2022 5th International Conference on Artificial Intelligence and Big Data (ICAIBD 2022)

Chengdu, China 27-30 May 2022



IEEE Catalog Number: CFP22Q12-POD ISBN:

978-1-6654-9914-9

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:
 CFP22Q12-POD

 ISBN (Print-On-Demand):
 978-1-6654-9914-9

 ISBN (Online):
 978-1-6654-9913-2

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



2022 IEEE The 5th International Conference on Artificial Intelligence and Big Data

ICAIBD 2022

Table of Contents

Prefacexiii Committeesxv
Chapter 1: Data Analysis and Computational Models
Prediction of Protein Post-Translational Modifications in Rice Based on Multi-head Self-Attention 1 Qiankun Wang, Hui Gao
Application of Blockchain Technology in Asset Securitization
Health Assessment and Fault Warning Method for Elevator Door System
IAVT: Anomalous Vessel Trajectory Detection Using AIS Data
Underwater Acoustic Target Classification with Joint Learning Framework and Data Augmentation 23 Liang Chen, Feng Liu, Daihui Li, Tongsheng Shen, Dexin Zhao
Research on the Relation of the Risk and Resilience Factors of Power Infrastructure
A*-FastIsomap: An Improved Performance of Classical Isomap Based on A* Search Algorithm 34 Tanzeel U Rehman, Jing Li, Zhou Zhiqiang, Naji Alhusaini
Development and Verification of Multi-class Data in Artificial Intelligence Model Group Based on Cloud Computing

Chapter 2: Computer Vision and Image Processing

n Image Contour Extraction Model Based on Depth Information and Phase Information	47
Jie Xiao, Xiaorui Lv, Yan Zhang	
FE-Net: Multi-type Feature Enhancement Net for Retinal Blood Vessel Segmentation	51
Haitao Yan, Jiexin Xie, Xiaotian Yue, Jiaxin Wang, Shijie Guo	
iamL-MLP: Siamese-like Network for Object Tracking Based on MLP-Mixer	57
Shipeng Sun, Shiyong Lan, Weikang Huang, Piaoyang Li	
omplex Network-Based Image Classification Method	63
Zhuang Ma, Guangdong Huang	
ompetition Threaten Risk Degree Assessment Strategy in Lane-changing Driving Scenarios based	on
on-cooperative Game Theory for Autonomous Systems	68
Mian Dai, Guoyu Zhang, Shuai Zhao, Xianglei Zhu	
nproved Model of Common Radix and Rhizome Chinese Herbal Medicine Classification Based	
GG16	77
Kunhui Wang, Yongtao Zhao, Yongzhe Wang, Xinyi Shang, Wenjing Zhao, Zhong Cao	
Joint Network for Pose Classification and Evaluation Based on Attention Mechanism	32
Lantian Zhang, Bowen Zheng	
n Intention-Based Comprehensive Feature Extraction Network for Behavior Sequences	38
Shanglin Yang, Daiwei Li, Haiqing Zhang, Lei Yang, Dan Tang, Lei He	
ontrast-enhanced CT Image Synthesis of Thyroid Based on Transfomer and Texture Branching	94
Ning Xiao, Zhenyu Li, Shaobo Chen, Liangtian Zhao, Yuer Yang, Hao Xie, Yang Liu, Yujuan	
uan, Junwei Duan	
Chapter 3: Machine Learning	
lissing Values for Classification of Machine Learning in Medical Data10	01
Lijuan Ren, Tao Wang, Aicha Sekhari Seklouli, Haiqing Zhang, Abdelaziz Bouras	
extual Similarity Based on Double Siamese Text Convolutional Neural Networks and Using BERT fo	r
re-training Model10	07
He Zhengfang, Ivy Kim D. Machica, Bi Zhimin	
ttention Based Large Scale Multi-agent Reinforcement Learning1	12
Xiaoqiang Wang, Liangjun Ke, Gewei Zhang, Dapeng Zhu	
Tool Platform for Predicting the Quality of Production Based on Machine Learning Technology1 ^r Xin Ding, Hanqing Zhou, Haixiong Lv	18

