5th International Conference on Artificial Intelligence and Advanced Manufacturing (AIAM 2023)

IET Conference Publications 850

Brussels, Belgium
20 - 21 October 2023

ISBN: 978-1-7138-9115-4

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© (2023) by the Institution of Engineering and Technology
All rights reserved.

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

For permission requests, please contact the Institution of Engineering and Technology
at the address below.

Institution of Engineering and Technology
P. O. Box 96
Stevenage, Hertfordshire
U.K. SG1 2SD

Phone: 01-441-438-767-328-328
Fax: 01-441-438-767-328-375

www.theiet.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

Vibration Signal-Based Fault Prediction Using Few-Shot Learning in the Digital Twin Ecosystem 1
A. Kumar, T. Mane, M. S. Kulkarni, A. Tewari

Design of Bolt Defect Recognition System Based on Machine Vision 7
C. Duan, S. Luo

Development Study on Artificial Intelligence Target Detection Technology with Ant Colony Optimization 15
K. Zhang, Y. Zhu

Data Statistics Acceleration Calculation Method Based on Massive Measuring Point Scene in Industrial Field 20
D. Jiang, J. Wang, X. Yang

Design and Research of UAV Maritime Search and Rescue System Based on Multi-Source Information Fusion 25
S. Song, D. Meng, Z. Zhou

Simulation Research on Single Joint Control of Day-Lily Manipulator Based on Error Sign Integral Robust Control 30
X. Zhang, H. Ma, S. Wei

Optimization of Joint Mechanism for Assisted Exoskeleton Robot 36
X. Chang, X. Liu, X. Cheng, X. Feng, Z. Gao, M. Zhang, Y. Zheng

Visual Sensor Aided by Image Processing Based on Optimization Algorithm Research of Mobile Robot Localization 43
H. Peng

Design of an Intelligent Reminder System Based on EEG Monitoring 48
Y. Zhang, J. Wu, H. Yi, W. Deng, Q. Li

Modeling and Visualization Analysis of Industrial Data Mechanism Based on Artificial Intelligence 53
S. Fang

Design and Implementation of Green Building Interior Design Style Recommendation System Based on Deep Learning 59
X. Peng

Implementing Disease Early Warning Based on Machine Learning Algorithms 64
Y. Wu, S. Li

A Fault Diagnosis Online Method of Railway Track Based on Knowledge Transfer Learning 69
Z. Li, F. Lv, J. Yang, X. Li

New Media User Behavior Prediction and Content Recommendation Based on Deep Learning 76
L. Xia

New Methods for VR Rehabilitation Intervention for Children with Cerebral Palsy Based on Artificial Intelligence 81
G. Xie, L. Hu, Z. Wang, Z. Cai, X. Lin, L. Peyrodie

CPPM: A Container Power Prediction Method Based on Performance Counters 88
M. Tang, L. Zhang, F. Xia, C. Xu

Remote Monitoring and Fault Diagnosis of Transport Ships and Engineering Dredging Ship Propulsion Systems Based on Data Fusion Algorithm 93
Q. Zuo, L. Wang, J. Hui

An Improved Shrimp Larvae Counting Algorithm Based on HRNET 98
W. Long, Y. Yang, Y. Tang, L. Hu, J. Zhang, J. Xu, Y. Yang, W. Yang, L. Jiang

Method for Detection of Traffic Signal Lights Based on Improved YOLOV5 105
Y. Yao, Y. Dai, S. Tan, J. Zhao

YO-BYNet: Multi-Object Tracking of Fish Based on YOLOv8 and BYTE Association Method 111
X. Tong, W. Long, L. H. Jiang, Z. Z. Huang, L. H. Xu

Application of PID Parameter Tuning for Robots Based on SIMULINK 117
L. Zhang, E. Chuntao

The Research and Design of Electrical Engineering Experiments Auxiliary Instruction System with Speech Recognition 123
M. Lv, K. Zhang

