

2020 10th Annual Computing and Communication Workshop and Conference (CCWC 2020)

**Las Vegas, Nevada, USA
6-8 January 2020**

Pages 1-536



**IEEE Catalog Number: CFP20CWA-POD
ISBN: 978-1-7281-3784-1**

**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:	CFP20CWA-POD
ISBN (Print-On-Demand):	978-1-7281-3784-1
ISBN (Online):	978-1-7281-3783-4

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

Content

Sr. No.	Paper ID	Paper Title	Page No
SESSION 1: ALGORITHM AND THEORY			
01.1	1570613426	A Distributed Density-Grid Clustering Algorithm for Multi-Dimensional Data	0001
01.2	1570612552	Continuous Error Detection and Correction of Arithmetic in a Complement RRNS	0009
01.3	1570613034	Prediction of Oblique Saccade Trajectories Using Learned Velocity Profile Parameter Mappings	0018
01.4	1570610717	A Group Mutual Exclusion Protocol for the Use Case of IoT-Blockchain Integration in Work-Safe Scenario	0025
01.5	1570613138	Crumple Trees	0031
01.6	1570613422	Parallelizing the Bounded K-Nearest Neighbors Algorithm for Distributed Computing Systems	0038
SESSION 2: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING			
02.1	1570611510	Designing a Feature Selection Technique for Analyzing Mixed Data	0046
02.2	1570601951	A Scalable System for Neural Architecture Search	0053
02.3	1570607524	DFB Laser Chip Defect Detection Based on Successive Subspace Learning	0061
02.4	1570614199	A Wavelet Compression based Multi-resolution Bidirectional LSTM Network for Electrocardiogram Biometric Classification in constructing Biometric Ontology	0065
02.5	1570601952	An Evolutionary Approach to Variational Autoencoders	0071
02.6	1570604472	On-device Training for Breast Ultrasound Image Classification	0078
SESSION 3: MOBILE AND WIRELESS COMPUTING			
03.1	1570605343	Accelerated and Preconditioned Refinement of Gauss-Seidel Method for Uplink Signal Detection in 5G Massive MIMO Systems	0083
03.2	1570608700	Adaptive Beamforming and Modulation Design for 5G V2I Networks	0090

03.3	1570608657	Grouping Proofs for Dynamic Groups of RFID Tags: A Secure and Scalable Protocol	0097
03.4	1570612822	Analysis of Human Behaviors in Real-Time Swarms	0104
03.5	1570613408	High Throughput Vehicular Communication Using Spatial Multiplexing MIMO	0110
03.6	1570613033	CSI Feedback Overhead Reduction for 5G Massive MIMO Systems	0116
SESSION 4: CLOUD COMPUTING AND IOT			
04.1	1570601379	A Fuzzy Linguistic Programming for Sustainable Ecotourism Activities	0121
04.2	1570609302	Dynamic Constellation Mapping and SER Performance for Asynchronized PNC Using QPSK	0127
04.3	1570613440	Energy Consumption Analysis of Scheduling Algorithms for Cloud Computing Systems	0134
04.4	1570613164	NetForager: Geographically-Distributed Network Performance Monitoring of Web Applications	0142
04.5	1570613320	A Resilient Cooperative Localization Strategy for Autonomous Underwater Vehicles in Swarms	0150
04.6	1570604734	Dilated Causal Convolutional Model For RF Fingerprinting	0157
SESSION 5: SOFTWARE ENGINEERING			
05.1	1570597589	A Simple Model for Reasoning about Limits on Coupling in Object-Oriented Software	0163
05.2	1570598433	A Decentralized Approach to Architecture-Based Self-Protecting Software Systems	0169
05.3	1570598957	The Paradoxical Effects of Jitter on Fairness in Financial Exchanges: Engineering Implications	0176
05.4	1570609429	Adapting a Container Infrastructure for Autonomous Vehicle Development	0182
05.5	1570613488	The self-upgrading mobile application for the automatic malaria detection	0188
05.6	1570613429	DeeperCoder: Code Generation Using Machine Learning	0194
SESSION 6: ROBOTICS , AUTONOMOUS SYSTEM AND MACHINE LEARNING			
06.1	1570613404	Detecting Malign Encrypted Network Traffic Using Perlin Noise and Convolutional Neural Network	0200
06.2	1570612797	A Data-Centric Approach to Taming the Message Dissemination in the Internet of Vehicles	0207
06.3	1570613476	Automated Radar Signal Analysis Based on Deep Learning	0215

