kisangiri and Shubi Kaijage
9:20-9:40 (Online)	Developing an Automated Core Rolling Machine for The Metering Unit's Current Transformer Rebecca Magomere, Michael Kisangiri and Silas Mirau
9:40-10:00	A Web-Based Human Resource Management System with Machine Learning Techniques Gideon Muleme, Shubi Kaijage and Ben Ruhinda
10:00-10:20	Development of a location-based app for the net-working of researchers and industry personnel based on innovation Ali Akyol and Manuel Zunguze
10:20 – 10:50	Health Break, Networking and Sponsors Exhibition
10:50-11:20	A Loan Application Management System for Efficient Loan Processing: A case of Muhimbili SACCOS LTD Luciana Murimi, Marius Siebert, Godwin Salira, Elizabeth Mkoba4 and Mussa Ally
11:20-11:40	Integrated Academic Programmes Information System for Inter-University Council of East Africa (IUCEA) Alban Manishimwe, Ben G. Ruhinda and Juru M. Eglantine
11:40-12:00 (Online)	A Proposed framework for the role of information technology (IT) infrastructure for Administrators' effective remote working Melinda Chakurira and Michael Kyobe
12:00 – 13:00	Lunch Break (karafuu Lobby)
13:30-14:00	Smart Energy Management System for Government Institutions: A Case of the Nelson Mandela African Institution of Science and Technology Ateny Gabriel Aguto, Sanisse Adrielle Berinkinzo, Zacharie Niyonzima, Anael Sam and Ramadhani Sindi
14:00-14:20	Development of the web-based data-driven University Information Management System (UIMS) for the Inter-University Council for East Africa (IUCEA) Abel Nshimiye, Mussa Dida Ally, Silas Steven Mirau and Ben Ruhinda
14:20-14:40	Embracing Sustainable Tourism Development through Information Communication Technology (ICT) in Tanzania: Analysis using Selected Tour Operators in Dar es Salaam Juma James Masele and Nassor Sadick
14:40-15:00	Design And Implementation of a Closed Loop Traffic Control System with Speed Control Influence on Proximity Vehicles, and Overriding Capabilities Daniel Mkongo and Zeeshan Khan
15:00-15:20	Explaining Changes in Short-term Water Demand Patterns During the COVID-19 Pandemic – An Absorptive Capacity Perspective Michael Mattern
15:20 – 15:50	Health Break, Networking and Sponsors Exhibition
15:50-16:10	Smart Industrial Electrical Energy Analytics and Forecasting System



