### 2021 20th International **Symposium on Communications** and Information Technologies (ISCIT 2021)

**Virtual Symposium** 19 – 22 October 2021



**IEEE Catalog Number: CFP21830-POD ISBN**:

978-1-6654-4959-5

#### 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:
 CFP21830-POD

 ISBN (Print-On-Demand):
 978-1-6654-4959-5

 ISBN (Online):
 978-1-6654-4958-8

ISSN: 2643-6140

#### 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



#### Regular Session: Image & Video Signal Processing

W1-1	Visual Tracking via Robust and Efficient Temporal Regularized Correlation Filters Zhao-Qian Tang, Kaoru Arakawa (Meiji University)	(pp. 1–5)
W1-2	Intra Prediction Fast Algorithm in AVS3 Based on Image Texture Characteristics  Yizhao Wang (Beijing University of Posts and Telecommunications), Chaobo Zhang (Peking University), Songlin Sun (Beijing University of Posts and Telecommunications)	(pp. 6–10)
W1-3	New Method of Detecting Calcification Regions in Dental Panoramic Radiographs Based on U-PraNet  Taito Murano, Mitsuji Muneyasu, Soh Yoshida (Kansai University), Kosin Chamnongthai (King Mongkut's University of Technology Thonburi), Akira Asano (Kansai University), Keiichi Uchida (Matsumoto Dental University)	(pp. 11–14)
W1-4	High Accuracy Video Foreground Segmentation Based on Feature Normalization Yuma Suzuki, Koichi Ichige (Yokohama National University)	(pp. 15–17)
Special	Session: Advanced Image Processing: Theo	ory and
Applica	ations (1)	
W2-1	Processing Time Reduction for Non-Local Median Filter Johei Matsuoka (Tokyo University of Technology)	(pp. 18–23)
W2-2	A Color Image Quantization Method Considering Chromatic Visual Impression  Yukiya Fukuda (Kyushu Institute of Technology), Ryosuke Kubota (National Institute of Technology, Ube College), Hakaru Tamukoh (Kyushu Institute of Technology)	(pp. 24–29)
W2-3	Proposal of Color Correction Method for Color Vision Deficiency Considering Correction Amount  Xi Cheng, Go Tanaka (Nagoya City University)	(pp. 30–31)
W2-4	Image Correction for Improving Visual Acuity Using Zernike-Based Vision Simulation Hiromu Tanaka, Hideaki Kawano (Kyushu Institute of Technology)	(pp. 32–36)
Special	Session: Advanced Image Processing: Theo	ory and
Applica	ations (2)	
W3-1	Tampered Regions Detection for JPEG Images by Using DCT Coefficients of Re-Saved Image  Mamoru Nakahara, Nariaki Imamura, Shota Furukawa (National Institute of Technology, Kagoshima College)	(pp. 37–40)
W3-2	Development of Human Pose Recognition System by Using Raspberry Pi and PoseNet Model  Kosei Yamao, Ryosuke Kubota (National Institute of Technology, Ube College)	(pp. 41–44)
W3-3	Step Detection for Walking Support of Visually Impaired Using Depth Images  Kento Yamamoto, Hideaki Kawano, Keishiro Kudo, Kohsuke Yanagihara, Noboru Nemoto,  Hiromasa Takakura (Kyushu Institute of Technology)	(pp. 45–48)

#### **Regular Session: System Design & Implementation**

Masaya Kojima, Masashi Nishiyama, Yoshio Iwai (Tottori University)

Tomoaki Oku, Kohei Fujita, Isao Nakanishi (Tottori University)

Tetsuya Honda, Hironobu Takano (Toyama Prefectural University)

Performance Improvement of User Verification Using Intra-Palm Propagation Signals

Characteristics of LBP-TOP Feature for Emotional Estimation by Micro-Expression

Koki Kato, Hironobu Takano (Toyama Prefectural University), Masahiro Saiko, Masahiro Kubo,

Development of Feature Extractor for Visible-Light Iris Recognition Using Multi-Task (pp. 83-88)

(pp. 79-82)

(pp. 89-91)

