

2022 9th International Conference on Soft Computing & Machine Intelligence (ISCMI 2022)

**Toronto, Ontario, Canada
26-27 November 2022**



**IEEE Catalog Number: CFP2244Z-POD
ISBN: 979-8-3503-2089-3**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2244Z-POD
ISBN (Print-On-Demand):	979-8-3503-2089-3
ISBN (Online):	979-8-3503-2088-6
ISSN:	2640-0154

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
E-mail: curran@proceedings.com
Web: www.proceedings.com

2022 9th Intl. Conference on Soft Computing & Machine Intelligence (ISCFMI 2022)

Table of Contents

Preface.....	vii
Conference Committees.....	ix

● Deep Learning Theory and Application

Using Deep Learning to Detecting Deepfakes	1
<i>Jacob Mallet, Rushit Dave, Naeem Seliya, Mounika Vanamala</i>	
Cryptocurrency Trading Agent Using Deep Reinforcement Learning	6
<i>Uwais Suliman, Terence L. van Zyl, Andrew Paskaramoorthy</i>	
Fake News Detection Using Deep Learning and Natural Language Processing	11
<i>Anand Matheven, Burra Venkata Durga Kumar</i>	
Channel Quality Prediction in 5G LTE Small Cell Mobile Network Using Deep Learning	15
<i>Ndolane Diouf, Massa Ndong, Dialo Diop, Kharouna Talla, Mamadou Sarr, Aboubaker Chedikh Beye</i>	
Enhancing Classification Performance for Android Small Sample Malicious Families Using Hybrid RGB Image Augmentation Method	21
<i>Yi-Hsuan Ting, Yi-Ming Chen, Li-Kai Chen</i>	
Layer Sensitivity Aware CNN Quantization for Resource Constrained Edge Devices	26
<i>Alptekin Vardar, Li Zhang, Susu Hu, Saiyam Bherulal Jain, Shaown Mojumder, Nellie Laleni, Ashish Shrivastava, Sourav De, Thomas Kampfe</i>	
Learning Disentangled Representations Using Dormant Variations.....	31
<i>Kanmani Palaniappan, Ushasukhanya S, T.Y.J Naga Malleswari, Prabha Selvaraj, Vijay Kumar Burugari</i>	
Heart Disease Prediction Using Hybrid Machine Learning Model Based on Decision Tree and Neural Network	36
<i>Mostafa Bakhshi, Seyedeh Leili Mirtaheri, Sergio Greco</i>	

● Machine Learning Model and Calculation

Continuous User Authentication Using Machine Learning and Multi-finger Mobile Touch Dynamics with a Novel Dataset	42
<i>Zach DeRidder, Nyle Siddiqui, Thomas Reither, Rushit Dave, Brendan Pelto, Mounika Vanamala, Naeem Seliya</i>	
On the Biological Plausibility of Orthogonal Initialisation for Solving Gradient Instability in Deep Neural Networks.....	47
<i>Nikolay Manchev, Michael Spratling</i>	
Non-fungible Token Price Prediction with Multivariate LSTM Neural Networks	56
<i>Jerome Branny, Rolf Dornberger, Thomas Hanne</i>	
A Novel Approach for Federated Learning with Non-IID Data.....	62
<i>Hiep Nguyen, Harikrishna Warrier, Yogesh Gupta</i>	
Explainable Machine Learning Models for Pneumonia Mortality Risk Prediction Using MIMIC-III Data	68
<i>James Sanii, Wai Yip Chan</i>	
Proficiency Prediction System for Online Learning Based on Recurrent Neural Networks.....	74
<i>You-Xuan Huang, Nen-Fu Huang, Jiang-Wei Tzeng, James Liang, Ching-Wei Su, Yao-Ting Li</i>	

Loan Repayment Prediction Using Logistic Regression Ensemble Learning with Machine Learning Algorithms	79
<i>Thuan Nguyen Dinh, Binh Pham Thanh</i>	

● Intelligent Algorithm and Optimization

Evaluating the performance of the Quantum Approximate Optimisation Algorithm to solve the Quadratic Assignment Problem.....	86
<i>M. T. Khumalo, K. Prag, K. J. Nixon</i>	
A Population-Based Algorithm for Solving the Fuzzy Capacitated Maximal Covering Location Problem.....	91
<i>Méziane Aïder, Imene Dey, Mhand Hifi</i>	
A Comparison of Linear Rank and Tournament for Parent Selection in a Genetic Algorithm Solving a Dynamic Travelling Salesman Problem.....	97
<i>Ramona Boeh, Thomas Hanne, Rolf Dornberger</i>	
A Hybrid Gain-Ant Colony Algorithm for Green Vehicle Routing Problem	103
<i>V. Sangeetha, R. KrishanKumar, K.S. Ravichandran, Amir H. Gandomi</i>	
Comparison of Trajectory and Population-Based Algorithms for Optimizing Constrained Open-Pit Mining Problem	109
<i>Iman Rahimi, Theodore Picard, Andrew Morabito, Kiriakos Pampalis, Aiden Abignano, Amir H. Gandomi</i>	
Exploring the Potential of a Genetic Algorithm on a Real-World Complex Scheduling Problem	113
<i>Szilvia Jáhn-Erdős, Bence Kővári</i>	
A Cooperative Population-Based Method for Solving the Max-Min Knapsack Problem with Multi-scenarios	118
<i>Méziane Aïder, Mhand Hifi, Khadidja Latram</i>	
Optimizing Speed and Accuracy Trade-off in Machine Learning Models via Stochastic Gradient Descent Approximation.....	124
<i>Jasper Kyle Catapang</i>	