	Wayne Steven Okello, Jared Kelvin Nganyi, Gideon Muleme, Ramadhani Sinde and Anael Elikana Sam
16:10-16:30	Mobile-Based Ticket Tracking Helpdesk System for Technical Support Jacqueline Uwimbabazi, Anael Sam and Devotha G Nyambo
Session IIa – Artificial Intelligence Tools and Applications	
Venue: Mbayuwayu Hall, Session chair: Prof. Jorge Marx Gómez, Dr. Neema Mduma	
9:00-9:15	Contextual Multi-view Graph Community Detection using Graph Neural Networks Chiheb Edine Zoghlemi and Abdelkerim Rezgui
9:15-9:30	Object Detection Model for Poultry Diseases Diagnostics Shabani Karim, Dina Machuve, Elizabeth Mkoba and Sanket Pandhare
9:30-9:45 (Online)	Improved Medical Imaging Transfer learning through conflation of domain features Raphael Wanjiku, Lawrence Nderu and Michael Kimwele
9:45 – 10:00	Intermodal matching algorithm including public transportation and ride-hailing Sven von Höveling, Cedrik Theesen, Anton Butenko and Venkatesh Sasapu
10:00-10:20	
10:20-10:50	Health Break, Networking and Sponsors Exhibition
10:50-11:20 (Online)	A Contribution to the Development of Sustainable Target Value Streams with Machine Learning Considering Material Flow Cost Mick Geisthardt and Lutz Engel
11:20-11:40	A systematic literature review toward standardization of business rules discovery in the context of Process Mining Menna Wael and Gamal Kassem
11:40-12:00	Continuous feature vector construction for incremental learning on constrained devices Daniel Alvarez-Coello and Jorge Marx Gómez
12:00-13:00	Lunch Break (karafuu Lobby)
13:30-14:00 (Online)	Screening Tool for Possible Cases of Type II Diabetes Using Machine Learning in An African Context Henry Semakula
14:00-14:20	Influence of Microservice Design Patterns for Data Science Workflows Christoph Schröer, Raphael Holtmann, Jorge Marx Gómez and Hergen Pargmann
14:20-14:40	Convolutional Neural Network deep learning model for early detection of streak virus and lethal necrosis in maize: A case of Northern-highlands, Tanzania Flavia Mayo and Neema Mduma
14:40-15:00 (Online)	Machine Learning Model for Predicting Construction Project Success in Tanzania Astin Ntulo, Elizabeth Mkoba, Dina Machuve and Sanket Pandhare
15:00-15:20 (Online)	Visualizing Outlier Explanations for Mixed-type Data Jakob Nonnenmacher and Jorge Marx Gómez
15:20-15:50	Health Break, Networking and Sponsors Exhibition
15:50-16:10 (Online)	From Process Mining to Enterprise Mining Hans-Jürgen Scheruhn, Christian Reiter and Elnur Bayramli
Session I b– Smart Systems Development	
Venue: Kololo Room, Session Chair: Prof. Juma James Masele, Dr. Mussa Ally	
9:00-9:20 (Online)	The Role of Mobile Application to Control the Existing Customer Needs, Pains and Gains in the Municipal Solid Waste Collection Systems Stanley Manyoni, Silas Mirau, Mussa Ally and Kuchibanda Kizito
9:20-9:40	Social Sustainability in Times of Digitalization and Transformation: The Volkswagen Roadmap Digital Transformation Eva-Maria Spindler and Christoph Schank



9:40-10:00	Mobile Based Application for E-services and E-payments A Study case of Habari Node Public Limited Company in Arusha, Tanzania Umuhoza Ritha, Anael E. Sam and Devotha G Nyambo
10:00-10:20	Smart System for Monitoring and Controlling Oxygen Gas Level in High Purity Germanium Detector Room Yvonne Uwamahoro, Devotha G Nyambo, Anael Sam and John B Ngatunga
10:20-10:50	Health Break, Networking and Sponsors Exhibition
Session III – Ethics in Information Systems and Cognitive Informatics	
Venue: Mbuni Room, Session chair: Dr. John Tarus, Dr. Ramadhani Sinde	
10:50-11:20 (Online)	The States Perspective of Blockchain - A Qualitative Content Analysis Hauke Precht, Tim Siedenburg and Jorge Marx Gómez
11:20-11:40	A Proposal to Store Remote Monitoring Sensor Data in a distributed manner, using IOTA Streams and IPFS Ali Aminrezaei and Jorge Marx Gómez
11:40-12:00 Online	Predictors of E-Government Adoption in Developing countries: A survey in South Africa Anass Bayaga
12:00-13:00	Lunch Break (karafuu Lobby)
13:30-14:00	DLT Architecture Proposal for IoT applications based on Data Streams Francisco Moya, Luis Martínez, Francisco Estrella, Rafael Espín, and Jorge Marx Gomez
14:00-14:20	Blockchain-based Crowdfunding Charity Platform Prithivi Rao Appadoo and Roopesh Kevin Sungkur
14:20-14:40	A Conceptual Model of the Benefits and Concerns of Wearable Health Data Management Lydia Izu, Brenda Scholt, and Ifeoluwapo Fashoro
14:40-15:00	The Data Value Chain Definition Dirk Bendlin, Jorge Marx Gómez and Moritz Werther Häckel
15:00-15:20 (Online)	An Expert System Model for Animal Welfare for Bovine Cattle Dehydration Risk Detection Using Precision Livestock Farming Silvia Molina, Emilio Luque and Dolores Rexachs
15:20-15:50	Health Break, Networking and Sponsors Exhibition
15:50-16:10	Development of an Arithmetic Video Game and Console for Standard I and II Pupils in Tanzania Winy Bundotich, Luciana Murimi, Alvarez Ntatiro, Michael Kisangiri and Devotha G Nyambo
Session IV – Wireless and Mobile Computing	
Venue: Themu Room, Chair: Prof. Kisangiri Michael, Dr. Godfrey Justo	
9:00-9:15	IoT Based-System for Fire Detection and Aviation Obstruction Light Monitoring Thierry Ndayitezibiganza, Anael Sam and Devotha G Nyambo
9:15-9:30	A Digital Twin Approach and Challenges for Real-time Automated Surface-drip Irrigation Monitoring: A Case of Arusha Tanzania Joseph Wangere, Ramadhani Sinde, Mussa Ally and Omary Mbwambo
9:30-9:45 (Online)	IoT on Newborn Room Temperature Control System with Fire Detector: Case Study at Meru Hospital Juma Salim, Ramadhani Sinde and Shubi Kaijage
9:45-10:00	IoT-Based Monitoring and Reporting System for Dosimeter Wearers in Radiation Areas