T2-4

T2-5

T2-6

**CNN** 

Hitoshi Imaoka (NEC)

T1-1	Development of Swarm Intelligence Leader-Vicsek-Model for Multi-AGV Path Planning Shiwei Lin, Ang Liu, Xiaoying Kong, Jack Wang (University of Technology Sydney)	(pp. 49–54)
T1-2	Comparison of Regression Methods on Data-Driven Controller Design for Systems with Observation Noise  Yoichiro Ashida (National Institute of Technology, Matsue College)	(pp. 55–58)
T1-3	Automatic Discrimination of Sound Propagation Path Using CNN for Underwater Acoustic Communication  Hiromu Etou, Shingo Yoshizawa (Kitami Institute of Technology)	(pp. 59–60)
T1-4	Winding System for Fishing Simulator with Real Rod Yoshimichi Honda, Arata Kawamura (Kyoto Sangyo University)	(pp. 61–66)
Special	Session: State-of-the-Art Biometric Technologies	
T2-1		
12-1	The Individual Characteristics of SSVEP for Modulated Flickers  Yuya Ozeki, Akitoshi Itai (Chubu University)	(pp. 67–69)
T2-2		,

## **Special Session: The Forefront of Information Communication Technology in the IEEE Hiroshima Section (1)**

T3-1	A Study on Utilizing Interval Arithmetic to Low-Voltage Distribution Grid Planning Hiroki Yokota, Yoshifumi Zoka, Naoto Yorino, Yutaka Sasaki (Hiroshima University), Shinya Fukuba (Tokyo Electric Power Company Holdings, Inc.), Satoru Akagi (TEPCO Power Grid, Inc.)	(pp. 92–96)
Т3-2	Development of an Energy Management System Tool for Disaster Resilience in Islanded Microgrid Networks  Samuel Kihembo Mumbere, Atsushi Fukuhara, Yutaka Sasaki, Ahmed Bedawy, Yoshifumi Zoka, Naoto Yorino (Hiroshima University)	(pp. 97–100)
Т3-3	Coverage Improvement by Adaptive Bandwidth Control Corresponding to Radio Channel Fluctuation in Multi-Band IoT Systems with Spectrum Sharing Systems Wataru Okada, Shigeru Tomisato, Kazuhiro Uehara (Okayama University)	(pp. 101–104)
Т3-4	SINR Improvement by Adaptive Bandwidth Control in Multi-Band IoT Systems with Spectrum Sharing  Kanta Haino, Shigeru Tomisato, Kazuhiro Uehara (Okayama University)	(pp. 105–108)

## **Special Session: The Forefront of Information Communication Technology in the IEEE Hiroshima Section (2)**

T4-1	Performance Improvement in User Verification Using Evoked Electroencephalogram by Imperceptible Vibration Stimuli	(pp. 109–113)
	Hirotomo Nakashima, Yoshiaki Shindo, Isao Nakanishi (Tottori University)	
T4-2	A Compensation Method for Both Amplitude Deviation of Frequency Response and Non-Linear Distortion in LED Visible Light Wireless Communications  Takeru Fukuyama, Shigeru Tomisato, Satoshi Denno, Kazuhiro Uehara (Okayama University)	(pp. 114–117)
T4-3	A Practical Control Strategy for Hybrid Static Var Compensator  Yuta Ohori, Hiroaki Yamada (Yamaguchi University), Fuka Ikeda, Masayuki Okamoto (National Institute of Technology, Ube College), Toshihiko Tanaka (Yamaguchi University)	(pp. 118–122)
T4-4	A Fault-Tolerant Routing Method for 2D-Torus Network-on-Chips Based on Bus Functions Taiki Tomita, Yota Kurokawa, Masaru Fukushi (Yamaguchi University)	(pp. 123–128)