Optimisation Strategy for multi-AGV Multi-Task Assignment Scheduling Based on Improved Particle Swarm Genetic Algorithm 131
Y. Xue, B. Jiang, Y. Huang

Optimization of Box Cover Plate Parameters Based on Particle Swarm Optimization Algorithm 139
Y. Gong, P. Zhang

Analysis and Optimization of Localization Error for Personnel Search and Rescue Based on Unmanned Aerial Vehicle Equipped with 5G Single Base Station 145
Y. Su, M. He, Q. Song, Z. Wang, Z. Su, W. Xiang, H. Huang

A Machine Learning Fusion Algorithm for Identifying Rainfall Enhancement Potential Areas 151
X. Zheng, H. Li, Y. Xin, Y. Jin, H. Lin

Impacts of Data Preprocessing and TF-IDF Based Feature Extraction on Chinese Spam Recognition in Machine Learning Methods 156
J. Gao, T. Qiu, G. Chen

Research on Strawberry Picking Robot Based on Remote Image Transmission and Visual Localization 160
H. Zhang

Mechanical System PID Simulation Based on Simulink 167
Y. Gong

Path Optimization Problem Analysis Based on Improved Ant Colony Algorithm 173
J. Fang

Human Action Recognition on Campus Monitor by Integrating Non-Local Attention Mechanism 178
J. Mi, J. Yuan

Analysis and Design of Networked Motor Control System Based on Bilateral Closed-Loop Function Approach 184
F. Zhou

Research on Physical Phenomena Based Group Intelligent Optimisation Algorithm and Engineering Applications 191
X. Zhang

3D Reconstruction Algorithm Based on Symmetric Information 199
G. Gao, C. Wang, L. Yang, Q. Zhang, C. Jiang, H. Bao

Image Defogging Algorithm Based on Physical Prior and Contrast Learning 208
F. Qu

A Machine Learning Approach for Recommending Aerial Target Interventions in Adversarial Training Scenarios 217
C. Yang, L. Zhao, A. Liu

Study on the Detection Method of Driver's Fatigue Based on Machine Vision 225
Y. Wang, Y. M. Li

Texture Enhancement in Infrared and Visible Image Fusion Using Triple Different Discriminators 230
Z. Zhang, Y. Hu

Research on Automated Review Method for Harmful Information of Smart Device 235
W. Li, S. Wang, J. Lin, J. Yao, X. Chen, Y. Liao

Camera-Lidar Fusion Algorithm Formed by Fast Sparse Encoder and Transformer Decoder 242
W. Chen, S. Chen, L. X. Chen, J. Liu

Multimodal LaF-CMA-ES Algorithm Based on Homotopic Convex Transformation 249
H. Liu, J. Zhang

NLP Based on Prompt-Based Learning and Prompting Methods: A Survey 255
L. Zhao, Q. Li, A. Tariq, J. Yang

Research on Robot Path Planning Based on Artificial Potential Field Method 260
Y. Gong

Real-Time Binocular Depth Estimation for Autonomous Driving Based on Convolutional Neural Network 266
J. Liu

Study on Multi-Parameter of Cold Spraying Technology Via RSM and BP+GA Methods 272
W. Hu, K. Tan, S. Oleksandr, T. Cao

Development of a Multi-Component Force Measurement Platform for Vector Thrust Calibration of Aviation Engines 279
J. Chai, S. Lin, Y. Zhang, H. Qin, S. Tian

Reconstruction-Based Time Series Anomaly Detection on Contaminated Data 290
Y. Xiao, Y. Li

Research on Abnormal Behavior Recognition Algorithm Based on 3D-Resnet Deep Neural Network 294
Q. Ye, X. Lu

Research on Image Recognition Method and Personalized Recommendation Model Based on Deep Learning 300
F. Liu, W. Guo

Enhancing Multiple Information Extraction with Comprehensive Augmentation Strategies Leveraging a Text Generation Model 306
B. Li, T. Zhu, J. Liu, H. Lv, Z. Chen

