# **2021 World Automation Congress (WAC 2021)**

Online 1-5 August 2021



IEEE Catalog Number: CFP21518-POD ISBN: 978-1-6654-2109-6

## Copyright © 2021, TSI Press, Inc. 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:
 CFP21518-POD

 ISBN (Print-On-Demand):
 978-1-6654-2109-6

 ISBN (Online):
 978-1-68524-111-7

ISSN: 2154-4824

#### **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



5G and beyond telco cloud: architecture and cybersecurity challenges, pp 1-6

by Yonas Engida Gebremariam, Daniel Gerbi Duguma, Hoon Yong Park, Ye Neung Kim, Bonam Kim and Ilsun You

A Survey of Modern Roadside Unit Deployment Research, pp 7-14

by Sean M Ackels, Patrick J Benavidez and Mo Jamshidi

ART: Automated Reclassification for Threat Actors based on ATTCK Matrix Similarity, pp 15-20 by Youngsup Shin, Kyoungmin Kim, Jemin J Lee and Kyungho Lee

An Assistive Tool For Fileless Malware Detection, pp 21-25

by Pramod Borana, Vikas Sihag, Gaurav Choudhary, Manu Vardhan and Pradeep Singh

An experimental study on energy-based control of rigid parallel series elastic actuator, pp 26-31 by Ujjal Krishnanand Mavinkurve, Seyed Amir Tafrishi, Ayato Kanada, Koki Honda, Yasutaka Nakashima and Motoji Yamamoto

Analysis and Prospect of the Development of TCM Theories under the Background of Big Data, pp 32-35

by Haiqiao Zhong, Linggui Jin, Yi Chen and Cheng Liu

Analysis of Current Situation of International Communication of Traditional Chinese Medicine Culture Assisted by Computer in the Age of Big Data—Taking Portugal as an Example, pp 36-39 by Nianhua Ye and Jing Yu

Analysis of Patella Movement and Posture During Knee Flexion Using a Depth Camera, pp 40-43 by Atsunori Uesaka, Kouki Nagamune, Takehiko Matsushita and Ryosuke Kuroda

Application of a Scaled Ground Vehicle in a Testbed of Heterogeneous Autonomous Systems, pp 44-49

by Alexander Ibarra, Patrick J Benavidez and Mo Jamshidi

**Automated Lung Cancer Classification Based on the Tissue Dielectric Property**, pp 50-54 by Meng Zhang, Zhongju Wang, Long Wang, Chao Huang and Xiong Luo

Automated registration of pre-operative head CT image and pathology images for osteoradionecrosis area estimation, pp 55-60

by Yukinobu Matsuoka, Kento Morita, Daisuke Takeda, Takumi Hasegawa and Tetsushi Wakabayashi

**Auxiliary Basketball Training System Based on Big Data**, pp 61-64 by Wei Hao

Behavior-Rule Specification-based IDS for Safety-Related Embedded Devices in Smart Home, pp 65--70

by Keon Yun, Philip Virgil B Astillo, Sangmin Lee, Jiyoon Kim, Bonam Kim and Ilsun You

Binary Vulnerability Mining Based on Long Short-Term Memory Network, pp 71-76 by Wenlei Ouyang, Meng Li, Qiqi Liu and Jianchao Wang

Clustering and Evolution of Artificial Intelligence Technology in International Sports, pp 77-79 by Jianhua Zhang

