



EAI AFRICATEK 2022
5TH EAI INTERNATIONAL CONFERENCE ON EMERGING TECHNOLOGIES FOR DEVELOPING COUNTRIES

BLOEMFONTEIN, SOUTH AFRICA
5-7TH | DEC | 2022



Venue: Prosperitus Auditorium
9300, 1 Park Rd, Willows, Bloemfontein, 9320

HERE
Contact person
Dr Pieter Potgieter

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**FINAL
PROGRAMME**

INTRODUCTION

Society is moving towards an era of intensified artificial intelligence. The public and private sector need to collaborate on systems that would equip the youth and adults for the Fourth Industrial Revolution (4IR/industry 4.0 and the 4th IR) era. The 4IR consists of an array of new technologies that link physical, biological and cyber networks as one unit. The three components of 4IR have been categorized as:

1. Industrial Internet of Things (machines and other technologies that collect, share and act on data between themselves);
2. the Big Data that refers to the capture of data on everything and real time analysis of that data by machines and systems; and
3. Secure and reliable digital infrastructure that connects everything together.

Technological disruptions associated with the 4IR era seem to be threatening traditional jobs and may exacerbate the unemployment problem besieging many countries. However, society should be resolute in innovating to create the future of society's dreams that is fair and humane. Whatever it is called: gig economy, automation, digitalization, robotics, artificial intelligence, internet of things or big data—it must all be underpinned by social justice, social inclusion, as well as youth and women empowerment.

It is against this background that eminent scholars and members of various Communities of Practice must find one another and agree on a common programme of action to leverage these 4IR technologies to drive socio-economic advancement in African cities, especially across the facets of smart governance, smart energy, smart building, smart mobility, smart infrastructure, smart technology, smart healthcare and smart citizen.

Presentations at this Conference will awaken the consciousness of the research community to the need for the adoption of various 4IR technologies in enabling a transformation of African cities and communities in a manner that supports socio-economic advancement therein. The presentations and papers contribute towards increasing awareness of the utility and impact of 4IR technologies in stimulating economic growth and, also showcase various 4IR-related technologies which are currently in play within the African context. To achieve these objectives, the Conference will reports on studies which focus on the nexus between the under-listed facets and 4IR technologies, among others.

1. National and Regional Competitiveness, Concentration and Inequality,
2. (Un)Employment and the Future of Work,
3. Society, State and Citizen welfare,
4. Education in the 4IR Era,
5. Manufacturing,
6. Opportunities for driving Efficiencies and Effectiveness,
7. Regulation/Regulatory Environment,
8. Other facets that address the theme of the Conference.

DAY 1 [05 DECEMBER 2022]

08:30–09:00	Conference Registration and Opening: M Masinde	
Theme 1: Education in the 4IR Era		
Session Chair: A Bagula		
09:00–09:20	Autonomous Learning in Education: A Multi-Armed Bandit Approach	Herkulaas Combrink, University of Pretoria
09:20–09:40	Assessing Institutional Readiness for the Fourth Industrial Revolution: Using Learning Analytics to Improve Student Experiences	Carolien van den Berg, University of the Western Cape
09:40–10:00	M-learning during COVID-19: A Systematic Literature Review	Esmhan Jafer, Sudan University of science and Technology (Sudan)
10:00–10:30	Q&A	
10:30–11:00	Coffee/Tea	
Theme 2 - 4IR as a driver of Efficiencies and Effectiveness		
Session Chair: G Muriithi		
11:00–11:20	Archiving 4.0: Dataset Generation and Facial recognition of DRC political Figures Using Machine Learning.	Ferdinand KAHENGA, University of the Western Cape (South Africa) & Ecole Supérieure d'Informatique
11:20–11:40	On the Machine Learning Models To Predict Town-scale Energy Consumption In Burkina Faso	Tounwendyam Frédéri Ouedraogo, Université Norbert ZON (Burkina Faso)
11:40–12:00	Application of Latent Dirichlet Allocation topic model in identifying 4IR Research Trends	Muthoni Masinde, Central University of Technology (South Africa)
12:00–12:20	A conceptual model for the digital inclusion of SMMEs in the Informal Sector in South Africa - The use of Blockchain Technology to access loans	Lebogang Mosupye-Semenya, University of Johannesburg (South Africa)
12:20–12:50	Q&A	
12:50–14:00	Lunch	
Masters and Doctorate Symposium Part I		
Session Chair: M Mbele		
14:00–14:10	Assessment of Business Intelligence Fitness in Performing Tasks: Case of a University of Technology (South Africa), South Africa	Vuyi Njokweni, Central University of Technology (South Africa)
14:10–14:20	An Internet of Things Framework to Facilitate the Smart City Implementation on South Africa's Municipality: A review	Moabi Kompfi, Central University of Technology (South Africa)
14:20–14:30	Appropriation of Cryptocurrencies as a Payment Method by South African Retailers	Neliswa Dyosi, University of Cape Town (South Africa)
14:30–14:40	Photo Session	
14:40–15:40	Tour of the Posters Display Venue	
15:40–16:10	Coffee/Tea	
18:00–20:00	Social Dinner [Invitation Only]	

DAY 2 [06 DECEMBER 2022]

08:30 - 0900	Conference Registration and Opening	
Theme 3: 4IR Baseline Architectures		
Session Chair: P Potgieter		
09:00–09:20	Multiple Mobile Robotic Formation Control Based On Differential Flatness	Elisha Markus, Central University of Technology (South Africa)
09:20–09:40	A Comparison of Publish-Subscribe and Client-Server Models for Streaming IoT Telemetry data	Olasupo Ajayi, University of the Western Cape (South Africa)
09:40–10:00	Fourth industrial revolution research outputs in Africa: A bibliometric review	Paulina Maingosinathi Phoobane, The Independent Institute of Education (IEMSA) (South Africa)
10:00–10:30	Q&A	
10:30–11:00	Coffee/Tea	
Theme 4 - 4IR in Environment and Agriculture Monitoring		
Session Chair: N Mabanza		
11:00–11:20	Towards a microservice-based middleware for a multi-hazard early warning system	Adeyinka Akanbi, Central University of Technology (South Africa)
11:20–11:40	Indigenous Knowledge mobile-based application that quantifies farmers' season predictions with the help of scientific knowledge	John Makhetha Nyetanyane, Central University of Technology (South Africa)
11:40–12:00	Weed Identification in Plant Seedlings Using Convolutional Neural Networks	Olasupo Ajayi, University of the Western Cape
12:00–12:20	Modelling DDoS Attacks in IoT Networks using Machine Learning	Pheeha Machaka, University of the Western Cape (South Africa)
12:20–12:50	Q&A	
12:50–14:00	Lunch	
Masters and Doctorate Symposium Part II		
Session Chair: J Nyetanyane		
14:00–14:10	Application of Blockchain in Managing Security Challenges Confronting the Adoption of Fourth Industrial Revolution Technologies in Smart Environments: The Case of a Multi-Hazard Early Warning System	Maneo Ntseliseng Ramahlosi, Central University of Technology (South Africa)
14:10–14:20	Towards a Semantic Middleware for South Africa's Multi-Hazard Early Warning System	Yolo Madani, Central University of Technology (South Africa)
14:20–14:30	Information Security Culture-related Practices in Small Medium and Micro Enterprises involved in Web Application Development	Adelin Kantore, Central University of Technology (South Africa)
14:30–15:00	Conference Closure	

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