

SACAIR2025

Southern African Conference for Artificial Intelligence Research

AI at the Edge | Pushing Boundaries - Powering Possibilities

1 - 5 December 2025

Century City | Western Cape

Monday, 1 December 2025 | Unconference

Venue | Marriott Crystal Towers | Conference Centre

07:30 - 08:45 Registration | Tea & Coffee

08:45 - 09:00 Welcome & Ice-breaker

09:00 - 09:20 Plenary: Prof. Fanelwa Ngece-Ajayi, Deputy Dean (Research and Innovation), Faculty of Natural Sciences, University of the Western Cape

09:20 - 09:40 Keynote: Prof. Clement Nyirenda, Director of eResearch (Office of the DVC: Research and Innovation) and Associate Professor (Department of Computer Science), University of the Western Cape

09:40 - 10:30 Industry panel: Mr. Joseph Lumbahe (Microsoft) | Mr. Simon Kleinsmith (Chetwood Bank) | Mr. Keith Makan (KMSEC) | Mr. Nathan Naidoo (Moya App)

10:30 - 11:00 Tea & Coffee | Refreshments

Session: Algorithmic and Data-Driven AI (Computer Science)

11:00 - 11:10 Scalable Machine Learning-Based Intrusion Detection for Large-Scale Cloud Environments Luvuyo Ngcobo

11:10 - 11:20 Exploring STGNNs for stock market trend prediction using macro-economic data Roelof Van Schalkwyk

11:20 - 11:30 Data-Driven Approach for Shelf Life Prediction of Fresh Apple Using IoT and Machine Learning Tharollo Mphahlele

11:30 - 11:40 An Interpretable Graph-Based Approach to Stress Recognition Using Multi-modal Wearable Signals Ahana Maharaj

11:40 - 11:50 Quality Index Prediction for Fresh Produce Using a Convolutional Neural Network Rovhona Mudau

11:50 - 12:00 Advancing Mental Health Diagnostics: Applying Spatial Temporal Graph Neural Networks to EEG Signals for Early Detection of Major Depressive Disorder Dionne Chasi

12:00 - 12:10 Who Is The Better AI Agent Creator: DQN, PPO, Or A2C? Battleground Azul Jené van Schalkwyk

12:10 - 12:20 Dynamic Spatio-Temporal Graph Neural Networks for Cryptocurrency Trend Classification and Change-point Detection Mazwi Nyadzayo

12:20 - 12:30 Reinforcement Learning Applied To Stock Index Trading Sedzani M. Ratshikombo

12:30 - 13:30 Lunch

Monday, 1 December 2025 | Unconference (Continued)

Session: Algorithmic and Data-Driven AI (Computer Science) (Continued)

13:30 - 13:45	Comparative Evaluation of Ensemble Machine Learning and Deep Learning Models for Vehicle Theft Location Prediction	Khiraam Singh
13:45 - 14:00	Automated Machine Learning for Solving the Combined Algorithm Selection and Hyperparameter Optimisation Problem in Trend Prediction	Alex Priscu

Session: Socio-Technical and Human-Centred AI

14:00 - 14:15	43 ChatGPT-Enhanced Suicide Risk Annotation: A Hybrid LLM-Human Framework for Social Media Data	Tsholofelo Mokheleli
14:15 - 14:30	63 Techno-Economic, Environmental and Social Multi-Objective Optimisation of a Grid-Connected Hybrid Renewable Energy System using Metaheuristic Algorithms	Dhruti Dheda

14:30 - 15:30 Posters Session | Tea & Coffee | Refreshments

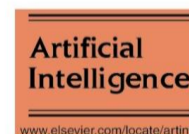
Regulating AI Through Digital Strategy Collective Agreements	Vusi Nguni
AI Literacy for Learners in Low-Income Communities: Co-designing with Educators and Learners in Youth Organisation within South Africa	Rachel Oluwatuyi
Exploring Digital Harm in the Age of Artificial Intelligence: Safeguarding Children from Algorithmic Risks	Radiakga T. Molokomme
Data Colonialism in Health Research involving African actors	Uyanda Maboea
Network Intrusion Detection Datasets: A Systematic Literature Review	Leonard Mutembei
Algorithms and Problem Domains for Fully Quantum Machine Learning	Moegamad Jameel
The VR-AI-Assisted Power Grid Management Education	Dukyung Choi
STGNN for Trend Line Prediction on the JSE	Ephraim Adongo
Learning Dynamic Dependencies in Spatial-Temporal Systems for Efficient Forecasting	Henok Moges
Local Social Structures as Enablers and Barriers for AI Enabled Medical Drone Delivery: Early Evidence from a Developing Economy	Evode Ndayishimiye