Coaxial Magnetic Drivetrain for Robotic Stingrays, pp 80-85

by Jordan Nowell, Jack Connor, Benjamin Champion and Matthew Joordens

Comparison of Machine Learning Methods for Predicting Modified Total Shape Score in X-ray Radiography, pp 86-91

by Kohei Nakatsu, Kento Morita, Daisuke Fujita and Syoji Kobashi

Construction of Logistics Public Information Platform of Port Logistics Network based on Artificial Intelligence, pp 92-96

by Aihong Li

Consumerism in the Digital Age, pp 97-99

by Qianjing Tang

Control of Slosh Instability: Experimental Verification with Underactuated Double Inverted Pendulum System, pp 100-105

by Arabinda Ghosh, Anjan Kumar Ray and Mo Jamshidi

Convolutional neural network based approach for static security assessment of power systems, pp 106-110

by Miguel Ramirez-Gonzalez, Felix Rafael Segundo Sevilla and Petr Korba

Cultivation of Humanistic Accomplishment of SPORT Majors in Colleges and Universities in the Information Age, pp 111-114

by Xiaoqang Wu

Design of a Bio-Inspired Pectoral Fin for Control of Robotic Fish, pp 115-120

by Jack Connor, Jordan Nowell, Jorg Schluter, Benjamin Champion and Matthew Joordens

Development of a Measuring System for Lateral Translation of the Knee Joint During Walking Using 6-axis Inertial Sensors, pp 121-124

by Tsubasa Abe and Kouki Nagamune

Development of an inspection system for waterway tunnels based on visual SLAM by an autonomous water robot, pp 125-130

by Cheng Tang, Ryota Inoue, Wei Hong Chin, Naoyuki Kubota and Naoyuki Takesue

Development of the Sensor Part Re-composition on the Salivary NO3- Measurement Device for the Evaluation of Mental Workload, pp 131-136

by Kenichi Kitamura, Koji Murai, Shin-ichi Wakida, Shuto Osaki and Takuya Kintoki

Effect of Human-Robot Interaction for Safety Driving on Driver's Self-Efficacy, pp 137-141

 $by\ Takenori\ Obo,\ Ryoya\ Hase,\ Kazuma\ Takizawa\ and\ Ryusei\ Masuda$ 

Efficient Network-Based Vaccination Strategies for Epidemic Control, pp 142-149

by Anahita Moradmand, Bahram Shafai and Milad Siami

Examination of Wide Area Control Methods to Face Inter-Area Oscillations, pp 150-155

by Felix Rafael Segundo Sevilla, Petr Korba and Mario R. A. Paternina

Exploration on the Integrated Teaching Construction of Mould Assembly and Adjustment Course Based on Information Technology, pp 156-159

by Yu Chen, Liang Zhou, Yang Yang and Xiaohai Qu

Extension of the Interface for Visual Feedback of Center of Foot Pressure in Insole Type Measurement Device, pp 160-163

by Shoei Nomura and Kouki Nagamune

Fault Diagnosis of Smart Grids Based on Deep Learning Approach, pp 164-169 by Halid Kaplan, K. Tehrani and Mo Jamshidi

Focus on Blockchain: Introduction, Benefits and Future Application Trends, pp 170-174 by Hao Liu, Lei Tao, Ruiwen Ji, Lejun Ji, Wei Yang and Yuanlong Cao

Generation of Artificial Movement Sensation in Ankle Joints with Vibration Stimulation, pp 175-179 by Kazuo Kiquchi and Taiki Yamasaki

Honeypot System for Automatic Reporting of Illegal Online Gambling Sites Utilizing SMS Spam, pp 180-185

by Moohong Min, Jemin J Lee, Hyunbeom Park and Kyungho Lee

Identifying characteristics of software vulnerabilities using machine learning analysis of vulnerabilities textual descriptions, pp 186-192

by Konstantin Izrailov, Mikhail Buinevich, Igor Kotenko and Alexander Yaroshenko

Impact of Artificial Intelligence on Preventive Treatment of Disease of TCM Based on Big Data, pp 193-196

by Linggui Jin, Haiqiao Zhong, Yi Chen, Cheng Liu and Xiaofang Wang

Innovative Dissemination of Broadcasting Documentaries from the Perspective of Cultural Memory Based on Digital Media Technology, pp 197-200 by  $Yanmei\ Li$ 

Intelligent Information Processing Technology in Teaching Reform of Computer Specialty, pp 201-205 by Xiangling Luo, Minguang Liu and Nan Liu