	Avith Habonimana, Devotha G Nyambo, Anael Sam and John Ngatunga
10:00-10:15	An Investigation on Internet of Things Technology (IoT) In Smart Homes Carmel Nkeshimana, Kwiringira Tumusiime, Amuki Joseph Kesi and Ramadhani Sinde
10:20-10:50	Health Break, Networking and Sponsors Exhibition
Session IIb – Artificial Intelligence Tools and Applications	
Venue: Themis Room, Session chair: René Kessler, Dr. Zeeshan Khan	
10:50-11:20 (Online)	Determining Emotion Intensities from Audio Data Using a Convolutional Neural Network Simon Kiptoo, Kennedy Ogada and Tobias Mwalili
11:20-11:40	Improving Robustness of Optimized Parameters Gradient Tree Boosting for Crime Forecast Model Godfrey Justo, Leonard Binamungu and Festo Clemence
11:20-11:40	Feature Selection Approach to Improve Malaria Diagnosis Model's Performance for High and Low Endemic Areas of Tanzania Martina Mariki, Neema Mduma and Elizabeth Mkoba
12:00-13:00	Lunch Break (karafuu Lobby)
13:40-14:00 (Online)	Application of multiple Time Series Models for Forecasting New and Relapse Tuberculosis Cases: A case of Kibong'oto Infectious Disease Hospital in Tanzania Eunice Silas, Devotha G Nyambo, Anael Sam, Elizabeth Mkoba and Sanket Pandhare
14:00-14:20	A Comparative Study of some Pre-Trained Models on Transfer Learning Approach in Detection and Classification of Cassava Leaf Diseases Emmanuel Ahishakiye, Waweru Mwangi, Petronilla Murithi, Danison Taremwa, Fredrick Kanobe and Ruth Wario
14:20-14:40	Machine Learning Based Forward Collision Avoidance System: A Case study for the Kayoola EVS Ali Ziryawulawo, Adonia Mbarebaki and Sam Anael
14:40-15:00	2-Stage Hybrid Based Heterogeneous Ensemble Committee Machine for Improving Soil Fertility Status Prediction Performance Augustine Josephat Malamsha, Mussa Ally Dida and Sabine Moebs
15:00-15:20	Mask R-CNN model for banana disease segmentation Christian Elinisa and Neema Mduma
15:20-15:50	Health Break, Networking and Sponsors Exhibition
15:50-16:10	A machine Learning Prediction Tool for Dolutegravir Associated Hyperglycemia for People Living with HIV in Uganda Ceaser Wisdom Favor, Sinde Ramadhan, Michael Kisangiri, Levicatus Mugenyi, Francis Musinguzi, Martin Balaba, Noela Owarwo, Eva Laker, Ruth Obaikol, Agnes Kiraga, Barbara Castelnuovo and Rosalind Parkes Ratanshi
16:10-16:30	The artificial neural network-based smart number plate for vehicles with real-time traffic signs recognition and notification Alexandre Niyomugaba, Neema Mduma and Michael Kisangiri
16:30-17:00	Announcement of Best Papers & Exhibition – Mbayuwayu hall
18:00	Conference Closing Remarks, Prof. Anthony Mshandete (NM-AIST)
19:00	Conference Dinner – Woodpecker Restaurant

SATURDAY 26TH NOVEMBER 2022

NATIONAL PARK VISITING/INDIVIDUAL ACTIVITIES



OUR SPONSORS