● Computer Model and Intelligent Calculation

Pipeline Leakage Detection and Characterisation with Adaptive Surrogate Modelling Using Particle Swarm Optimisation.....	129
<i>Mutiu Adesina Adegbeye, Aditya Karnik, Wai-Keung Fung, Radhakrishna Prabhu</i>	
Modeling and Optimization of Two-Chamber Muffler by Genetic Algorithm	135
<i>Jing-Fung Lin</i>	
Fuzzy Object Ambiguity Determination and Human Attention Assessment for Domestic Service Robots.....	140
<i>Kevin Fan, Melanie Jouaiti, Kerstin Dautenhahn, Christopher L. Nehaniv</i>	
MVI-DCGAN Insights into Heterogenous EO and Passive RF Fusion	146
<i>Asad Vakil, Erik Blasch, Robert Ewing, Jia Li</i>	
Feature Construction, Feature Reduction and Search Space Reduction Using Genetic Programming.....	152
<i>David Herrera-Sánchez, Efrén Mezura-Montes, Héctor-Gabriel Acosta-Mesa</i>	
CILDI: Class Incremental Learning with Distilled Images	157
<i>Abel Zacarias, Luis A. Alexandre</i>	
Towards Determining the Optimal Application of Distributed Generation for Grid Integration.....	162
<i>K. Moloi, H. Langa</i>	

● Text Classification and Semantic Analysis

Knowledge Graph Fusion for Language Model Fine-Tuning	167
<i>Nimesh Bhana, Terence L. van Zyl</i>	

Dysfluency Classification in Speech Using a Biological Sound Perception Model	173
<i>Melanie Jouaiti, Kerstin Dautenhahn</i>	
Hybrid Joint Embedding with Intra-Modality Loss for Image-Text Matching.....	178
<i>Doaa B. Ebaid, Adel A. El-Zoghabi, Magda M. Madbouly</i>	
Empirical Evaluation of Word Representation Methods in the Context of Candidate-Job Recommender Systems	183
<i>Gazmira Brahushi, Uzair Ahmad</i>	
Online News Extraction and Multiclass Classification Using Linear Support Vector Machines.....	188
<i>Apoorva Gupta, Smriti Arora, Niyati Baliyan</i>	
The Usability of Derived Function Features in Online Signature Verification.....	192
<i>Cintia Lia Szucs, Bence Kovari</i>	
Agent-Based Document Expansion for Information Retrieval Based on Topic Modeling of Local Information.....	198
<i>Oliver Straus, Damian Kutzias, Holger Kett</i>	
Hadamard Estimated Attention Transformer (HEAT): Fast Approximation of Dot Product Self-attention for Transformers Using Low-Rank Projection of Hadamard Product	203
<i>Jasper Kyle Catapang</i>	
Naïve Bayes with Negation Handling for Sentiment Analysis of Twitter Data.....	207
<i>Lobna H. Kamal, Gerard T. McKee, Nermin Abdelhakim Othman</i>	
VPass: An Open-Source COVID-19 Vaccine Passport, and Vaccine Hesitancy	213
<i>Ravi Kansagara, ANK Zaman</i>	
● Computer Vision and Image Analysis	
Enhanced RecycleNet for Efficient Waste Classification	217
<i>Bhagawat Adhikari, Raj Kumar Ranabhat, Mohammad Mizanur Rahman, Rasha Kashef</i>	
Texture Analysis on Digital Microscopic Leather Images for Species Identification.....	223
<i>Anjali Varghese, Malathy Jawahar, A Amalin Prince, Amir H Gandomi</i>	
● Software Test and Optimization	
Priority-First Search and Mining Popular Packages.....	228
<i>Yangjun Chen and Bobin Chen</i>	
Enhancing Differential Evolution Algorithm: Adaptation for CEC 2017 and CEC 2021 Test Suites	235
<i>Rohit Salgotra, Seyedali Mirjalili, Amir H Gandomi</i>	
● Network and Information Security	
Anomaly Detection with Convolutional Autoencoder for Predictive Maintenance.....	241
<i>Ruiqi Tian, Luisa Liboni, Miriam Capretz</i>	
The Analysis of the Generator Architectures and Loss Functions in Improving the Stability of GANs Training towards Efficient Intrusion Detection	246
<i>Raha Soleymanzadeh, Rasha Kashef</i>	
AI for Information Technology Operation (AIOps): A Review of IT Incident Risk Prediction.....	253
<i>Salman Ahmed, Muskaan Singh, Brendan Doherty, Effirul Ramelan, Kathryn Harkin, Damien Coyle</i>	

A Novel Framework for Secure Cloud Computing Based IDS Using Machine Learning Techniques	258
<i>Geetika Tiwari, Ruchi Jain</i>	
Brazilian Air Traffic Network Analysis Using Social Network Metrics	264
<i>L. Jani Anbarasi, Malathy Jawahar, Bipasa Mukherjee, Modigari Narendra, Masoumeh Rahimi, Amir H Gandomi</i>	
Multiple Severity-Level Classifications for IT Incident Risk Prediction	270
<i>Salman Ahmed, Muskaan Singh, Brendan Doherty, Effirul Ramelan, Kathryn Harkin, Damien Coyle</i>	