2021 International Conference on Computer Engineering and **Artificial Intelligence (ICCEAI 2021)**

Shanghai, China 27 - 29 August 2021



IEEE Catalog Number: CFP21AL7-POD ISBN:

978-1-6654-3961-9

Copyright © 2021 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:
 CFP21AL7-POD

 ISBN (Print-On-Demand):
 978-1-6654-3961-9

 ISBN (Online):
 978-1-6654-3960-2

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



2021 International Conference on Computer Engineering and Artificial Intelligence (ICCEAI)

ICCEAI 2021

Table of Contents

Message from the General Chairs xix Message from the Program Chairs xx Organizing Committee xxi Reviewers and Program Committee xxii Sponsors xxxii
Computer Engineering
3D Human Pose Estimation : Using Context Information in Monocular Video .1
A Hemispheric Surface Improvement Method Based on Parametric Method .8
A Literature Review of Innovation and Corporate Social Responsibilities .13
A Method for Designing and Analyzing Automotive Software Architecture: A Case Study for an Autonomous Electric Vehicle 20
A Novel Framework to Synthesize Arterial Spin Labeling Images Using Difference Images .27 Feihong Li (Nanchang University, China), Peng Zhang (Northwestern Polytechnical University, China), and Wei Huang (Nanchang University, China)

Pe Te E1 Sy In H	curity Scheme for Industrial Internet Platform Based on Trusted Computing Technology .32 eiru Fan (China Industrial Control Systems Cyber Emergency Response eam, China), Wei Zhang (China Industrial Control Systems Cyber emergency Response Team, China), Hao Zhou (China Industrial Control ystems Cyber Emergency Response Team, China), Yaobing Li (China edustrial Control Systems Cyber Emergency Response Team, China), and ao Jiang (China Industrial Control Systems Cyber Emergency Response eam, China)
Ya (N In	mmary of the Latest Research on Knowledge Graph Technology .38
	nproved Non-Local Mean Filtering Algorithm Based on Medical Image Restoration .43
Confi H	ysis of China's Pension Financial Sustainability Based on Actuarial Model and idence Interval Theory .48
SI U Te	maly Detection of Electricity Load Data Based on MixMatch .53
Jia Sa	nical Chinese Poetry Generation Based on Transformer-XL .57
Ya (S Ta	C: a New Erasure Code Localization Algorithm for HDFS .62
Li (S U Te Ci	munication Application of Distributed Energy Resources Monitoring System Based on XMPP .66 ingyan Sun (Shandong University of Technology, China), Yu Chen shandong University of Technology, China), Qian Cheng (Shandong iniversity of Technology, China), Baihan Zhu (Shandong University of echnology, China), Changming Chen (Shandong University of Technology, hina), and Xiaoning Hou (State Grid Liaocheng Power Supply Company, hina)
Mech G C T (E	IVNet: Three-Dimensional Point Cloud Classification Network Based on Dual Attention nanism and VLAD .71

Design and Implementation of a Business Domain Requirement Collection System .78. Binbin Fan (National University of Defense Technology, China), Fengzeng Liu (National University of Defense Technology, China), and Yuzhao Huang (National University of Defense Technology, China)
Detection of Wearing Safety Helmet for Workers Based on YOLOv4 .83
Development Survey of a Monitoring and Early Warning System for Banks and Dams of Expansive Soil .88. Xizhong Shen (Yellow River Institute of Hydraulic Research, Yellow River Conservancy Commission, China), Min Zhang (Yellow River Institute of Hydraulic Research, Yellow River Conservancy Commission, China), Chenghui Dong (Yellow River Institute of Hydraulic Research, Yellow River Conservancy Commission, China), Weiwei Liu (Yellow River Institute of Hydraulic Research, Yellow River Conservancy Commission, China), and Yan Lan (Yellow River Institute of Hydraulic Research, Yellow River Conservancy Commission, China)
Evaluation of Motor Vehicle Driver Fatigue Based on Eye Movement Signals .94. Xing Liu (Yibin University, China), Lecai Cai (Yibin University, China), Zhiming Wu (Yibin University, China), Shaosong Duan (Sichuan University of Science & Engineering, China), Keyuan Tang (Yibin University, China), and Chaoyang Zhang (Yibin University, China)
Extraction of Form Attribute and Query Interface Integrating from Deep Web .99
Fine-Grained Image Classification Method Based on Generating Adversarial Networks with SIFT Texture Input .104
Generative Difference Image for Blind Image Quality Assessment 108. Yunfei Han (The Xinjiang Technical Institute of Physics & Chemistry Chinese Academy of Sciences, China; Xinjiang Laboratory of Minority Speech and Language Information Processing Chinese Academy of Sciences, China), Yi Wang (The Xinjiang Technical Institute of Physics & Chemistry Chinese Academy of Sciences, China; Xinjiang Laboratory of Minority Speech and Language Information Processing Chinese Academy of Sciences, China), and Yupeng Ma (The Xinjiang Technical Institute of Physics & Chemistry Chinese Academy of Sciences, China; Xinjiang Laboratory of Minority Speech and Language Information Processing Chinese Academy of Sciences, China)
Hyperspectral Image Fusion by Hybrid Regularizations with Local Low-Rank .116