A Study on the Improvement of K-Means Algorithm Based on Community Discovery 312
S. Jia

Emotional Computing Modeling Method Combining User Preference Model 318
H. Wang, Y. Gao, J. Jin

Research on Attitude Analysis and Improvement of Volleyball Players Based on Machine Vision 323
Y. Liu

Fire Emergency Plan Generation and Dynamic Optimization Method Based on Knowledge Graph and Improved Whale Optimization Algorithm 328
H. Zhao, Z. Pan

Modeling and Simulation of a UAV Dynamic Model for Air Quality Monitoring 339
Y. Jin, X. Wang, K. Lu, X. Cui, L. Wang

A Study on Keyword Search Framework Based on End-To-End Speech Recognition in Low-Resource Languages 351
S. Liu, N. Yolwas, W. Slamu

Intelligent Picking Robot for Orchard Based on Visual Recognition 358
C. Lei, C. Lei, H. Liu, Z. Nong, L. Long

Research on the Algorithm of Marine Radar Rainfall Recognition Based on Gray-Level Co-Occurrence Matrix and Support Vector Machine 364
J. Pan, H. Wang, H. Qiu, P. Zhi, Z. Zhu

MySQL Data Analysis and Its Application in E-Commerce User Behavior Analysis 370
S. Jin, M. Yuan, Y. Song

Person Re-Identification Algorithm Based on Identity Information Matrix 376
Y. Yan, J. Yao, H. Zhu, Y. Luo, X. Li, Y. Shen, J. Zhang, Y. Liu, X. Li

Research on Key Technologies for Electric Power System Measurement Index Selection Based on SMOTE Algorithm 387
J. Luan, Z. Hou

Design and Research of Household Intelligent Classified Garbage Bin Based on Machine Vision 394
T. Song, A. Lin

Random Noise Suppression of Seismic Data with Generative Adversarial Network 401
L. Wang, J. Wang, Z. Wang, P. Liu

Anti-Collision Algorithm of Blind Source Separation for RFID Based on Hessian Regular Sparse NMF 407
Z. Chang, Y. Deng, J. Zhao, X. Ding, W. Pu, F. Li, L. Yang, M. Chen

Research on the Effect of Multiple Jammers Based on PCA Algorithm 412
K. Liu, T. Shen, X. Peng, X. Ge, Q. Li

Dual-Mode Sensor Information Acquisition System Design 418
X. Peng, T. Shen, K. Liu, X. Ge, Q. Li

Research on Power Grid Contract Entity and Relation Extraction Based on Domain Embedding 425
Y. Zhang, J. Hu, R. Li, B. Yu, P. Sun, B. Jiang

Bayesian Sampling Method Design Based on Hierarchical Model 432
Y. Yin, W. Xu, L. Zhu, W. Cheng, Y. Mo, R. Lin

Air-Ground Collaborative Network Coverage Enhancement Algorithm Based on Power Grid and Deep Learning 437
Q. Ou, H. Shi, J. Kong, H. Xu

Design and Application of Pseudo-Random Sequence Base on Logistic Map 444
Q. Pan, X. Chen, L. Luo, W. Xu

Improved OpenPose for Multi-Person Pose Estimation and Behavior Recognition 450
Y. Zhang, Y. Zhang, K. Xu

Based on Atrous Spatial Convolutional and Attention Mechanism Cycle-Consistent Generative Adversarial Defogging Network 458
Y. He, B. Xing, C. Xu

English Reading Comprehension Data Classification Based on Random Forest Bidirectional Voting Mechanism 465
H. Wu

A Sequential Recommendation Algorithm Combining Attributes and Long-Term and Short-Term Preferences 471
Y. Yao, Y. Zhao, L. Zhao

Design of Weld Recognition System Based on Machine Vision 478
C. Duan, S. Li

A Data Encryption Scheme Combined Symmetric Encryption Algorithm with Asymmetric Encryption Algorithm 484
Y. Wang

Author Index