2020 International Conference on **Computing and Data Science** (CDS 2020)

Stanford, California, USA 1 – 2 August 2020



IEEE Catalog Number: CFP20X23-POD **ISBN**:

978-1-7281-7107-4

Copyright © 2020 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:
 CFP20X23-POD

 ISBN (Print-On-Demand):
 978-1-7281-7107-4

 ISBN (Online):
 978-1-7281-7106-7

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



2020 International Conference on Computing and Data Science (CDS) CDS 2020

Table of Contents

Message from General Chair xi Organizing Committee xii
Reviewers xiii
CDS 2020
Machine Learning Meets Astronomy 3
Deep Learning for Cybersecurity: A Review .7
A Review on the Extraction of Region of Interest in Traffic Sign Recognition System .19
Improving Agile Development from Perspective of Design-Informing Model .23
Welding Seam Recognition Robots Based on Edge Computing .27
An Improved Surf Algorithm Image Feature Point Extraction Based on Hadoop Cluster .31
Part-Weighted Deep Representation Learning for Person Re-Identification .36
The Challenges and Methods of Natural Scene Text Detection 40
Lightpath Simulation in Optical Systems Based on Matrix Optics Method .44
Detect and Depornize Pornographic Images Using Pre-Trained CNN Models .48
Implicit Bias or Explicit Bias: An Analysis Based on Natural Language Processing .52
A Comparison of Three Numeric Algorithms for Lasso Solution .56

An Improved SVR-FCM Method for Remaining Useful Life Prediction of Aircraft Engines .62 Xinle Yu (Xi'an Jiaotong University)
Ensemble Incremental Learning Iterative Mechanism on Reject Inference 69. Wenwen Ding (University of Hong Kong) and Hongyang Wan (Tongdun Technology)
Study on Using Scenarios of Linear and Nonlinear Classifiers .76. Tianyang Yan (Xuzhou University of Technology)
Design and Implementation of D2D System Based on Android and JXTA .81
Recent Advances in the Application of Deep Learning to Choreography .88
Prediction Intervals for Mechanical Property Forecasting with Improved ANFIS .92
Wireless Communication Using Electromagnetic Wave with Orbital Angular Momentum .99 Yue Hou (Tianjin University)
Design of Smart Home System Based on ARM and RFID .1.04. Chuanhao Gao (No. 3 High School Harbin, China)
Characterizing the Weight Space for Different Learning Models 109. Saurav Musunuru (Computer Science & Engineering Indian Institute of Technology Delhi, India), Jay N. Paranjape (Computer Science & Engineering Indian Institute of Technology), Vijendran G. Venkoparao (Robert Bosch Engineering and Business Solutions), and Rahul Kumar Dubey (Robert Bosch Engineering and Business Solutions)
Exploring the Role of Input and Output Layers of a Deep Neural Network in Adversarial Defense 114
A Data Analytics Study in the Influence of Top Universities over World-Class Cities Based on QS Best Cities Ranking .119
Evaluation of Deep Learning Models for Kannada Handwritten Digit Recognition .125
The Application of Machine Learning in Gesture Prediction on EMG Dataset .131
Analysis of the Gasoline Octane Number Based on Neural Network .136
Feature Selection Method Based on Hybrid SA-GA and Random Forests .139
Research on Business District Operation Planning Based on Machine Learning .143

Diagnosis of Breast Cancer Based on Support Vector Machine and Random Forest Methods .147 Yuyao Wu (Sichuan University)
The Trend of Image Segmentation 3 Research: An Overview Based on Traditional, Supervised and Semi-supervised Methods .152
Research on Strategy of HS300 Index Based on Random Forest .156
IMM-EKF Based GPS/INS Combined Positioning Method for Drone .160
Irony Detection Using Transformers .165
Research on Identifying Phlegm-Damp Constitution in Obese People Based on Machine Learning Methods 169
Convolutional Neural Networks for Multimode Fiber Study: A Review .17.4
Research on the Control Strategy of Robot Fish Game in Dynamic Environment .179
Recognition of Handwritten Digit Using Convolutional Neural Network .183
Future Challenges in the Next Generation of Voice User Interface .191. Zicheng Wang (Syracuse University)
Design of Distributed Network Clock-Synchronization for Swarm UAV .194
Study on the Evaluation of Practical Teaching Quality in Applied Undergraduate Colleges .198 Zaijuan Xu (Guangzhou College of Technology and Business)
Securing Database Integrity in Intelligent Government Systems That Employ Fog Computing Technology .202
(University of Arkansas)
Performance Evaluation of Classifiers Based on Stock Prediction 208. Zixu Huang (Sun Yat-Sen University)
The Application of Machine Learning Algorithms in Credit Card Default Prediction .212
Model-Based or Model-Free, a Review of Approaches in Reinforcement Learning .219
Application of Cloud Computing Clustering Mining Algorithm in Logistics Scheduling Information 222 Qingqing Wang (Jilin Animation Institute), Jianan Meng (Jilin
Animation Institute), and Meili Zhu (Jilin Animation Institute)