15:30 - 15:45 Activity: Kahoot! Quiz

15:45 - 15:50 Prizegiving: Best Student Presentation | Best Student Poster | Quiz Winner

15:50 - 16:00 Closing and Thanks

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Century City | Western Cape

Tuesday, 2 December 2025 | Tutorials

Venue | Marriott Crystal Towers | Crystal 1 - 3

07:30 - 08:30

Registration | Tea & Coffee

08:30 - 10:30

Generative AI Conversational Café – Using GAI for Student Assessments in Higher Education
Dr Desireé Cranfield | Swansea University | Wales
Mr André Daniels | Centre for Innovative Education and Communication Technologies
University of the Western Cape
Professor Salah Kapabanda | Centre for Information Technology and National Development in Africa (CITANDA)
University of Cape Town

10:30 - 11:00

Tea & Coffee | Refreshments

11:00 - 13:00

How AI Shapes Public Belief
Dr Paige Benton | University of Johannesburg

Crystal 1 & 2

11:00 - 13:00

An Unconvoluted Introduction to Convolutional Neural Network
Prof Mehrdad Ghaziasgar | University of the Western Cape

Crystal 3

13:00 - 14:00

Lunch

14:00 - 16:00

Human-Centred AI Systems for Scientific Knowledge Discovery
Prof Deshen Moodley | University of Cape Town

Crystal 1 & 2

14:00 - 16:00

Large Language Models for African Languages
Dr Jan Buys | University of Cape Town

Crystal 3

Tutorials End

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1 - 5 December 2025

Century City | Western Cape

Wednesday, 3 December 2025 | Main Conference | Day One

Venue | Marriott Crystal Towers | Crystal 1 - 3

07:00 - 08:00		Registration Tea & Coffee	
08:00 - 08:10		Introduction: Mehrdad Ghaziasgar, SACAIR 2025 Co-Chairperson Associate Professor in Computer Science, University of the Western Cape	
08:10 - 08:30		Welcome: Professor José Frantz, Deputy Vice-Chancellor Research and Innovation, University of the Western Cape	
08:30 - 09:30		Vijayan Sugumaran, Distinguished University Professor and Janke Scholar of Management Information Systems in the School of Business Administration at Oakland University, Rochester, Michigan,	
		Session 1: Socio-technical AI (Information Systems) (IS) Session Chair: Prof Ben Opperman, North-West University	
09:30 - 09:50	2	AI-Enabled Cybersecurity Implementation: A Case Study of Critical Success Factors in a South African State-Owned Entity	Awonke Mamane and Rennie Naidoo
09:50 - 10:10	58	Exploring Postgraduate Students' Use and Perceptions of Generative AI as a Research Support Tool: A South African Case	Mfowabo Maphosa, Lucas Khoza, Cyril Tlomatsana and Winnie Pitjo
10:10 - 10:30	62	An Awareness Framework for Sustainable Selection of LLMs in Business	Natascha Brughitta Anchia and Andreas Martin
10:30 - 10:50		Tea & Coffee Refreshments	
		Session 2: Socio-technical AI (Information Systems) (IS) (Continued) Session Chair: Prof Aurna Gerber, Stellenbosch University	
10:50 - 11:10	140	Detection Of Power Line Insulator Defects Using YOLOv10-N	Kgampu Shawn Shawn and Terence van Zyl
11:10 - 11:30	27	RAG Evaluation: From Model-Centric Benchmarks to System-Level Metrics	Alta de Waal, Daniel Van Niekerk, Florian Donhauser, Salmaan Suliman and Dehan Lamprecht
11:30 - 11:50	122	Factors influencing the use of Autonomous Vehicles on Traditional Road Infrastructure in The Western Cape	Naasir Parker and Walter Uys
11:50 - 12:10	125	Large Language Model Powered Agentic Framework for Cholera Risk Prediction with Explainable ML and Statistical Insights	Paul Jideani and Aurna Gerber
12:10 - 12:30	136	A Scoping Review on Generative AI prompting to optimize the workflow of healthcare professionals in sub-Saharan Africa	Oluwamayowa O. Ogundaini and Lisa-Dionne Morris
12:30 - 12:45	23	Benchmarking and deploying Small Language Models on the edge for real-world agentic systems in industry	Edward Duffy, David Fernandez, Alta de Waal and Mert Pesé
12:45 - 13:40		Lunch	

