16th International Multi-Conference on Complexity, Informatics and Cybernetics (IMCIC 2025)

Online
25-28 March 2025

Editors:

Nagib Callaos
Natalja Lace
Belkis Sanchez
Michael Savoie

ISBN: 979-8-3313-1692-1

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2025) by International Institute of Informatics and Systemics (IIIS)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact International Institute of Informatics and Systemics (IIIS) at the address below.

International Institute of Informatics and Systemics (IIIS)
13750 West Colonial Dr.
Suite 350-408
Winter Garden, Florida 34787
USA

Contact-us@iiis.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Table of Contents i

Academic Globalization

Morze, Nataliia *; Makhachashvili, Rusudan *; Zvonar, Viktor **; Ilich, Liudmyla *; Boiko, Mariia * (* Ukraine, ** Poland): "Digital Competence for e-Governance in Ukraine" 1

Nikolarea, Ekaterini (Greece): "The Impact of Globalization on the non-English Higher Education: Case Studies of (Mixed/Blended) Referencing" 7

Complexity

Bancroft, Justin *; Bancroft, James ** (* Latvia, ** USA): "Beyond Traditional Metrics: Embedding Sustainability and Stewardship in Innovation Measurement" 12

Cowin, Jasmin (USA): "Autonomous AI Agents – The Kraken Wakes" 20

Ezeji, Ijeoma Noella; Adigun, Matthew Olusegun; Oki, Olukayode (South Africa): "Strategic Selection of Application Area for Optimizing Computational Complexity in Explainable Decision Support System Using Multi-Criteria Decision Analysis (MCDA)" 24

Lipuma, James *; Leon, Cristo *; Cabobianco, Marcos O. **; Daizo, Maria B. ** (* USA, ** Argentina): "Continuum of Academic Collaboration: Issues of Inconsistent Terminology in Multilingual Context" 36

Computer Science and Engineering

AlRamouni, Suad; AlKassim, Norah (Saudi Arabia): "Architecture Design of Scalable Blockchain in IoT Smart Cities" 48

Correia, Jo-Anne; Ilunga, Masengo (South Africa): "Using Geospatial Computation Intelligence for Mapping Temporal Evolution of Urban Built-up in Selected Areas of the Ekurhuleni Municipality, South Africa" 54

Dhliwayo, Ransom; Ilunga, Masengo (South Africa): "Preliminary Flood Mapping Using Cloud Computing: Case of Port St Johns Local Municipality, South Africa" 64

Dweba, Vukile Allison; Ilunga, Masengo (South Africa): "Preliminary Drought Monitoring Using Normalized Difference Drought Indices in Google Earth Engine Intelligent Tool: Case of Tabuk Area, Saudi Arabia" 70

Gama, Tinyiko Millicent; Ilunga, Masengo (South Africa): "Preliminary Assessment of Land Use Land Cover Using Random Forest Machine Learning in Google Earth Engine: Case of a Metropolitan Municipality" 76

Lugoma, Masikini *; Zimbili, Abel Omphemetse *; Ilunga, Masengo *; Mosia, Ngaka *; Abhishek, Agarwal ** (* South Africa, ** Bhutan): "Effect of Data Imbalance in Predicting Student Performance in a Structural Analysis Graduate Attribute-Based Module Using Random Forest Machine Learning" 85

Lunga, Ntombela; Ilunga, Masengo (South Africa): "Railway Track Degradation Modelling Using Finite Element Analysis: A Case Study in South Africa" 93

Nkoabela, Matsela Tlhologelo; Ilunga, Masengo (South Africa): "Trend Analysis of Remotely Sensed Historical Rainfall in the Olifants River Watershed, South Africa" 105

Nokovic, Bojan; Lambe, Andrew (Canada): "Quantitative Endosurgery Process Analysis by Machine Learning Method" 112

Rogalski, Sebastian; Ilunga, Masengo (South Africa): "Predicting Land Surface Temperature from Rainfall and Elevation Remotely Sensed Data Using Random Forest Machine Learning in Google Earth Engine" 119

Santos, Danilo Rodrigues dos; Silva, Diego Furtado (Brazil): "Enhancing Random Forest for Continuous Data Streams Using Divergence Measures to Select Decision Trees" 127