Industrial Object Detection Method Based on Improved CenterNet .121
Infrared and Low Light Image Registration from Coarse-to-Fine Matching .126
Inventory Sharing Based on Supplier-led Inventory Transshipment .131
Large-Scale UAV-Network Using the Hata – Okumura Model with PSO Algorithm for Open Area Communication .138
LSTIF:Long-Short Temporal Information Fusion Architecture for Video-Based Person Re-Identification 143
Numerical Simulation of wind Field Characteristics Under Micro-Terrain .148
Numerical Stability Analysis of Baota Mountain in Yan'an City .153
Object Retrieval System Based on Feature Matching Technology .158

Research and Application of Digital Management of Vehicles Based on The New Generation of Information Technology .162
Research of User Power Profile and Load Forecast Based on Power Big Data .169
Research on Deep Learning Based Optimal Combination of Multidimensional Features in Large-Scene Laser Point Clouds Classification 17.4
Research on Information Visualization of Electronic Games .17.9
Research on Network Data Storage Technology Based on Autonomous Controllable System .183 Kai Zhao (Beijing Polytechnic, China)
Research on the Integrated Development of Stadiums and Stadiums Under the Background of "Internet +" .187
Residual Enhancement Network for Realistic Face Sketch-Photo Synthesis .191
Risk Analysis Based on Quantum Theory 196. Zhimei Yang (Guizhou University, China) and Pan Ping (Guizhou University, China)
Scene Segmentation of Remotely Sensed Images with Data Augmentation Using U-Net++ .201 Cheng Chen (Xi'an Jiaotong-Liverpool University, China) and Lei Fan (Xi'an Jiaotong-Liverpool University, China)

Hai Tan (East China University of Technology Nanchang, China), Yu Chen (East China University of Technology Nanchang, China), Jun Zhang (East China University of Technology Nanchang, China), Bin Tang (East China University of Technology Nanchang, China), Jijun Zou (East China University of Technology Nanchang, China), Zhicheng Wang (East China University of Technology Nanchang, China), Gejian Liao (East China University of Technology Nanchang, China), Shu Liu (East China University of Technology Nanchang, China), Shu Liu (East China University of Technology Nanchang, China), Ying Fang (ShangQiu Normal University, China), Shuaifang Wang (ShangQiu Normal University, China), and Zhaoqun Sun (Department of Pre-sales Solution Shanghai INSEA AI Innovation Center Shanghai, China)
Study on the Rapid Prediction Model of Water Quality for Emergency Water Pollution .211 Liting Zhang (Beijing University of Technology, China), Wensi Wang (Beijing University of Technology, China; Engineering Research Center of Intelligent Perception and Autonomous Control (Ministry of Education), Beijing University of Technology, China), Qiang Gao (Beijing University of Technology, China), Mengyu Yang (Beijing University of Technology, China), Yanping Ji (Beijing University of Technology, China), and Shuqin Geng (Beijing University of Technology, China)
The Algorithm and Application of Fast Surface Slice and Color Acquisition for Color 3D Printing 216
TQM-Based Study on Teaching Quality Management of Online Teaching in Colleges and Universities 221. Li Lin (Shanghai Sanda University, China)
Using Binocular Vision to Measure wave Characteristic 226. Lei Shi (Qilu University of Technology (Shandong Academy of Sciences), China), Li Hui (Qilu University of Technology (Shandong Academy of Sciences), China), Jing Shi (Luoyang Institute of Electro-optical Devices, Aviation Industry Corporation of China, China), Bin Zhao (Qilu University of Technology (Shandong Academy of Sciences), China), Xiao Cui (Institute of Oceanographic Instrumentation, Qilu University of Technology (Shandong Academy of Sciences), China), and Shibo Chu (Qilu University of Technology (Shandong Academy of Sciences), China)

