## **2021 IEEE 4th International** Conference on Multimedia **Information Processing and** Retrieval (MIPR 2021)

**Virtual Conference 8-10 September 2021** 



**IEEE Catalog Number: CFP21K85-POD ISBN**:

978-1-6654-4814-7

### 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:
 CFP21K85-POD

 ISBN (Print-On-Demand):
 978-1-6654-4814-7

 ISBN (Online):
 978-1-6654-1865-2

#### **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



### 2021 IEEE 4th International Conference on Multimedia Information Processing and Retrieval (MIPR)

### **MIPR 2021**

#### **Table of Contents**

Welcome Message from the MIPR 2021 Organizing Committee xiv		
IEEE 4th International Conference on Multimedia Information Processing and Retrieval (MIPR 2021)		
Oral Session 1		
Cross-Domain Person Re-identification with Identity-Preserving Style Transfer 1		
Weakly-Supervised Damaged Building Localization and Assessment with Noise Regularization .8  Maria Presa-Reyes (Florida International University, USA) and  Shu-Ching Chen (Florida International University, USA)		
A Manifold Semantic Canonical Correlation Framework for Effective Feature Fusion .15		
An Interactive Cooking Support System for Short Recipe Videos Based on User Browsing Behavior 21		
Takuya Yonezawa (Kwansei Gakuin University), Yuanyuan Wang (Yamaguchi University), Yukiko Kawai (Kyoto Sangyo University; Osaka University), and Kazutoshi Sumiya (Kwansei Gakuin University)		
Topic Detection for Video Stream Based on Geographical Relationships and Its Interactive Viewing System 28.  Itsuki Hashimoto (Kwansei Gakuin University), Yuanyuan Wang (Yamaguchi University), Yukiko Kawai (Kyoto Sangyo University; Osaka University), and Kazutoshi Sumiya (Kwansei Gakuin University)		

#### **Oral Session 2**

Augmented Tai-Chi Chuan Practice Tool with Pose Evaluation 35  Yao-Fu Jan (National Taiwan University, Taiwan), Kuan-Wei Tseng (National Taiwan University, Taiwan), Peng-Yuan Kao (National Taiwan University, Taiwan), and Yi-Ping Hung (National Taiwan University, Taiwan)
Learning-Based Tensor Decomposition with Adaptive Rank Penalty for CNNs Compression .42  Deli Yu (University of Chinese Academy of Sciences, China; Chinese  Academy of Sciences, China), Peipei Yang (Chinese Academy of Sciences,  China; University of Chinese Academy of Sciences, China), and  Cheng-Lin Liu (Chinese Academy of Sciences, China; University of  Chinese Academy of Sciences, China)
An Empirical Study of the Effects of Sample-Mixing Methods for Efficient Training of Generative Adversarial Networks 49.  Makoto Takamoto (Biometrics Research Laboratories, NEC, Japan) and Yusuke Morishita (Biometrics Research Laboratories, NEC, Japan)
TLV-Bandit: Bandit Method for Collecting Topic-Related Local Tweets .56
Oral Session 3
Multi-style Transfer Generative Adversarial Network for Text Images .63
FPX-G: First Person Exploration for Graph .70
Automated Video Labelling: Identifying Faces by Corroborative Evidence .77.  Andrew Brown (University of Oxford, UK), Ernesto Coto (University of Oxford, UK), and Andrew Zisserman (University of Oxford, UK)
Do as We Do: Multiple Person Video-to-Video Transfer .84
Poster Session
Robust Homomorphic Video Hashing .91 Priyanka Singh (Dhirubhai Ambani Institute of Information and Communication Technology, India)

Buy Me That Look: An Approach for Recommending Similar Fashion Products .97.  Abhinav Ravi (Data Sciences Myntra, India), Sandeep Repakula (Data Sciences Myntra, India), Ujjal Kr Dutta (Data Sciences Myntra, India), and Maulik Parmar (Data Sciences Myntra, India)
Exploring the Spatial-Visual Locality of Geo-Tagged Urban Street Images 104
Recalibration of Structured-Light RGB-D Cameras with Parametric Depth Error Correction .111  Peng-Yuan Kao (National Taiwan University, Taiwan), Sheng-Wen Shih  (National Chi Nan University, Taiwan), Yi-Ping Hung (National Taiwan  University, Taiwan), and Aye Mon Tun (National Chi Nan University,  Taiwan)
Transformer Based Neural Network for Fine-Grained Classification of Vehicle Color .118
One-Shot Example Videos Localization Network for Weakly-Supervised Temporal Action Localization .125
Stochastic Observation Prediction for Efficient Reinforcement Learning in Robotics .131
Predicting Human Behavior Using User's Contextual Embedding by Convolution of Action Graph 138 Aozora Inagaki (Meiji University, Japan), Shosuke Haji (Meiji University, Japan), Ryoko Nakamura (Meiji University, Japan), Ryo Osawa (Meiji University, Japan), Tomohiro Takagi (Meiji University, Japan), and Isshu Munemasa (CyberAgent, Inc., Japan)
Predicting Human Behavior with Transformer Considering the Mutual Relationship between Categories and Regions .144
XM2A: Multi-scale Multi-head Attention with Cross Talk for Multi-variate Time Series Analysis .151