06.4	1570613532	Deep Reinforcement Learning Pairs Trading with a Double Deep Q-Network	0222
06.5	1570613062	Cost-Effective, Re-Configurable Cluster Approach for Resource Constricted FPGA Based Machine Learning and AI Applications	0228
06.6	1570610411	Ultra-thin MobileNet	0234
SESSION 7: CRYPTOGRAPHY AND INFORMATION SECURITY			
07.1	1570606643	Decentralized Security Bounty Management on Blockchain and IPFS	0241
07.2	1570610623	Synchronized Power Injection From PVA To Grid With Reduced THD And Dc Voltage Ripple Using PID Controller for Dc Grid Applications	0248
07.3	1570594609	Optimal Power Sharing of Renewable Sources and Backup Power Supply Maintenance During Grid Power Failure	0257
07.4	1570614745	Inductive and Deductive Reasoning to Assist in Cyber-Attack Prediction	0262
07.5	1570596106	Area and Energy Efficient Radiation Hardened Gain Cell Memory	0269
07.6	1570613415	A proposed Crypto-Ransomware Early Detection(CRED) Model using an Integrated Deep Learning and Vector Space Model Approach	0275
SESSION 8: ARTIFICIAL INTELLIGENCE, MACHINE LEARNING AND EMBEDDED SYSTEMS			
08.1	1570613406	A Victims Detection Approach for Burning Building Sites Using Convolutional Neural Networks	0280
08.2	1570610236	RMNv2: Reduced Mobilenet V2 for CIFAR10	0287
08.3	1570612688	Simulation of Surface Reflections and Shadowing in Molecular Communication Systems	0293
08.4	1570613447	Machine Learning Techniques for Motion Analysis of Fatigue from Manual Material Handling Operations Using 3D Motion Capture Data	0300
08.5	1570593087	Application of RXD Algorithm to Word Vector Representation for Keyword Identification	0306
08.6	1570612674	Deep Convolutional Neural Network Design Approach for 3D Object Detection for Robotic Grasping	0311
SESSION 9: ARTIFICIAL INTELLIGENCE , CRYPTOGRAPHY AND SECURITY			
09.1	1570611334	BloCyNfo-Share: Blockchain based Cybersecurity Information Sharing with Fine Grained Access Control	0317
09.2	1570613122	Facial Expression Recognition with Convolutional Neural Networks	0324

09.3	1570613451	Network Traffic Images: A Deep Learning Approach to the Challenge of Internet Traffic Classification	0329
09.4	1570613508	An Automated Framework for Real-time Phishing URL Detection	0335
09.5	1570613526	Unravelling of Convolutional Neural Networks through Bharatanatyam Mudra Classification with Limited Data	0342
SESSION 10: ALGORITHM AND THEORY			
10.1	1570606726	Throughput, Delay, and Complexity Tradeoffs in Interference Channels	0348
10.2	1570613473	Two Methods for Authentication Using Variable Transmission Power Patterns	0355
10.3	1570613468	Optimizing B-Spline Surface Reconstruction for Sharp Feature Preservation	0359
10.4	1570613479	Using Machine Learning to Estimate Utilization and Throughput for OpenCL-Based Matrix-Vector Multiplication (MVM)	0365
10.5	1570613576	Pulse on Pulse Deinterleaving Radar Algorithm	0373
SESSION 11: WIRELESS COMMUNICATION AND EMBEDDED SYSTEMS			
11.1	1570609638	Implementing ROS Communications for Sensor Integration with the RB5 Collaborative Robot	0378
11.2	1570612407	HID-SMART: Hybrid Intrusion Detection Model for Smart Home	0384
11.3	1570613402	Data Compression and Re-computation Based Performance Improvement in Multi-Core Architectures	0390
11.4	1570610665	3.5–9 GHz Ultra-Wideband LNA With Variable Gain and Noise Cancellation for Wireless Communication	0396
11.5	1570612097	Wireless Communication Between FPGA and Microcontroller	0402
SESSION 12: NATURAL LANGUAGE PROCESSING, COMMUNICATION SOFTWARE AND OTHERS			
12.1	1570613494	Corpora of Russian Spontaneous Speech as a Tool for Modelling Natural Speech Production and Recognition	0406
12.2	1570608768	A Comparative Study of Machine Learning Algorithms for Use in Breast Cancer Studies	0412
12.3	1570613026	AIOPS Prediction for Hard Drive Failures Based on Stacking Ensemble Model	0417
12.4	1570608767	On the Application of Algebraic Graph Theory to Modeling Network Intrusions	0424