Wednesday, 3 December 2025 | Main Conference | Day One)(Continued)

Session 3: Socio-technical AI (Information Systems) (IS) (Continued)
Session Chair: Dr Alta de Waal, University of Pretoria

13:40	-	13:55	29	Evaluating the Backup Buddy Chatbot for Raising Awareness of Mobile Bullying	Portia Mathimbi and Wallace Chigona
13:55	-	14:10	41	Using AI to boost scoping reviews. Exploring AI deployment in obstetrics and gynaecology as an exemplar	Isabella Venter, Renette Blignaut and Karen Renaud
14:10	-	14:25	43	A Cross-Cultural Assessment of Human Ability to Detect LLM-Generated Fake News about South Africa	Tim Schlippe, Matthias Wölfel and Koena Mabokela
14:25	-	14:40	63	Persona-Aware Alignment of LLMs Using Synthetic Dialogue Data	Annick Grob, Hans Friedrich Witschel and Andreas Martin
14:40	-	14:55	104	R.A.I.S.E - A Novel Framework for Evaluating Foundational AI Models in Medical Deployment: Moving Beyond Traditional Metrics to Real-World Deployability	Zardus Adendorff, Laing Lourens, Judy Gichoya, Vukosi Marivate and Rhena Delpont

14:55 - 15:15 Tea & Coffee | Refreshments

Session 4: Socio-technical AI (Information Systems) (IS) (Continued)
Session Chair: Prof Ilya Sinayskiy, University of KwaZulu-Natal

15:15	-	15:30	124	A perspective on Agentic AI as a component of the analytics workflow	Charl Cowley and Warren Brettenny
15:30	-	15:45	128	The Uses of Generative Artificial Intelligence for Cybersecurity in Organisations	Chipo Chidakwa and Zainab Ruhwanya

Session 5: Responsible and Ethical AI (Philosophy and Law)
Session Chair: Prof Dirk Van Rooy, Antwerp Centre for Responsible AI (ACRAI)

15:45	-	16:05	20	Artificially Generated Minorities (AGMs): The Veneer of Algorithmic Bias Correction	Ibifuro R. Jaja
16:05	-	16:25	35	Under-resourced and over-researched: The ELSA approach to transdisciplinary AI research in low-trust neighborhoods	Nanou van Iersel, Majsa Storbeck, Marlon Kruizinga and Michaël Grauwde
16:25	-	16:45	117	From Principles to Practice: Extracting Human-Centred AI Components from Governance Frameworks	Cindy van den Berg and Hanlie Smuts
16:45	-	17:00	31	Hermeneutic Harm, Epistemic Injustice, and Disrupted Sense Making	Fabio Tollon and Sasha Smit

17:45 Bus Departs for The Tangram Restaurant, Durbanville Hills Wine Estate

18:15 Conference Dinner - The Tangram Restaurant, Durbanville Hills Wine Estate

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Century City | Western Cape

Thursday, 4 December 2025 | Main Conference | Day Two

07:30 - 08:00

Registration | Tea & Coffee

08:00 - 08:10

Introduction: Louise Leenen, Associate Professor and Acting Head of Department, Computer Science, University of the Western Cape

08:10 - 08:55

Aleksandar Radovanovic, Quantum Computing Institute of Cape Town, University of the Western Cape
Quantum AI: The Next Frontier

Session 6: Responsible and Ethical AI (Philosophy and Law)
Session Chair: Prof Dane Brown, Rhodes University

08:55 - 09:10

141

An initial foray into AI judicial drafting: a comparative experiment in a constitutional privacy case

Kudakwashe Mawowa and Donrich Thaldar

09:10 - 09:25

61

Rethinking the Right to a Human Decision-Maker: From Right to Constitutive Necessity

Joshua Brand

09:25 - 09:40

120

Bestowing Legal Personality on AI: A South African Perspective

Kristi Erasmus

09:25 - 09:40

91

Otheroids or Anthropomorphism? An Empathy-Based Approach to Artificial Agents

Abootaleb Safdari

09:40 - 09:55

123

Digital Colonialism as an Economic Strategy: Engineered Inequality

Sunita Menon

09:55 - 10:10

134

"Where you want her, how you want her": Understanding the violence of deepfake pornography

Amukelani Mnisi

10:10 - 10:30

Tea & Coffee | Refreshments

Session 7: Algorithmic and Data-Driven AI (Computer Science)
Session Chair: Prof Albert Helberg, North-West University

10:30 - 10:50

10

Which contextual topic modelling algorithm is the best?

