

2024 4th Asia Conference on Information Engineering (ACIE 2024)

**Singapore
26 – 28 January 2024**



**IEEE Catalog Number: CFP24Z82-POD
ISBN: 979-8-3503-7193-2**

**Copyright © 2024 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:	CFP24Z82-POD
ISBN (Print-On-Demand):	979-8-3503-7193-2
ISBN (Online):	979-8-3503-7192-5

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

CURRAN ASSOCIATES INC.
proceedings
.com

2024 4th Asia Conference on Information Engineering (ACIE) **ACIE 2024**

Table of Contents

Preface	ix
Program Committee	x

Data Oriented Information System Optimization and Security Authentication

Detecting Phase Transitions in Financial Market based on Manifold Learning	1
<i>Yan Huang (Xihua University, China)</i>	
Pre-training Retnet of Simulating Entities and Relations as Sentences for Knowledge Graph Reasoning	6
<i>Jun Cheng (Midea Group (Shanghai) Co., LTD, China), Tao Meng (Midea Group (Shanghai) Co., LTD, China), Xiao Ao (University of Electronic Science and Technology of China, China), and Xiaohua Wu (University of Electronic Science and Technology of China, China)</i>	
Federated Learning Poisoning Attack Detection: Reconfiguration Algorithm TopK-FLcredit	11
<i>Hong Zhang (Shanghai University of Electric Power, China) and Hongjiao Li (Shanghai University of Electric Power, China)</i>	
Analysis of the Damage Effect of Direct Aiming Attack on WarGame Replay Data Based on Machine Learning	17
<i>Yang Shi (Officers College of PAP, China)</i>	
Suicide Detection in Tweets Using LSTM and Transformers	22
<i>Oluwole Akintoye (Sam Houston State University, USA), Nathan Wei (Strake Jesuit College Preparatory, USA), and Qingzhong Liu (Sam Houston State University, USA)</i>	
Research on Hybrid Modeling Method Based on Mechanism Model and BP Neural Network	28
<i>Jie Chen (Nuclear Power Institute of China, China), Yanqiu Zheng (Nuclear Power Institute of China, China), Qing Chu (Nuclear Power Institute of China, China), Guanfu Jiang (Nuclear Power Institute of China, China), and Jing Li (Nuclear Power Institute of China, China)</i>	
CNDA: Chinese Multi-label Classification Model based on Dual Attention	35
<i>Sinuo Liu (Shanghai University of Electric Power, China), Daming Liu (Shanghai University of Electric Power, China), and Jian Zhang (Chinese Academy of Sciences, China)</i>	

Intelligent Image Analysis and Processing Methods

Robust Coverless Image Steganography Based on SIFT and DWT Sequence Mapping	41
<i>Su-Ho Chiu (National Taichung University of Science and Technology, Taiwan) and Chen-Yi Lin (National Taichung University of Science and Technology, Taiwan)</i>	
Coverless Image Steganography Based on Multi-Object Mapping Rules	46
<i>Shu-Wei Liang (National Taichung University of Science and Technology, Taiwan) and Chen-Yi Lin (National Taichung University of Science and Technology, Taiwan)</i>	
A Robust Coverless Image Steganography Method Based on Face Recognition and Camouflage Image	52
<i>Shih-Yu Lu (National Taichung University of Science and Technology, Taiwan) and Chen-Yi Lin (National Taichung University of Science and Technology, Taiwan)</i>	
Video Instance Segmentation via Spatial Feature Enhancement and Temporal Fusion	58
<i>Hongyu Zhu (North China University of Technology, China), Chen Li (North China University of Technology, China), Baoqing Zhang (Beijing Institute of Electronic System Engineering, China), and Guang Yang (North China University of Technology, China)</i>	
Multi-scale Diffusion Features Fusion Network For Hyperspectral Image Classification	65
<i>Xunyan Tan (Guangdong University of Technology, China), Zhuoyi Zhao (University of Electronic Science and Technology of China, China), Xiang Xu (University of Electronic Science and Technology of China, China), and Si Li (Guangdong University of Technology, China)</i>	
Pressure-Based In-Bed Pose Estimation Methods Using the Skinned Multi-person Linear Model	74
<i>Chen Lei (Zhejiang University, China), Fenlan Li (R&T Digital Identity & Security, Biometric Solution, China), Xianhao Chen (Zhejiang University, China), and Liangjing Yang (Zhejiang University, China)</i>	
A Semi-automatic Annotation System for Imperfect Grain Images	80
<i>Zhenyang Zhu (Beihang University, China) and Li Li (Beihang University, China)</i>	
Application of Delay-and-Multiply Algorithm to Microwave Breast Cancer Detection	87
<i>Donghao Guo (Shandong Normal University, China), Huanqing Liu (Shandong Normal University, China), Weihao Liu (Shandong Normal University, China), and Jingjing Wang (Shandong Normal University, China)</i>	
Transformer Based Position Information Enhancement for Medical Image Segmentation	92
<i>Liang Zhao (Liaoning Technical University, China), Xuecheng Tian (Liaoning Technical University, China), and Yuping Liu (Liaoning Technical University, China)</i>	