12.5	1570608766	On the Application of the Complexity Zeta Function to Modelling Complexity and Emergence in NeuroEngineering	0431
SESSION 13: WIRELESS COMMUNICATION AND ENERGY MANAGEMENT			
13.1	1570613850	Monitoring and Alarm System Timing Analysis for an Interconnecting Grid	0437
13.2	1570613105	Environmental Perception in Autonomous Vehicles Using Edge Level Situational Awareness	0444
13.3	1570613911	The Blindspot of Electromagnetic Interference Affecting Sensitive Medical Devices at Hospitals and Healthcare Facilities	0449
13.4	1570611508	A New Highly Power-Efficient Inverse Class-D PA for NB-IoT Applications	0458
13.5	1570611507	Design of A 2-3 GHz Down-Conversion Active Mixer With Improved Linearity	0463
13.6	1570613495	Edge Based Decision Making In Disaster Response Systems	0469
SESSION 14: CRYPTOGRAPHY , SECURITY AND MACHINE LEARNING			
14.1	1570612810	Image Classification on NXP i.MX RT1060 using Ultra-thin MobileNet DNN	0474
14.2	1570612787	Behavioral Model Anomaly Detection in Automatic Identification Systems (AIS)	0481
14.3	1570613123	Investigating the Security Threats on Networked Medical Devices	0488
14.4	1570606627	Privacy Violating Opensource Intelligence Threat Evaluation Framework: A Security Assessment Framework For Critical Infrastructure Owners	0494
14.5	1570610944	UDPP: Blockchain based Open Platform as a Privacy Enabler	0500
14.6	1570605824	Practical Data Sharing at Untrusted Stores	0506
SESSION 15: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING			
15.1	1570613073	Houston Toad and Other Chorusing Amphibian Species Call Detection Using Deep Learning Architectures	0511
15.2	1570612542	A Non-Linear GPU Performance Modeling Approach and Consolidated Linear Hardware Model Performance Evaluation of the LEAP Cluster	0517
15.3	1570613058	Rice Disease Detection by Image Analysis	0524
15.4	1570613417	The Voltage Regulation of Boost Converters Using Dual Heuristic Programming	0531
15.5	1570613456	Identification of Wild Species in Texas from Camera-trap Images using Deep Neural Network for Conservation Monitoring	0537
15.6	1570613059	Topic Analysis of Climate-Change News	0543

SESSION 16: ROBOTICS AND AUTONOMOUS SYSTEMS			
16.1	1570611362	A Robotic Control System Using Robot Operating System and MATLAB for Sensor Fusion and HumanRobot Interaction	0550
16.2	1570611525	Autonomous Control of a Line Follower Robot Using a Q-Learning Controller	0556
16.3	1570613332	An Intrusion Detection System Against DDoS Attacks in IoT Networks	0562
16.4	1570611028	ROS-MATLAB Interface and Setup for a Fault Tolerant Robotic System Using Human Robot Interaction	0568
16.5	1570610600	A Robotic System for Elderly Care and Monitoring using Human Robot Interaction	0576
16.6	1570613076	A Data Driven PID Control System	0580
SESSION 17: IMAGE PROCESSING, EVOLUTIONARY COMPUTATION AND OTHERS			
17.1	1570609305	MARS: Machine learning based Adaptable and Robust Network Management for Software-defined Networks	0586
17.2	1570613485	Error Detection using Augmented Reality in the Subtractive Manufacturing Process	0592
17.3	1570613498	Combinatorial-Based Event Sequences for Reduction of Android Test Suites	0598
17.4	1570602849	Integer vs. Floating-Point Processing on Modern FPGA Technology	0606
17.5	1570608656	Area-Optimized UAV Swarm Network for Search and Rescue Operations	0613
17.6	1570609914	Zoning Effect on the Capacity and Placement Planning for Battery Exchange Stations in Battery Consolidation Systems	0619
SESSION 18: BIG DATA, DATA MANAGEMENT AND ANALYTICS			
18.1	1570612396	Multi-Stage Distributed Computing for Big Data: Evaluating Connective Topologies	0626
18.2	1570611408	Prediction of Cancer Drug Effectiveness Based on Multi-Fusion Deep Learning Model	0634
18.3	1570613363	Supervised Sentiment Analysis of Twitter Handle of President Trump with Data Visualization Technique	0640
18.4	1570613430	Multi-Tenant Big Data Analytics on AWS Cloud Platform	0647
18.5	1570612920	An Investigation of Factors Influencing Private Technology Organizations' Intention to Adopt Open Government Data in Saudi Arabia	0654
18.6	1570613538	Complex Food Recognition using Hyper-Spectral Imagery	0662