Artificial Intelligence

Automatic Recognition of Harmful Algae Images Using Multiple CNNs .276	
Automobile Airbag Defect Detection Algorithm Based on Improved Faster RCNN .281	
Bearing Fault Diagnosis Based on Attention Mechanism and Deep Residual Network .286	
Diagnosis Method of Kiwifruit Foliar Diseases Based on Improved YOLOv4-tiny .291	
Domain Adaptation Based on ResADDA Model for Face Anti-Spoofing Detection .295	
Fall Recognition in Open Scenes 300 Kai Yao (Shijiazhuang Tiedao University, China), Shanna Zhuang (Shijiazhuang Tiedao University, China; Hebei Key Laboratory for Electromagnetic Environmental Effects and Information Processing, China), Yale Zhao (Shijiazhuang Tiedao University, China), and Zhengyou Wang (Shijiazhuang Tiedao University, China; Hebei Key Laboratory for Electromagnetic Environmental Effects and Information Processing, China)	
Feature Extraction of Dual-Convolutional Network with LBP for Face Anti-Spoofing .305	

eature Selection Using Different Evaluate Strategy and Random Forests .310	•••
Tine and Coarse-Grained Feature Learning for Unsupervised Person Re-Identification .314	••
Heart Sound Recognition Method of Congenital Heart Disease Based on Improved Cepstrum Coefficient Features .319. Li Zhiming (Southwest Forestry University, China) and Miao Sheng (Southwest Forestry University, China)	
mprove the Interpretability by Decision tree Regression: Exampled by an Insurance Dataset 325. Shuyuan Dong (WuHan University, China) and Dingzhou Fei (WuHan University, China)	•••
mproved Deeplabv3 For Better Road Segmentation In Remote Sensing Images .331	•••
nfrared and Visible Image Fusion Based on Multi-Scale Decomposition and Texture Preservation Model .335	
ntelligent Modeling Method of Proton Exchange Membrane Fuel Cell Based on Grey Theory .340 JianFeng Zhao (Naval University of Engineering, China), YiFan Liang (Naval University of Engineering, China), QianChao Liang (Naval University of Engineering, China), and MengJie Li (Naval University of Engineering, China)	D
Lateral Control Design of Intelligent Chassis for Fire Robot .346	
Learnable Sparse Transform Siamese Attention Networks for Visual Tracking .350	•••

Multi-Label Classification of Heart Sound Signals .355. Li Zhiming (Southwest Forestry University, China) and Miao Sheng (Southwest Forestry University, China)
Multi-user Random Water Distribution in Greenhouse Based on Hybrid Intelligent Algorithm 36 Lei Zhang (Xi'an Jiaotong University, China), Zhengying Wei (Xi'an Jiaotong University, China), Weibing Jia (Xi'an Jiaotong University, China), and Haoran Wei (Xi'an Jiaotong University, China)
Optimization of Emergency Load Shedding Employing Social Learning-Based PSO .366
Pedestrian Recognition System for Smart Security Robot using Pedestrian Re-Identification Algorithm 371.
Yusu Wang (Huazhong University of Science and Technology, China), Zhipeng Ma (Huazhong University of Science and Technology, China), Huaqi Fang (Chip Research Institute Nuclei System Technology, China), Can Hu (Chip Research Institute Nuclei System Technology, China), Yihao Cao (Huazhong University of Science and Technology, China), and Dingxin He (Huazhong University of Science and Technology, China)
PFF-FPN: A Parallel Feature Fusion Module Based on FPN in Pedestrian Detection .377
Prediction of Intrinsically Disordered Proteins with Convolutional Neural Networks Based on Feature Selection 382.
Hao He (Hebei University of Technology, China) and Yong Yang (Jiangxi University of Finance and Economics, China)
Pyramid Residual Neural Network with Attention for Seismic Data Denoising .387
Research and Practice of China's Intelligent Coal Mines 391. Cong Liu (China Coal Technology & Engineering Group (CCTEG) Shanghai Co., Ltd, China) and Xingru Wang (China Coal Technology & Engineering Group (CCTEG) Shanghai Co., Ltd, China)
Research on 3D Visual Cooperative Maintenance Method for Bogie of Urban Rail Vehicle .400 Yi Liu (Hunan University of Technology, China), Qi Chang (Hunan University of Technology, China), Qinghai Gan (National Innovation Center Advanced Rail Transit Equipment Zhuzhou, China), and Fengyun Xie (East China Jiaotong University Nanchang, China)

Research on Gait Recognition Algorithm Based on Deep Learning .405. Zhang Yujie (Yibin University, China; Sichuan University Of Science & Engineering, China), Cai Lecai (Yibin University, China), Zhiming Wu (Yibin University, China), Kui Cheng (Yibin University, China), Di Wu (Sichuan University of Science & Engineering, China), and Keyuan Tang (Sichuan University of Science & Engineering, China)
Research on License Plate Detection and Recognition Based on Deep Learning .410 Lei Gao (Nanjing University of Science and Technology, China) and Weibin Zhang (Nanjing University of Science and Technology, China)
Stability Analysis and Application Research of Hybrid Dynamic System 416
Fabu Annealing Lion Swarm Optimization Algorithm .422
Target Locating of Robots Based on the Fusion of Binocular Vision and Laser Scanning .427
Feaching Quality Evaluation of "Data Structure" Courses Based on Principal Component Analysis and Support Vector Machine .431
Ferminal Micro-Service Discovery Algorithm Based on Attractor Model .436
The way of Survival Based on Heuristic Dijkstra Algorithm .444
FripletGAN VeinNet: Palm Vein Recognition Based on Generative Adversarial Network and Friplet Loss 454 Aung Si Min Htet (Jeonbuk National University, South Korea) and Hyo Jong Lee (Jeonbuk National University, South Korea)