Intelligent capturing system for beast damage control, pp 206-210 by Wen Bang Dou, Cheng Hui Liu, Wei Hong Chin and Naoyuki Kubota

Investigation and Research on the Psychological Status of College Students Based on Big Data Analysis, pp 211-215

by Guoyong Liu and Li Hou

Load Shedding Frequency Management of Microgrids Using Hierarchical Fuzzy Control, pp 216-221 by Felix Rafael Segundo Sevilla, Josep M. Guerrero, Charalambos Konstantinou and Harold R. Chamorro

Modelling a Meta Smart City on Mars in Minecraft, pp 222-227 by Anthony Nolan, OAM

More and Faster Energy Transfer Capability for Battery Chargers of Electric Vehicles, pp 228-232 by K. Tehrani, Mahdi Bayati and Maryam Farahmandrad

Multimodal Data Streaming using Visual IoTs and We arables for Telerehabilitation and Teletreatment, pp 233-238

by Herbert Guzman, Victor Guzman, Max Kilger, Kevin Desai and Reenam Joshi

Path Optimization Development of Sports Industry Management Development under the Background of Artificial Intelligence Era, pp 239-243 by Jinsong Xiong

Reform of College Physical Education Model Based on Computer Technology, pp 244-247 by Chaozhi Yang

Rehabilitation Evaluation with Gait Analysis Mat, pp 248-253

by Yuma Iseri, Yutaka Hata, Naomi Yagi, Yoshiaki Saji and Yoshitada Sakai

Research on the Grass Cloth Embroidery Regeneration Development Strategies in the Information Age, pp 254-259

by Gaosheng Luo and Ling Lin

Routing Protocol Based on Link Stability in MANET, pp 260-264

by Zhihui Lin and Jie Sun

Secure Data Management using Distributed Storages for Stronger Cybersecurity in Cloud Service, pp 265-270

by Taek-Young Youn, Nam-Su Jho and Samuel Woo

Shape Memory Alloy Actuated Ankle Foot Orthosis for Reduction of Locomotion Force, pp 271-276 by Ahmad Alminnawi, Yo Kobayashi, Tomohiro Otani and Masao Tanaka

Study on Evaluation Support System for Ship Handling Simulator Training, pp 277-282 by Koji Murai, Kenichi Kitamura, Jie Wang, Xiao Fei Wen, Yibing Wang and Yang Qilei

The Application Prospects of Artificial Intelligence in the Field of Physical Education, pp 283-286 by Xingzhao Yuan

The Construction of University Teachers' Scientific Research Performance Evaluation System under Artificial Intelligence, pp 287-290

by Ermi Zhang and Wanbing Shi

The Risk Assessment of False Disclosure of financial Statements Based on the Mining of Vague Cross CheckingTake the Pharmaceutical Industry for Example, pp 291-295 by Naiwen Cao

The Vibration-induced Kinesthetic Illusion Enhanced by Functional Electrical Stimulation for Neurorehabilitation, pp 296-301

by Shouta Okunami, Koki Honda, Ayato Kanada, Yasutaka Nakashima and Motoji Yamamoto

UGV-UAV Coordination: Take-off, Landing and Formation Control, pp 302-307

by Arindam Singha, Anjan Kumar Ray and Arun Samaddar

Underwater Acoustic Positioning System using Ultrasonic Waves for Diving Support, pp 308-312 by Kodai Kaneko and Naoyuki Kubota

Uterine Movement Analysis Based on Velocity Information by Convolutional Neural Networks, pp 313-316

by Kentaro Mori, Yoshimitsu Tokunaga, Tetsuro Sakumoto, Akira Nakashima, Isamu Komesu and Yutaka Hata

Virtual Testing and Policy Deployment Framework for Autonomous Navigation of an Unmanned Ground Vehicle Using Reinforcement Learning, pp 317-322

by Tyrell C Lewis, Patrick J Benavidez and Mo Jamshidi