Darren Roos and Katherine Malan

10:50 - 11:10

14

Leveraging Language Models for Document Type Classification in Low-Resource Afrikaans Archives

Eduan Kotzé, Burgert Senekal and Walter Daelemans

11:10 - 11:30

32

Hybrid Automatic Modulation Classification for Increased Robustness under White-Box Adversarial Attacks

Arnold van der Merwe and Albert Helberg

11:30 - 11:50

34

Counterfactual Explanation Model for Personalised Dietary Interventions in Anaemia Patients

Zvinodashe Revesai and Okuthe P. Kogeda

11:50 - 12:10

38

Feature extraction for plant growth estimation

Simbarashe Aldrin Ngorima, Albert Helberg and Marelise Davel

12:10 - 12:30

39

Exploring the impact of different loss functions for anomaly prediction in a mineral processing plant

Morne C. Du Plessis and Deshendra Moodley

12:30 - 12:35

Message from our sponsor the Centre for Artificial Intelligence Research (CAIR) by Deshendra Moodley, Co-Director of CAIR

12:35 - 13:25

Lunch |

Session 8: Algorithmic and Data-Driven AI (Computer Science) (Continued)
 Session Chair: Prof Eduan Kotzé, University of the Free State

13:25	-	13:45	40	Modifying class distributions to improve the classification of minority group examples in a class-imbalanced dataset	Banele Mdluli and Terence Van Zyl
13:45	-	14:05	49	Evaluating OCR performance on food packaging labels in South Africa	Mayimunah Nagayi, Clement Nyirenda, Rina Swart, Alice Khan and Tamryn Frank
14:05	-	14:25	55	Investigating the Impact of Multilingual Pre-trained Speech Models on Gender Bias in ASR for Low Resource African Languages	Claytone Sikasote, Hussein Suleman and Jan Buys
14:25	-	14:45	56	A Two Stage Pipeline for Automated Caries Detection on Single Tooth Images from Panoramic Radiographs	Christopher Jürgen Hansen, Coenraad Mouton, Claus-Christian Glüer, Paula Klöhn, Anna-Louisa Kollster, Christof Dörfer, Jonas Conrad, Christian Graetz, Toni Gehrman, Niklas Christoph Koser and Jan-Bernd Hövener
14:45	-	15:05	71	Exploring syllable similarity across South African languages through self-supervised speech representation	Aby Louw

15:05 - 15:25 Tea & Coffee | Refreshments

Session 9: Algorithmic and Data-Driven AI (Computer Science) (Continued)
 Session Chair: Prof Deshen Moodley, University of Cape Town

15:25	-	15:45	73	Data Pruning: Redundant, Problematic, and Interdependent Samples	Leon Freese and Marthinus Wilhelmus Theunissen
15:45	-	16:05	76	Restoring Neural Network Plasticity for Faster Transfer Learning	Xander Coetzer, Anna Bosman and Arné Schreuder
16:05	-	16:25	80	AfroXLMR-Comet: Multilingual Knowledge Distillation with Attention Matching for Low-Resource Languages	Joshua Sakthivel Raju, Sanjay Somasundaram, Jaskaran Singh Walia, Srinivas R and Vukosi Marivate
16:25	-	16:45	81	Code-Switch Pretraining for Improved Cross-Lingual Alignment in Low-Resource Languages	Ruan Visser, Trienko Grobler and Marcel Dunaiski

Symbolic AI (KRR)

16:45	-	17:00	17	An Override-Aware Classifier for Transparent AI	Ruvarashe Shalom Madzime, Thomas Meyer and Louise Leenen
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Session ends