# **Special Session: Recent Topics in Theory and Application of Digital Filters**

F1-1	Design of CSD Coefficient FIR Filters Using Diversified ACO	(pp. 129–133)
	Marika Morikawa, Kenji Suyama (Tokyo Denki University)	
F1-2	A Recurrence Formula for Low-Pass Maximally Flat IIR Digital Differentiator Design	(pp. 134–139)
	Takashi Yoshida (Tokyo Metropolitan College of Industrial Technology)	
F1-3	On Quantization Effects of Adaptive Notch Filters with Simplified Lattice Algorithm	(pp. 140–144)
	Shunsuke Koshita (Hachinohe Institute of Technology)	
F1-4	Performance Evaluation of Cross Correlation Functions Based on Correlation Filters	(pp. 145–149)
	Shunsuke Yamaki, Shuntaro Seki, Norihiro Sugita, Makoto Yoshizawa (Tohoku University)	

#### **Regular Session: Noise Reduction & Signal Separation**

F2-1	Implementation of Temperature Data Denoising Operator Using Steepest Descent Method	(pp. 150–153)
	Chien-Cheng Tseng (National Kaohsiung University of Science and Technology), Su-Ling Lee	
	(Chang-Jung Christian University)	
F2-2	Proposal of Adaptive Equalization Method with Noise Removal Function Based on Channel	(pp. 154–157)
	Estimation Using TLS Method	
	Ryusuke Kono, Minoru Komatsu, Hiroki Matsumoto (Maebashi Institute of Technology)	
F2-3	Pulse Wave Extraction Method Using Wavelet-BSS for Driver	(pp. 158–162)
	Seiya Ogawa, Minoru Komatsu, Hiroki Matsumoto (Maebashi Institute of Technology)	
F2-4	A Consideration on Optimal Non-Linear Function to Separate Auscultation Sounds Using	(pp. 163–168)
	BSS	
	Yuki Kubota, Minoru Komatsu, Hiroki Matsumoto (Maebashi Institute of Technology)	

# Special Session: Advanced Technologies and Applications in Wireless Communication Systems and Networks (1)

F3-1	Prototype Development of River Velocimetry Using Visual Particle Image Velocimetry for Smart Cities and Disaster Area Networks Shintaro Mori (Fukuoka University)	(pp. 169–171)
F3-2	Design and Implementation of Pulse-Based Protocol with Chirp Spread Spectrum for Massive IoT  Kentaro Honda (Tokyo University of Science), Ferdinand Peper (National Institute of Information and Communications Technology), Atsushi Nakamura, Aohan Li, Yusuke Ito (Tokyo University of Science), Kenji Leibnitz, Konstantinos Theofilis (National Institute of Information and Communications Technology), Naoki Wakamiya (Osaka University), Mikio Hasegawa (Tokyo University of Science)	(pp. 172–175)
F3-3	ECG Signal Reconstruction Using FMCW Radar and Convolutional Neural Network  Daiki Toda, Ren Anzai, Koichi Ichige (Yokohama National University), Ryo Saito, Daichi Ueki (Murata Manufacturing)	(pp. 176–181)
F3-4	A Comparison of Distributed Ledger Technologies in IoT: IOTA Versus Ethereum Xuan Chen, Ryota Nakada, Kien Nguyen, Hiroo Sekiya (Chiba University)	(pp. 182–187)
F3-5	Novel Frame Synchronization System for RGB-LED Parallel Transmission Employing BPPM Format  Jvo Matsushima, Tomohiro Kiguchi, Hiromasa Habuchi (Ibaraki University)	(pp. 188–192)

# Special Session: Advanced Technologies and Applications in Wireless Communication Systems and Networks (2)

F4-1	Analysis of Delayed Bit-Interleaved Coded Modulation for APSK	(pp. 193–198)
	Gou Hosoya (Waseda University)	
F4-2	A Combination Rule Based on Signal Power for Distributed Blind Equalization	(pp. 199–203)
	Sulin Chi, Tetsuya Shimamura (Saitama University)	
F4-3	Code Tracking System for Optical-Wireless Code-Shift-Keying Using Two-Layered PN	(pp. 204–207)
	Code	
	Ryouta Kuriyama, Hiromasa Habuchi (Ibaraki University)	
F4-4	Deep Leaning Aided Consensus Problem with Betweenness Centrality Approach	(pp. 208–213)
	Shoya Ogawa, Koji Ishii (Kagawa University)	