A Survey of Available Information Recovery of Binary Programs Based on Machine Learning 125 Wenqiang Shao, Qichao Yang, Xixi Guo, Ruijie Cai
A Feature Engineering Approach for Tree-based Machine Learning Sales Forecast, Optimized by a
Genetic Algorithm Based Sales Feature Framework
Adoption of Blockchain-based Artificial Intelligence in Healthcare
Mir Hassan, Jincai Chen, Chuanbo Zhu, Umer Zukaib
Generate Lanscape Paintings From Text to Landscape Painting Generation and Redrawing Using
Deep Learning Model
Yijia Chen
Chapter 4: Next Generation Neural Network Theory and Technology
The Influence of Embedding Size and Hidden Units Parameters Changes on the Sequence2Sequence
Model
Zhengfang He, Mingbo Pan, Yikai Wang, Gang Xu, Weibin Su, Chunmei Shi
Vision4All — A Deep Learning Fashion Assistance Solution For Blinds
A Intrusion Detection Model Based on Convolutional Neural Network and Feature Selection 162
Liang Zhang, Chengxin Xu
Pork Price Prediction Using Bi-RNN-LSTM Artificial Neural Network
Complete Synchronization of Delayed Fractional-Order Complex-Valued Neural Networks via Adaptive
Control
Ning Yao, Meng Hui, Jiahuang Zhang, Jiefei Yan, Weizhe Wu
Densely Convolutional Neural Network for Transcription Factor Binding Sites Prediction Using DNA
Sequence and Histone Modification
Beichen Li, Zixuan Wang, Shuwen Xiong, Yongqing Zhang
Research on Life Prediction of Oxygen Concentrator Based on Improved VMD-NAR Neural Network
Jie Bao, Bo Jing, Shenglong Wang, Jinxin Pan, Xiaojuan Zhang, Qingyi Zhang, Yu Zhang,
Songlin Huang
Research on Water Content Prediction Method Based on LSTM Neural Network
Hongtao Hu, Chen Dang, Min Li

Quasi-Synchronization for Complex-Valued Neural Networks with Leakage Delay and Mixed Delay	Ω/
Meng Hui, Jiahuang Zhang, Jiefei Yan, Ning Yao, Weizhe Wu	194
Chapter 5: Algorithm Design and Intelligent Computing	9
A Novel Multi-objective Neural Architecture Search Algorithm via Gaussian Progress Sampling 20 Xuehui Chen, Jingfei Jiang, Xin Niu, Hengyue Pan, Peijie Dong, Zimian Wei) (
A Realization of Self-face Diagnosis Algorithm Based on Chinese Medicine Theory	
APRSR: Adversarial Personalized Ranking Modeling for Sequential Recommendation	11
Evolution Analysis of Large-Scale Spatiotemporal Configuration of Provincial Birth Rate in China 27 Liyun Su, Wen Guo, Shengli Zhao, Jing Quan	17
An Improved Particle Filter Target Tracking Algorithm Using Online Learning Model	23
Improvement and Experimental Evaluation Based on ORB-SLAM-VI Algorithm	29
Source-Load Joint Probability Prediction Based on Transformer Model	35
CM-Predict: A Classification Model to Predict Cancer Metastasis Based on Co-expression Network	41
Jingbo He, Boyang Yu, Zhaonian Cai	
Chapter 6: Digital Image Analysis and Processing	
Real-time Face Structure Reproduction Model for Generative Adversarial Networks	48
Single Image Reflection Removal Based on Reflection Region	54
Imbalanced Image Classification by An Enhanced Depthwise Separable Convolutions Network 26 Lulu Qu, Haiqing Zhang, Daiwei Li, Xi Yu, Dan Tang, Lei He	31
Recruitment Fraud Detection Method Based on Crowdsourcing and Multi-feature Fusion	37