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1 - 5 December 2025

Century City | Western Cape

Friday, 5 December 2025 | Main Conference | Day Three

07:30 - 08:00

Registration | Tea & Coffee

08:00 - 08:10

Announcement of SACAIR 2026, Aurna Gerber, Chairperson of the SACAIR Steering Committee, Stellenbosch University
Introduction: Mehrdad Ghaziasgar, SACAIR 2025 Co-Chairperson
Associate Professor in Computer Science, University of the Western Cape

08:10 - 08:30

Prof David Holgate
Dean: Faculty of Natural Sciences and UWC-AIMS Research Chair in Mathematics

08:30 - 09:15

Joseph Lumbahe, Senior AI Technology Specialist at Microsoft
AI at the Edge of Intelligence: The Rise of Agentic Systems and the Future of Human-Machine Collaboration

Session 10: Algorithmic and Data-Driven AI (Computer Science) (Continued)
Session Chair: Dr Abootaleb Safdari, University of Bremen

09:15 - 09:35

85

Identification of Social Media Users that Perpetuate Xenophobic Attitudes and Hate Speech Narratives in South Africa

Carl du Plessis, Michael du Plessis, Ronny Mabokela, Abiodun Modupe and Vukosi Marivate

09:35 - 09:55

92

HAPI-FedProx: Heterogeneity-Aware Adaptive Proximal Optimization for Federated Learning

Kudzaishe Mhou and Senekane Makhamisa

09:55 - 10:15

94

Fog-Based Deep Learning for Real-Time Cold Chain Temperature Prediction Using IoT Data

Jeremiah Taguta, Jean Frederic Isingizwe Nturambirwe and Clement Nthambazale Nyirenda

10:15 - 10:35

Tea & Coffee | Refreshments

Session 11: Algorithmic and Data-Driven AI (Computer Science) (Continued)
Session Chair: Prof Terence van Zyl, University of Johannesburg

10:35 - 10:55

112

Robust Driver Distraction Recognition via Lightweight Body-Part Association and Object Context on NVIDIA Jetson

Frank Zandamela, Patrick Malatjie, Teboho Sekopa, Mamodike Sadiki and Moloko Manthata

10:55 - 11:15

130

Nearest-Class Mean and Logits Agreement for Wildlife Open-Set Recognition

Jiahao Huo, Mufhumudzi Muthivhi, Fredrik Gustafsson and Terence L. Van Zyl

11:15 - 11:35

139

Semi-Supervised Object Segmentation via Active Learning for Efficient Ecological Monitoring

Dane Brown and Karen Bradshaw

11:35 - 11:55

144

Scaling behavior of Encoder Language Models in Low-Resource Settings

Ruan Visser, Trienko Grobler and Marcel Dunaiski

11:55 - 12:15

146

Enhancing Target Re-Identification via Model Fusion and Knowledge Distillation of Pre-trained Foundation Models

Tendai Shoko and Terence L. van Zyl

12:15 - 12:30

15

MAGE: Multi-Head Attention Guided Embeddings for Low Resource Sentiment Classification

Varun Vashisht, Samar Singh, Mihir Konduskar, Jaskaran Singh Walia and Vukosi Marivate

12:30 - 12:45

143

Injecting Explicit Cross-lingual Embeddings into Pre-trained Multilingual Models for Code-Switching Detection

Thapelo Sindane, Vukosi Marivate and Avashlin Moodley

12:45 - 13:30

Lunch

Session 12: Algorithmic and Data-Driven AI (Computer Science) (Continued)
 Session Chair: Dr Ayinde Usman, University of the Western Cape

13:30 - 13:50	86	Synthesizing Insights on AI in Africa: A Comprehensive Qualitative Analysis	Arti Ramanathan, Dongpeng Huang and James Katz
13:50 - 14:05	36	Should We Trust AI to Detect Social Stress? A Machine Learning Approach	Valentina Oelofse and Herkulaas Combrink
14:05 - 14:20	87	Cross-lingual transfer of multilingual models on low resource African Languages	Harish Thangaraj, Ananya Chenat, Jaskaran Singh Walia and Vukosi Marivate
14:20 - 14:35	19	An End-to-End Deep Learning Model for Recommender Systems	Abebe Tegene, Vukosi Marivate, Mapundi Banda, Abiodun Modupe, Valisoa Rakotonarivo and Mathibele Nchabeleng

Conference Ends

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