SESSION 19: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING			
19.1	1570613013	A Multi Sensor Real-time Tracking with LiDAR and Camera	0668
19.2	1570613023	High Impulse Noise Intensity Removal in Natural Images Using Convolutional Neural Network	0673
19.3	1570612377	A Scalable Approach to Time Series Anomaly Detection & Failure Analysis for Industrial Systems	0678
19.4	1570612566	Connected Home Automated Security Monitor (CHASM): Protecting IoT Through Application of Machine Learning	0684
19.5	1570610229	Squeeze-and-Excitation SqueezeNext: An Efficient DNN for Hardware Deployment	0691
19.6	1570613019	GFSK Demodulation Using Learned Sequence Correlation	0698
SESSION 20: BIOMEDICAL COMPUTING AND OTHERS			
20.1	1570612852	Differential Pricing of 5G Network Slices for Heterogeneous Customers	0705
20.2	1570612548	Social Network Analysis and Mining: Privacy and Security on Twitter	0712
20.3	1570602822	Light-Based Interpretation of Quanta and its Implications on Quantum Computing	0719
20.4	1570613046	Buterin's Scalability Trilemma viewed through a State-change-based Classification for Common Consensus Algorithms	0727
20.5	1570613371	Evolution of Machine Learning Algorithms on Autonomous Robots	0737
20.6	1570612850	Location Privacy Protection in Online Query based on Privacy Region Replacement	0742
SESSION 21: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING			
21.1	1570613428	Fine-Grained Access Control in the Era of Cloud Computing: An Analytical Review	0748
21.2	1570613489	Complex Motion Detection Based on Channel State Information and LSTM-RNN	0756
21.3	1570610919	Analyzing Variation Among IoT Botnets Using Medium Interaction Honeypots	0761
21.4	1570613567	Interface for Human Machine Interaction for assistant devices: A Review	0768
21.5	1570612918	Using Attribute-based Feature Selection Approaches and Machine Learning Algorithms for Detecting Fraudulent Website URLs	0774
SESSION 22: WIRELESS SENSOR NETWORK, OPTICAL NETWORKS AND OTHERS			

22.1	1570609340	Can Mobile Phone Usage Affect HypothalamusPituitary-Adrenal Axis Response?	0780
22.2	1570613335	Optical Communication and Positioning Method of Underwater Observation Apparatus for Environmental Monitor	0784
22.3	1570595744	Node Replacement Method for Disaster Resilient Wireless Sensor Networks	0789
22.4	1570613285	Optimal Contention Window Based on Performance Analysis for Full Duplex WLANs	0796
22.5	1570613119	Risk-Averse Traffic Allocation for Multi-RAT Connectivity in HetNets	0803
SESSION 23: ARTIFICIAL INTELLIGENCE, WIRELESS COMMUNICATION AND OTHERS			
23.1	1570613364	Performance comparative of OpenCV Template Matching method on Jetson TX2 and Jetson Nano developer kits	0812
23.2	1570614342	Towards Deep Learning based Traffic Accident Analysis	0817
23.3	1570613121	NVMe-over-RPMsg: A Virtual Storage Device Model Applied to Heterogeneous Multi-Core SoCs	0821
23.4	1570613917	Energy Efficient 5Gb/s/pin Baseband Transceiver for 3D Memory Interface	0827
23.5	1570604520	A Secure Biometric Based User Authentication Protocol in Wireless Sensor Networks	0830
SESSION 24: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING			
24.1	1570610636	Theoretical and Experimental Study of GSM Frequencies in the Offices	0835
24.2	1570613727	Robotics Technology Kernel for Radiation Sensing and Site Exploitation	0839
24.3	1570615043	A Bayesian based Model to Credential Learners' Content Skill Assessment	0845
24.4	1570613471	Secure5G: A Deep Learning Framework Towards a Secure Network Slicing in 5G and Beyond	0852
24.5	1570612801	Design and Implementation of Cadastral Geospatial IoT Network Gateway Analyzer for Urban Scale Infrastructure Health Monitoring	0858
SESSION 25: ALGORITHM AND THEORY, SOFTWARE ENGINEERING			
25.1	1570612767	Extension of the Statistical MIMO Model by Alias as an Independent Subchannel	0864
25.2	1570613029	Roadway Crack Segmentation Based on an Encoder-decoder Deep Network with Multi-scale Convolutional Blocks	0869