V-HPM Based Gait Recognition .459 Yunpeng Zhang (Shijiazhuang Tiedao University, China), Zhengyou Wang (Shijiazhuang Tiedao University, China; Hebei Key Laboratory for Electromagnetic Environmental Effects and Information Processing, China), Xiangpan Zhang (Shijiazhuang Tiedao University, China), and Shanna Zhuang (Shijiazhuang Tiedao University, China; Hebei Key Laboratory for Electromagnetic Environmental Effects and Information Processing, China)
Visual Odometry Integrated with Self-Supervised Monocular Depth Estimation .464
Electronics and Communication and Other Related Topics
A Practical Base Station Location Optimization Based On Four Networks Integration .470
Analysis of Different Passivation Solute Weight Ratio on Performance Influence of Indium Oxide Electronic Characteristics .47.6
Application of Fuming Tablet Combined with Liraglutide in the Treatment of Diabetic Retinopathy .482
Changes of Parathyroid Hormone and Osteocalcin in Diabetic Patients with Different Syndromes of Deafness .486
Effect of "Ying Wei Fang" on Vascular Endothelial Function in Patients with Different Syndromes of Type 2 Diabetes Mellitus .490

Syndromic Type 2 Diabetes 494
Ruiyu Li (Institute for Integrated Traditional and Western Medicine, China), Yue Li (Hebei Normal University, China), Xing Li (Shijiazhuang People's Medical College, China), Meng Li (Xinjiang Armed Police Corps, China), Chenyu Zhang (Institute for Integrated Traditional and Western Medicine, China), Qingwen Liu (Institute for Integrated Traditional and Western Medicine, China), and Jinjie Hou (Institute for Integrated Traditional and Western Medicine, China)
Effect of Hypoglycemic Anti-Deafness Prescription on Blood Glucose in Animal Model of Diabetic Deafness 498
Ruiyu Li (Institute for Integrated Traditional and Western Medicine, China), Yue Li (Hebei Normal University, China), Xing Li (Shijiazhuang People's Medical College, China), Meng Li (Xinjiang Armed Police Corps, China), Weiya Guo (Institute for Integrated Traditional and Western Medicine, China), Chenyu Zhang (Institute for Integrated Traditional and Western Medicine, China), Qingwen Liu (Institute for Integrated Traditional and Western Medicine, China), and Jinjie Hou (Institute for Integrated Traditional and Western Medicine, China)
Evaluating the Speedup of Multicore Architecture on the Topological Characteristics of On-chip Memory .502
Influence Analysis of Electromechanical Servo System Parameters on Photoelectric Stability Circuit .507
Intelligent Transformation of Small and Medium-Sized Manufacturing Enterprise in China Case Study of Dongguan Taiwei Electronics .5.11
Interference in Strauss Wireless Networks <u>519</u>
Nursing Intervention of Postoperative Hypoglycemia in Elderly Patients with Endometrial Cancer and Diabetes Mellitus 523

Perioperative Nursing Experience of Endometrial Cancer Patients with Diabetes Mellitus .527 Huiqing Hua (The second affiliated Hospital of Xingtai Medical College, China), Lijuan Gao (The second affiliated Hospital of Xingtai Medical College, China), Fengju Chen (The second affiliated Hospital of Xingtai Medical College, China), Ting Sun (The second affiliated Hospital of Xingtai Medical College, China), and Lingling Wu (The second affiliated Hospital of Xingtai Medical College, China)
Perspectives of Face Recognition with Medical Applications .531. Wenfeng Wang (Shanghai Institute of Technology, China; Interscience Institute of Management and Technology, India), Jingjing Zhang (Shanghai Institute of Technology, China), and Yong He (Shanghai Institute of Technology, China)
Relationship Between Timer Resolution and Synchronization Message Repetition Frequency in a Synchronized Wireless Sensor Network .535
Study on the Performance of Microcatheter Commonly Used in Nerve Endovascular Treatment .539 Wei Li (Medical University, China), Zhe Qu (Shijiazhuang people's Hospital, China), Suisui Zhang (The Second Affiliated Hospital of Xingtai, China), Hongyi Yuan (The Second Affiliated Hospital of Xingtai, China), Youxiang Li (Medical University, China), and Huijian Ge (Medical University, China)
The Effect of Negative Life Events on Self-Transcendence Wisdom: The Moderating Role of
Meaning in Life .543
Author Index 547.