Scene Text Detection Using Context-Aware Pyramid Feature Extraction .226
Detecting Overlapping Communities via Expanding Core Regions 231. Qingyao Liu (Beijing Institute of Technology), Dingda Yang (Bullis School), Zhongzheng Zhang (Beijing Institute of Technology), and Jianwu Li (Beijing Institute of Technology)
A Survey Paper on Movie Trailer Genre Detection .238
Research on Track Irregularity Full Speed Segment Detection Based on Adaptive Fuzzy Neural Network 245
Performance Evaluation and Practical Use of Supervised Data Mining Algorithms for Credit Card Approval 251
A Novel Multi-attribute Face-to-Cartoon Model for Human-Computer Interaction 255
Brief Review of Recent Researches in Speech Enhancement from Filters to Neural Networks 260 Fei Ge (Dalian Maritime University)
Obesity Rate, Economy Condition and Races: Exploration on Spatial Heterogeneity of Obesity-Related Factors Based on Geographical Weighted Regression (GWR) in City of Los Angeles 265
Stock Picking Strategy Based on Exploration of Chip Distribution Indicators .27.6
A New Verifiable Image Encryption Network .283. Dewei Li (Renmin University of China)
Age Estimation from Face Images Based on Deep Learning 288. Siyu Han (Beijing University of Posts and Telecommunications)
Phishing Website Detection Based on Machine Learning Algorithm .293. Weiheng Bai (Johns Hopkins University)
Object Detection for Automatic Driving Based on Deep Learning .299. Bo Hu (Beijing University of Posts and Telecommunications)
Kidney Disease Diagnosis Based on Machine Learning .307. Bo Wang (Chengdu No.7 High School)
The Evaluation on the Development Potential of Rural Commercial Endowment Insurance in Guangdong Province under the Strategy of Rural Revitalization 311
Random Forest Based Scheduling Rules Mining in 3D Printing Network .318

Multi-carrier Peak-to-Average Ratio Suppression and Data Quality Assurance Algorithm Based on Multi-filter Bank .323
Xin Xie (Glasgow College University of Electronic Science and Technology of China)
A Comprehensive Hand Gesture Dataset .328. Jiahao Ma (Hebei University of Technology), Tailun Li (Jinan University), and Jingfei He (Hebei University of Technology)
An Analysis of Driver Cognitive Distraction .334
A Review on Action Recognition and Its Development Direction .338
From Statistics to Data Mining: A Brief Review .343. Jiachen Liu (Beijing Sport University)
Social Study Based Review on Image Aesthetic Assessment and Editing .347
A Summary and Analysis of Articles That Based on Studying Text Data and Digital Data .353 Xuhuyang Guo (Southwest University)
Active Object Searching Based on Deep Reinforcement Learning .362
Calculation of Frame Internal Force Based on MATLAB Matrix Displacement Method .367
A TCM Question and Answer System Based on Medical Records Knowledge Graph .37.3
A Virtual Environment Making Method for CAVE System .377 Liguo Zheng (Jilin Animation Institute), Meili Zhu (Jilin Animation Institute), and Hongwei Yu (Beijing Branch of JAI Cultural Arts Group)
The Analysis and Predication of Energy Use in Smart Homes Based on Machine Learning .381 Xuantang Xiong (National Institute of Applied Sciences, Toulouse) and Yanji Wei (National Institute of Applied Sciences, Toulouse)
CNN-Based Image Style Transfer and Its Applications .387
A Design of Real-Time Status Updated Charging Service APP .391. Ming Li (Microelectronics Technology Ltd.), Xiangfei Zhang (Microelectronics Technology Ltd.), and Guojing Liu (Microelectronics Technology Ltd.)
Research on the Human-Computer Interaction Design in Mobile Phones 395. Yonghao Zhu (Brunel University)
Detecting Neuronal Assemblies in Spontaneous Activity with Dictionary Learning .400
Predictive Modeling of U.S. Housing Prices Reveals Key Indicators of Real Estate Prices and Economic Health .405

umor Detection of Sina Weibo Based on MCF Algorithm 411
vo-Stage Network-Based Inventory Management .415
ealization of Physical Unclonable Circuit IP Core on FPGA .421. Ziyi Fu (Beijing University of Technology)
Review on Machine Learning and Gesture Recognition .425. Peiran Zhao (Indiana University Bloomington)
ne Model of COVID-19 Pandemic .429. Tianyu Xin (Beijing National Day School)
Systematic Review of Machine Learning Approaches for Mental Disorder Prediction on ocial Media 433
Jiang Qiao (University of Illinois at Urbana- Champaign)
ne Research of RBPF-SLAM Accuracy under the Influence of Depth Camera Noises .439
eep Learning Based People Detection, Tracking and Re-Identification in Intelligent Video urveillance System .443
AV Automatic Docking Technology Based on Deep Learning .448
ulti-features Based Arrhythmia Diagnosis Algorithm Using Xgboost 454
esearch and Prospect of Applications Based on the Internet of Vehicles .458
tient Request Analysis Tool for CERN ALICE Grid Services 462 Cristian Margineanu (University Politehnica of Bucharest), Costin Grigoras (Cern), Mihai Carabas (University Politehnica of Bucharest), Sergiu Weisz (University Politehnica of Bucharest), Darius Mihai (University Politehnica of Bucharest), Maria-Elena Mihailescu (University Politehnica of Bucharest), and Nicolae Tapus (University Politehnica of Bucharest)
n ITSM Framework Adaptation: Case Study in an Electoral Institution .468
Renzhuo Wang (SRM Institute of Science and Technology) lient Request Analysis Tool for CERN ALICE Grid Services .462