Classification of Fir Seeds Based on Feature Selection and Near-infrared Spectroscopy	274
Jing Lu, Yan Zhang, Shanshan Xie, Jiang Liu, Danjv Lv, Biaosheng Huang, Yue Yin	
A Recommendation Model with Attention-Aware Graph Matching	281
Utilizing Text-based Augmentation to Enhance Video Captioning	287
Multi-CAM: A Class Activation Mapping Method Based on Multi-scale Feature Fusion	294
Chapter 7: Target Detection	
Rotating Target Detection for Tarpaulin Rope Based on Improved YOLOv5	299
A Depression Tendency Detection Model Fusing Weibo Content and User Behavior	304
Intelligent Helmet Detection System based on the Improved YOLOv5 Peng Zou, Jie Zhang	310
Detection of Link Communities in Attributed Graphs via an Approximate Bayesian Generative Mo	odel
Zehai Tang, Lun Hu, Xiangyu Pan	315
Forgery Face Image Detection Based on Improved Capsule Network	321
Research on Depression Tendency Detection Based on Image and Text Fusion	326
Research on Underground Personnel Behavior Detection Algorithm Based on Lightweight Open	
Yongqing Lv	
Depressive Emotion Tendency Detection for Users on Social Platform Based on Fusion of Graph	n and
Text	337
Jie Yan, Xin Shu, Jian Shu	
Robust Pantograph-Catenary Contact Point Detection from Infrared Images Based on the YOLO Corner Detection	
Wuchang Li, Jie Zhang, Peng Zou	

Chapter 8: Big Data Technology and Data Management

Industrial Cyber Intelligent Control Operating System that Hybrid with IEC 61499 and Big Data on Ed	ge
Computing34	48
Weibin Su, Ivy Kim Machica, Gang Xu, Zhengfang He, Yanchun Kong	
Dynamic Data Partitioning Strategy Based on Heterogeneous Flink Cluster	55
Chenglong He, Yan Huang, Chaoyong Wang, Nian Wang	
Using Big Data for a Comprehensive Evaluation of Urban Vitality: A Case Study of Guangzhou, China	
Zhaohua Deng, Yaqin Zhu, Mingxin Liu, Shifu Wang	
Review of Panel Data Clustering Methods and Applications	69
Research on Intelligent Management Technology of Project Reserve Data in Enterprise Digital	
Transformation3	75
Fang Shao, Jie Cai, Wei Peng, XianFeng Shi, HongLiang Han	
Deep Reinforcement Learning Scheduling of Container Cloud Workflow Considering Invalid	
Time-Consuming and Reliability	80
Yaotong Wu, Ming Gao, Ye Wang, Liantan Duan	
Big Data Analysis in Human Resources Management: Performance Prediction Based on Employee	
Network	89
Jia Yuan	
Chapter 9: Pattern Recognition	
Macht: An Application Based on a Sentiment Analysis Model to the Identification of Messages in	
Spanish with Gender Violence Content on Twitter39	96
Ivonne Soldevilla, Nahum Flores, Sebastian Tuesta	
Interference Line Removal Using A Progressive Model40	02
Kangquan Mo, Pingjian Zhang	
The Fine-Grained Recognition of Bird Images Based on Joint Semantic Components and ResNet . 40	06
Yucheng Li, Hua Zhou, Yili Zhao	
A Novel Deep Learning Framework for Recognizing High-Speed Train Numbers4	11
Yi Zhao, Yunan Jiang, Xiaobo Zhang, Zhehao Zhang, Panpan Ni, Zhimin Li	
A Review of Research on Feature Extraction for Emotion Recognition Based on EEG Signals 4	16
Liu Hongxing, Du Lifeng, Li Lihua, Hu Shenhui	