Computer Models and Simulations in Information Systems

EEG Signals Decoding of Freely Moving Rats Based on Support Vector Machine Algorithm	97
<i>Jiange Kou (Beihang University, China), Chenfei Sun (Beihang University, China), Yan Shi (Beihang University, China), Liman Yang (Beihang University, China), Yanxia Niu (Beihang University, China), Zhiguo Yang (Beihang University, China), Yulong Nie (Beihang University, China), and Jiaqi Chang (Beihang University, China)</i>	
A Health Assessment Model for Communication Power System Based on Auto-Encoder and Generative Adversarial Network	103
<i>Guopeng Zhu (Information & Telecommunications Company State Grid Shandong Electric Power Company, China), Yi Lu (Information & Telecommunications Company State Grid Shandong Electric Power Company, China), Lei Liu (Information & Telecommunications Company State Grid Shandong Electric Power Company, China), Xinquan Lv (Information & Telecommunications Company State Grid Shandong Electric Power Company, China), Pu Zhang (Information & Telecommunications Company State Grid Shandong Electric Power Company, China), and Shihao Wang (Information & Telecommunications Company State Grid Shandong Electric Power Company, China)</i>	
An PWL Based Fast Efficient Approximate Sigmoid Circuit Design for Activation Function	111
<i>Chaoyuan Wu (Shenzhen University, China), Yanqing Yuan (Geehy Microelectronics Inc., China), Weiwei Shi (Shenzhen University, China), Canji Huang (Shenzhen University, China), Xiacong Liu (Geehy Microelectronics Inc., China), and Guiping Li (Geehy Microelectronics Inc., China)</i>	
MATLAB/Simulink-Based Simulation Study of Small Pressurized Water Reactor Nuclear Steam Supply System	117
<i>Jie Chen (Nuclear Power Institute of China, China), Kai Xiao (Nuclear Power Institute of China, China), Mengwei Zhao (Nuclear Power Institute of China, China), Ke Huang (Nuclear Power Institute of China, China), and Pengcheng Yang (Nuclear Power Institute of China, China)</i>	

Artificial Intelligence Technology and Computing Models

An Improved Convolutional Neural Networks Framework with Flexible Channel Shift	122
<i>Peng Li (Southwest China Institute of Electronic Technology, China), Shuzhuang Zhang (Beijing University of Posts and Telecommunications, China), and Chen Qing (Southwest China Institute of Electronic Technology, China)</i>	
Research on Long Text Similarity Calculation Method Based on TextRank and BERT	128
<i>Xi Zhao (China West Normal University, China), Binglin Zhu (China West Normal University, China), and Xiaofeng Liu (China West Normal University, China)</i>	
Efficient Mobile Deployment of Lightweight CNN-Transformer Model for Crop Disease Diagnosis in Smart Agriculture	133
<i>Zirong Lv (China University of Geosciences, China)</i>	

Enhancing Document-level Relation Extraction with Integrated Local Evidence and Global Graph	138
<i>Xiaohua Wu (University of Electronic Science and Technology of China, China), Youping Fan (University of Electronic Science and Technology of China, China), Zirui Wang (University of Electronic Science and Technology of China, China), and Yu Li (University of Electronic Science and Technology of China, China)</i>	
Coins Game—A Novel Decision Problem and Its Solving Using Reinforcement Learning	143
<i>Bo Chen (Fuzhou University, China), Ziqing Lin (Fuzhou University, China), and Guohong Chen (Fuzhou University, China)</i>	
Multi-Agent Cooperative Search and Target Tracking Based On Hierarchical Constrained Policy	149
<i>Shiyu Zhang (Beijing University of Posts and Telecommunications, China), Min Feng (Beijing University of Posts and Telecommunications, China), Qi Zhang (Beijing University of Posts and Telecommunications, China), Jingyi Zhang (Beijing University of Posts and Telecommunications, China), Shi Pu (Beijing University of Posts and Telecommunications, China), and Miaomiao Wei (Beijing University of Posts and Telecommunications, China)</i>	
Unearthing the Efficacy of ChatGPT in Argumentation Analysis: Performance, Potentials and Limitations	157
<i>Tiezheng Mao (Waseda University, Japan), Jialing Fu (Guangdong University of Finance & Economics, China), and Osamu Yoshie (Waseda University, Japan)</i>	
Author Index	163