25.3	1570613224	Applying k-means Method to the Modified Bottleneck Assignment Problem in Vector Case	0875
25.4	1570613540	The Basis for Development of a Foundational Biomarker Reflectance Signature Database System for Plant Cell Identification, Disease Detection, and Classification Purposes	0881
25.5	1570613481	Modeling and Simulation of Software Execution Time in Embedded Systems	0888
25.6	1570613011	A New Maximum Weight Submatrix Solver Tool for Identifying Mutated Driver Pathways in Cancer using Python	0895
SESSION 26: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING			
26.1	1570613505	Multilayer Perceptron Algorithms for Network Intrusion Detection on Portable Low Power Hardware	0901
26.2	1570613474	A Time-varying Neural-network-based ARX Model of the Traffic in Mobile Networks	0907
26.3	1570613499	Focus Detection Using Spatial Release From Masking	0913
26.4	1570610534	Service Robot Navigation and Computer Vision Application in a Banquet Hall Setting	0918
26.5	1570613470	A CCRW receiver with a single window of variable width for mitigation of multipath and ambiguity in GNSS with MBOC signals	0924
26.6	1570609806	The Future of Work: Towards Service Robot Control through Brain-Computer Interface	0932
SESSION 27: ALGORITHMS AND THEORY, IMAGE PROCESSING AND MULTIMEDIA TECHNOLOGY AND OTHERS			
27.1	1570613356	Ticket-Based Authentication for Securing Internet of Things	0938
27.2	1570611523	Towards Smart Classroom: Affordable and Simple Approach to Dynamic Projection Mapping for Education	0942
27.3	1570613577	Virtual Reality-Based Musical Therapy for Mental Health Management	0948
27.4	1570608557	Image Stitching Using Green Coordinates and Robust Elastic Warping	0953
27.5	1570612591	Shamir's Secret Sharing for Authentication without Reconstructing Password	0958
27.6	1570613462	Average Consensus-Based Data Fusion in Networked Sensor Systems for Target Tracking	0964
SESSION 28: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING			
28.1	1570598528	CRADLE: Cross-Layer Design for Load-Aware Routing in IEEE 802.11-Based Wireless Mesh and Sensor Networks	0970

28.2	1570608518	Docker Container Security in Cloud Computing	0975
28.3	1570613235	Performance Evaluation and Analysis of Proactive and Reactive MANET Protocols at Varied Speeds	0981
28.4	1570613109	A Secured IoT Scheme for Microgrids Monitoring	0986
28.5	1570612682	Brain-IoT based Emotion Recognition System	0991
28.6	1570613025	Exploiting Capture Diversity in Distributed Passive RFID Systems	0996
SESSION 30: ARTIFICIAL INTELLIGENCE, ROBOTICS AND INFORMATION SECURITY			
30.1	1570612400	A Study of Ensemble Methods for Cyber Security	1001
30.2	1570613064	Smart Jamming Attacks in 5G New Radio: A Review	1010
30.3	1570612390	Segregating Hazardous Waste Using Deep Neural Networks in Real-Time Video	1016
30.4	1570613432	Artificial Intelligence for 5G Wireless Systems: Opportunities, Challenges, and Future Research Direction	1023
30.5	1570612889	Hardware Trojan Detection Method Based on Time Feature of Chip Temperature	1029
30.6	1570612423	Similarity Metric for Millions of Unlabeled Face Images	1033
SESSION 31: SOFTWARE ENGINEERING, BIOMEDICAL COMPUTING AND OTHERS			
31.1	1570612381	Using Convolutional Neural Networks to Analyze X-Ray Radiographs for Multi-Label Classifications of Thoracic Diseases	1041
31.2	1570612397	Healthcare Yelp: Health Care Services Prediction	1049
31.3	1570612866	Improve Accuracy of Speech Emotion Recognition with Attention Head Fusion	1058
31.4	1570608786	Increasing Reliability of Terahertz Communication Links Using Onboard Fiber Connectivity	1065
31.5	1570610634	A Predictive Tool For Grid Data Analysis Using Machine Learning Algorithms	1071