Multistage Degradation Prediction Based on Degradation Pattern Recognition and Long Short-Term
Memory
Rui Gao, Wei Han, Li Zhang
Fungi Recognition Based on Coordinate Attention and EfficientNetV2427
Chuxian Li, Wenjing Zhao, Lingchun Meng, Zhaohui Chen, Yongtao Zhao, Zhong Cao
Chapter 10: Modern Speech and Signal Analysis
EEG Motor Imagery Classification Based on Multi-spatial Convolutional Neural Network
Xin Li, Maoqing Peng, Siyu Chen, Wenyin Zheng, Yunxia Zhang, Dongrui Gao, Manqing Wang
A High-Accuracy Two-Stage Model for Automatic Speech Recognition
A Comparison Study of Pre-trained Language Models for Chinese Legal Document Classification 444 Ruyu Qin, Min Huang, Yutong Luo
Boost Speech Recognition without Training
Yifeng Niu, Gong He, Jide Qian, Ling Xiao, Xiaoping Li, Jiye Qian
Analysis of Anti-Multipath Performance Based on Traditional Acquisition Algorithm of BOC Signal 455 Yuanfa Ji, Sisi Song, Xiyan Sun, KAMARUL HAWARI BIN GHAZAL, Songke Zhao
EEG-based Assessment of Human Endurance: Association between Endurance and Brain-wave
Activity459
Haipeng Zhang, Changshui Zhang, Yulu Wang, Keying Zhang, Ruidong Liu, Lei Fang, Fangfang Wu, Chunmei Cao
KLT Algorithm for Non-contact Heart Rate Detection Based on Image Photoplethysmography 465 Hongyu Wang, Dongrui Gao, Guo Chen, Yuan Jing, Manqing Wang
Chapter 11: Artificial Intelligence Technology and
Application
Artificial Intelligence: A Promising Prospect for Better Management of Diabetic Patients
Most. Miftahul Jannat Nuri, Md. Tofael Alam Siddiquee
On the Processing of Interrogative Sentence and Sentence Tense in Chinese-English Machine
Translation
Chi Yang, Yi Zhang, Linhui Wu, Xianze Yang

Research on cooperative task assignment scheme of heterogeneous UAVs	480
Analysis of Key Technologies of Underground Inspection Robot and Design of Its Manipulator Cungen Xi, Bing Liu, Minghui Zhao	484
D-Leader Control Algorithm for Multi-Robot Formation Transformation	488
Testing and Measurement on Willingness to Use Augmented Reality, Virtual Reality, and AI-Ena Checkouts	
Sunisa Junsawang, Singha Chaveesuk, Wornchanok Chaiyasoonthorn	
A Simple Framework for XAI Comparisons with a Case Study	501
Guo Feng Anders Yeo, Irene Hudson, David Akman, Jeffrey Chan	
Thoughts on Whether Unmanned Driving Can Be Safe on the Road	509
Yukun Yang	
Chapter 12: Knowledge Engineering	
Research on the Application of Data Mining in Teaching System	513
Yi Zhang, Chi Yang, Xianze Yang, Chujun Wang, Xiaoting Weng	
The Theory and Empirical Study on the Two-dimensional Driving Choice of College Students' Ma	-
Xingguang CHEN, Xueting WANG	517
Constructing Dynamic Knowledge Graph Based on Ontology Modeling and Neo4j Graph Databa	
Yaxi Chen, Xuefeng Xing	522
Research on Compression of Teacher Guidance Network Use Global Differential Computing Ne	ural
Architecture Search	526
Haozhe Shen, Wenjun Li, Yilin Li, Keqiang Yue, Ruixue Li, Yuhang Li	
Global Relation Auxiliary Graph Attention Network for Knowledge Graph Completion	532
Ruotian Hou, Wenjun Zhu, Cui Zhu	
An Optimized Graph Embedding based Knowledge Graph Cleaning Algorithm	539
Optimization of Subgraph Matching over Knowledge Graph Based on Subgraph Indexing	5/3
Lei Lv, Jiayu Liu, Qi Li, Jiazhou Li	J 4 J
A General and Systematic Method for Constructing and Applying the Chinese Medical Knowledge	ge
Graph	547
Junhua Duan, Ziyuan Chen, Yi-An Zhu, Wei Lu	