Tamano, Tatsuki; Itano, Ryuya; Tanitsu, Honoka; Koita, Takahiro (Japan): "Real-Time Performance and Accuracy in Anomaly Detection by a Hierarchy of Crowdworkers" 137

Health Sciences and Bio-Medical ICT

Abad, Alessandra; Farfan, Gonzalo; Subauste, Daniel (Peru): "Platform for Detection of Depression in Medical Students with Improvement Monitoring Using Dialogflow" 141

Abadicio, Coleen; Arenas, Stella Louise; Hahn, Rosette Renee; Maleriado, Angel Berry; Mariano, Ramon Miguel; Zabella, Rodolfo Antonio Ma.; Adarlo, Genejane (Philippines): "Navigating Psychological Riptides: How Seafarers Cope and Seek Help for Mental Health Needs" 150

ElSayary, Areej; Ragab, Jumana K. (United Arab Emirates): "Digital Neuroplasticity: How Prolonged Technology Use Reshapes Neural Pathways Over Time" 158

Towards Business Sophistication and Sustainability - Invited Session

Organizer: Natalja Lace (Latvia)

Abesadze, Nino; Abesadze, Otar; Kinkladze, Rusudan; Paresashvili, Nino; Robitashvili, Natalia; Chitaladze, Ketevan (Georgia): "Transformation of Residential Property Price in Georgia Against the Backdrop of Global Events" 165

Bahmanova, Alona; Lace, Natalja (Latvia): "Conceptual Model of the Company's Cyber Resilience Elements" 172

Burceva, Rita; Oganisjana, Karine; Dzerviniks, Janis (Latvia): "The Impact of Artificial Intelligence on the Competencies of School Career Counselors from the Perspective of Sustainable Development" 184

Erina, Jana; Alekse, Aivija (Latvia): "Increasing the Efficiency of Human Resources Management in Financial Institutions in Latvia" 191

Erina, Jana; Kovalova, Anastasija (Latvia): "Effective Leadership Approaches in a Multicultural Environment in a Remote Work Model" 198

Nikolov, Borislav; Koleva, Nataliya (Bulgaria): "Risks in Managing Smart Factories" 207

Sproge, Ilze; Lace, Natalja; Joppe, Aina (Latvia): "Tax Benefits of the Income Tax Systems of the Baltic States: Comparison and Assessment" 216

Titova, Anita; Lace, Natalja (Latvia): "Peat Resource Management and Climate Change Mitigation Issues – Case of Latvia" 221

Trans- and Inter-Disciplinary Research, Education, and Communication: TIDREC

Chang, Li-Jing Arthur (USA): "Machine Learning Models for Journalists' Job Satisfaction Using Synthetic Data" 227

Cwiakala, Martin (USA): "Prototyping the Future: Educational Competitions for XR and Physical Design" 232

Ilunga, Masengo *; Zimbili, Omphemetse *; Mampilo, Phahlani *; Abhishek, Agarwal ** (* South Africa, ** Bhutan): "Modelling Student Performance in a Structural Steel Graduate-Based Module: A Comparative Analysis Between K-Nearest Neighbor and Dummy Classifiers" 239

Makhachashvili, Rusudan; Semenist, Ivan; Klochkov, Vladyslav (Ukraine): "AI-Enhanced Multilingual Lexicography for Digital Communication" 247

Makhachashvili, Rusudan; Semenist, Ivan (Ukraine): "Cybernetics and Informatics of Generative AI for Transdisciplinary Communication in Education" 254

Makhachashvili, Rusudan; Semenist, Ivan; Vorotnykova, Iryna (Ukraine): "Interoperable Digital Skills for Foreign Languages Education in the COVID-19 Paradigm" 262

Makhachashvili, Rusudan; Semenist, Ivan (Ukraine): "Transformative, AI-Enhanced, Transdisciplinary Digital Educational Communication for Resilience" 267

Nikolarea, Ekaterini (Greece): "Interlinguistic Communication: A *Topos* of Inter-Disciplinary Research in Higher Education and Multinational Companies in a Trans-Disciplinary Way" 275

Quispe Rojas, Julio Ernesto; Troncoso Castro, Paul Fernando; Quispe Tuesta, Julio Enrique (Peru): "Expert System for the Start of Research in Electronic Engineering in a Public University in Peru" 288

Authors Index 295