

2024 4th International Conference on Artificial Intelligence, Virtual Reality and Visualization (AIVRV 2024)

**Nanjing, China
1-3 November 2024**



**IEEE Catalog Number: CFP24VX9-POD
ISBN: 979-8-3315-2875-1**

**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:	CFP24VX9-POD
ISBN (Print-On-Demand):	979-8-3315-2875-1
ISBN (Online):	979-8-3315-2874-4

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

Table of Contents

Safety-aware Path Planning for Post-disaster Rescue Vehicles	1
Jingjing Liu, Zhen Zhang, Yibo Guo, Tao Niu, Xiaoxiao Zhao	
Advancements and Challenges in Virtual Reality: A Comprehensive Overview of Tracking and Display Technologies	6
Qikun Zhang	
Distributed dynamic event-triggered consensus for linear multi-agent systems with bounded interference	13
Zhouyi Yu, Changzhong Chen, Houhong Liu	
Forecasting Road Crash Trend Utilizing Recurrent Neural Network: A Time Series Analysis Approach in the City of Manila	17
Ian Rhazel D. Bartolome, Patricia Grace Y. Dichoso, Aldreinne Neille V. Ugali, Christ John L. Marcos, Neiconel G. Bandala	
AAKA-WCS: Anonymous Authentication and Key Agreement Protocol for Wearable Computing Scenarios	22
Xin Ai, Shanshan Tu, Wenlong Li, Hongchen Li, Qingqing Yue	
An Immersive Ceramic Display and Personalized Decoration Method Based on WebVR	28
Yongkang Peng, Shixiong Yang, Shuhong Liao	
Evaluation of Target Damage Effect Based on LiDAR	34
Chenguang Dang, Chao Li, Zhuo Wei, Huiyong Feng, Jian Wang, Zhewei Zhang	
A Review of Artificial Intelligence-Enhanced Security Solutions for the Internet of Things	40
Qingqing Yue, Shanshan Tu, Wenlong Li, Hongchen Li	
A Study of 3D Point Cloud Feature Extraction Method Based on Multi-Feature Fusion	45
Qiancheng Huang, Bo Zhang, Limin Liao, Jiangming Zhao	
Optimized particle swarm-ant colony fusion for UAV path planning research	49
Haoxiang Lei, Yuehao Yan, Qiang Han	
Classification methoed of cement concrete pavement conditions based on improved EfficientNet	55
Jie Li, Wenzhong Zhu, Yu Liu, Zhike Zhang	
Review of VREED in Eye Tracking-based VR Emotion Detection	60
Gilbert Chen Ye	
The Impact of REM Sleep Fragmentation on Depression: A Cross-Sectional Analysis Using Machine Learning	67
YingSiou Liao, Chengyu Lin, Shengfu Liang	
A method for ultra-short-term wind power forecasting: Based on parallel Transformer encoder architecture	71
Diyan Li, Jin Hou, Yan Xia	
A Knowledge Fusion Learning Method for Reinforcement Learning in Different Tasks	77
Kai Zhou, Haifeng Guo, Qingjie Zhang, Long Wang, Liang Xu	
An Intelligent Collaborative Decision-making Method for Multi-target Tracking in Heterogeneous Unmanned Clusters	82
WenHong Zhou, Long Wang, QingJie Zhang, Liang Xu	

2D LiDAR Point Cloud Correction Method for Spherical Robot	89
Xinru Fu, Zhanfeng Ying, Zhihua Chen	
Depth Completion of Transparent Objects Based on Feature Fusion	95
Ye Jin, Limin Liao, Bo Zhang	
A System Design for Virtual Reality Visualization of hydrological and meteorological data	99
Tianze Zhao, Zhijun Fan, Qiumei Pu, Yutong Gao	
Detecting AI Generated Images through Texture and Frequency Analysis of Patches	103
Yuming Chen, Maryam Yashtini	
Regional Face Recognition Algorithm Based on Ahash and Face Anti-Spoofing Detection	111
Yurui Ju	
Investigation of complex underwater environments for target recognition based on improved YOLOv7-tiny	116
Jing Ling, Soifyoudine Ibrahim, Zishuo Lin, Zheng Zuo, Zhimin Wang	
DFSMDA: A Domain Adaptation Algorithm with Domain Feature Extraction for EEG Emotion Recognition	120
Xu Wu, Xiangyu Ju, Sheng Dai, Ming Li	
A Multimodal Virtual Reality System for Switchgear Operation Training: Integration of Dynamic Gesture and Speech Recognition	125
Dan Fang, Jiangwei Chen, Yuliang Jiang, Guoliang Zhang	
Design Study on Hierarchical Analysis Based and Dynamic Information Visualisation Gene of Endangered Plants - A Case Study of South China Botanical Garden	134
Liuyi Yu, Lichuan Lin, Churou Gong	
YOLOv8-FW: Rail Surface Defect Detection Algorithm Integrating Frequency Domain Features	140
Li Lu, Hongping Pu, Shuhui Zhang	
DyFormer: A CNN-Transformer Network Combining Local and Global Attention for Optical Remote Sensing Object Detection	145
Youxiang Huang, Qin Wang, Donglai Jiao, Shufei Wang, Yu Wang, Zhiyi Lu, Tomoaki Ohtsuki, Guan Gui	
Automated penetration testing based on MATD algorithm	150
Qiankun Ren, Xinli Xiong, Jingju Liu, Zhen Wang	
Research on 3D Visualization Modeling of Bridge Real Scene Based on OpenGL Graphics Library and Image Sequence	156
Yanwei Wang	
The Study on Sweetness Enhancement Design in Augmented Reality Based on Synesthesia Theory	160
Kaiyuan Hou, Zhanxun Dong	
Psychological and Emotional Driven Virtual Reality Human-Computer Interaction Based on Recurrent Neural Network	166
Xiaowei Chen	
Research on Anomaly Detection Model for Power Industrial Control Networks Based on Bidirectional Recurrent Neural Networks	171
Chao Liu, Tingting Yang, Yu Wang, Bin Ren, Yanzhao Wang	

Visualization of Hotspots and Frontiers in Artificial intelligence in education - Based on Citespace Knowledge Map Analysis	176
Fei Li	
Ground penetrating radar signal denoising based on multi-scale feature fusion network	180
Mingjun Zheng, Yao Tong, Rongnan Dai, Zhongli Yang	
Static object detection and localization technology based on multi machine information fusion	186
Peisong Liu, Nian Liu, Shubin Li, Ming Li	
The Position Visualization Modeling of Mechanical Product Assembly Line Based on Equidistant Helix	192
Donghao Cao, Fuchen Huang, Ziyi Wang, Kui Duanmu	
Intelligent equipment application research and analysis based on AR interactive mode	196
Meng Wang, Manli Qi, Ting Yang, Fan Xia	
DA-SlowFast network for abnormal action detection in the workshop	201
Bin Zhang, Haichuan Liu, Chuanfeng Sun, Xuemei Li	
Advancing Spatiotemporal Fusion for Enhanced Perception in Dynamic Environments	207
Xuefeng Bao, Rui Tian, Yunli Chen, Yiqiang Zhen	
Author Index	215