Chapter 13: Advanced Information Theory and Technology

Gang Xu, Ivy Kim Machica, Weibing Su, Zhengfang He	. 553
Fault Diagnosis and Treatment of DS6-K5B Computer Interlocking System	. 558
An Improved Raft Protocol Combined with Cauchy Reed-Solomon Codes	. 563
Analysis of the Impact of Political Connection Using Community Detection	. 569
DKBERT: An Efficient and Effective Ranking Model via Weight Sharing Decoupling and Kernel Matching	. 577
Xiang Li, Daifeng Li	
Research on Autonomous 6TiSCH Network Resource Demand Calculation Based on Queuing The	•
Yan Zhang, Jinglong Guo, Youxin Cai, Yushuang Wu	
A Multi-way Access Portal Website Construction Scheme	. 589
Yan Bian, Dechao Ma, Qing Zou, Weirui Yue	
Chapter 14: Computer Science and Information	
Engineering	
FL-finder: Detecting Unknown Network Anomaly in Federated Learning	. 593
Tinashe Justice Manyadza, Haizhou Du, Shiwei Wang, Wenbin Yang, Cheng Chen, Fei Tian	
Optimization of Patient Guidance Path Based on Improved Genetic Algorithm	. 598
A Position Representation Method Based on the Localization Mechanism of Rat Hippocampus Weilong Li, Dan Wu, Chuanjin Dai, Dewei Wu	. 605
Study on the Relationship of Process-Oriented Servitization Strategy, Hierarchical Network Structu	ıre
and Innovation Performance	611
Lan Wang, Mian Liu	
Generating Consistent Multimodal Dialogue Responses with Emoji Context Model	. 617

Explicit and Implicit Feature Interaction Based on Attention Networks for Click-Through Rate Prediction
Shiqi Li, Zhendong Cui
A Social Recommendation Method Based on Double-Layer Weak Relation Network 631
Yan Wang, Shouzhi Sun, Aiping Tan
Deep Hash Model for Similarity Text Retrieval
Zhiwen Li, Dan Zhang, XiaoGuang Yuan, Jun Zheng
Chapter 15: Intelligent Transportation and System
Management
Research on Adaptive Adjustment Method of Intelligent Traffic Light Based on Real-Time Traffic Flow
Detection
Li Huang, Hongjing Huang, Jie Xiao, Xiaorui Lv
Fire Linkage Scheme Design and Modeling Verification of Urban Rail Transit
Zicheng Wang, Jiacheng Liu, Lifu Yi, Guangqian Wang
Design of Intelligent Flight Platform for High-Rise Fire Fighting and Rescue
Minghui Zhao, Xinyu Liu, Qi Wang
Estimation of Vessel Link-Level Sailing Time Distribution under a Connected Network
Zhuo Chen, Jianlong Su, Yang Zhan
Research on the Shared Supply Mode of Urban Public Transportation under the Internet of Things—
A Case Study Based on Hello Travel Platform
Yapeng Li, Congmin Shao
Adaptive Cuckoo Search Algorithm Based on Dynamic Scaling Factor and Historical Experience 669
Fu He, Haiwen Yuan, Changjun Luo, Qing Song, Junchi Chen, Yongyi Ma
Intelligent Driving Safety Prediction Model Based on Algorithm Dynamic Fusion
Wenxin Xu, Ying Chen, Jizhuang Zhao, Feng Wang
Demand Analysis of Taxi Passenger-carrying Hot Spot Areas Based on XGBoost Algorithm 682
Tingting Xu