Dynamic Local Geometry Capture in 3D Point Cloud Classification
Identifying Maturity Rating Levels of Online Books
A Hybrid Image Segmentation Approach for Thermal Barrier Coating Quality Assessments
A Novel Correntropy Analysis Method with Application to Multi-view Feature Representation 179 Lei Gao (Ryerson University, Canada) and Ling Guan (Ryerson University, Canada)
Dynamic Topic-Enhanced Memory Networks: Time-Series Behavior Prediction Based on Changing Intrinsic Consciousnesses
Multi-scale Context Interaction Learning Network for Medical Image Segmentation
Supplementing Omitted Named Entities in Cooking Procedural Text with Attached Images 1995 Yixin Zhang (Kyoto University, Japan), Yoko Yamakata (The University of Tokyo, Japan), and Keishi Tajima (Kyoto University, Japan)
Passenger Flow Estimation with Bipartite Matching on Bus Surveillance Cameras
A Multi-modal Dataset for Analyzing the Imageability of Concepts Across Modalities
Demo Session
Practice-Oriented Real-time Person Occurrence Search System

Pop'n Food: 3D Food Model Estimation System from a Single Image	223
Are Theme Songs Usable for Anime Retrieval?  Naoto Homma (Nihon University, Japan), Aiko Uemura (Nihon University, Japan), and Tetsuro Kitahara (Nihon University, Japan)	227
Ad Hoc Search on Statistical Data Based on Categorization and Metadata Augmentation  Taku Okamoto (Graduate School of Kyoto Sangyo University) and Hisashi  Miyamori (Graduate School of Kyoto Sangyo University)	231
Integrated Cloud-Based System for Endangered Language Documentation and Application  Min Chen (University of Washington Bothell, USA), Jignasha Borad  (University of Washington Bothell, USA), Mizuki Miyashita (University  of Montana, USA), and James Randall (University of Montana, USA)	235
Kyoto Sightseeing Map 2.0 for User-Experience Oriented Tourism	239
A Fact-Checking Assistant System for Textual Documents	243
Special Session: Multi-modal Techniques for Multimedia	
Special Session: Multi-modal Techniques for Multimedia  Detection of the Stacked Objects Based on Mask R-CNN  Jun Wu (Hubei University of Technology, China), Chengtian Yu (Hubei University of Technology, China), Zhixi Bao (Hubei University of Technology, China), and Chunzhi Wang (Hubei University of Technology, China)  China)	N/A
Detection of the Stacked Objects Based on Mask R-CNN	
Detection of the Stacked Objects Based on Mask R-CNN  Jun Wu (Hubei University of Technology, China), Chengtian Yu (Hubei University of Technology, China), Zhixi Bao (Hubei University of Technology, China), and Chunzhi Wang (Hubei University of Technology, China)  Socially Aware Multimodal Deep Neural Networks for Fake News Classification  Saed Rezayi (University of Georgia, USA), Saber Soleymani (University of Georgia, USA), Hamid R. Arabnia (University of Georgia, USA), and	253
Detection of the Stacked Objects Based on Mask R-CNN  Jun Wu (Hubei University of Technology, China), Chengtian Yu (Hubei University of Technology, China), Zhixi Bao (Hubei University of Technology, China), and Chunzhi Wang (Hubei University of Technology, China)  Socially Aware Multimodal Deep Neural Networks for Fake News Classification Saed Rezayi (University of Georgia, USA), Saber Soleymani (University of Georgia, USA), Hamid R. Arabnia (University of Georgia, USA), and Sheng Li (University of Georgia, USA)  Clustering Trajectories via Sparse Auto-Encoders  Xiaofeng Wu (Wuhan University of Technology, China), Rui Zhang (Wuhan University of Technology, China), and Lin Li (Wuhan University of	253 260 nined

# Special Session: Multimedia for RETech 2021: Innovations of Housing and Real Estate Industries

Constructing a Highly Accurate Price Prediction Model in Real Estate Investment using LightGBM .273
Light(CBM-27/3
Tianqi Li (DEVEL Co., Ltd.), Takuya Akiyama (DEVEL Co., Ltd.), and Liang Wei (Tokyo Institute of Technology)
Entity Resolution of Japanese Apartment Property Information Using Neural Networks 277  Youiti Kado (At Home Lab Co., Ltd., Japan), Takashi Hirokata (At Home Lab Co., Ltd., Japan), Koji Matsumura (At Home Lab Co., Ltd., Japan),  Xueting Wang (The University of Tokyo, Japan), and Toshihiko Yamasaki  (The University of Tokyo, Japan)
Predicting Inquiry from Potential Renters using Property Listing Information .283
Effect of Walkability on Rental Prices in Tokyo .287
Preference Analysis of Shopping Malls' Followers and Keyword Recommendation on Twitter .29 Mantaro Yamada (The University of Tokyo, Japan), Xueting Wang (The University of Tokyo, Japan), and Toshihiko Yamasaki (The University of Tokyo, Japan)
Workshops The 3rd IEEE Workshop on Artificial Intelligence for Art Creation (AIART'21)
(AIAKI 21)
Rethinking of Intangible Cultural Heritage Teaching with Creative Programming in China 299  Peng Tan (Guangdong University of Technology, Guangdong), Yi Ji (Guangdong University of Technology, Guangdong), and Yuqing Xu (School of Art and Design, Guangdong University of Technology, Guangdong)
of the unit Beorgin, Guangueng Envectoring of Technology, Guangueng,
A Probabilistic and Random Method for the Generation of Bai Nationality Music Fragments .303.  Pengcheng Shang (China University of Geosciences, China), Shan Ni (China University of Geosciences, China), and Li Zhou (China University of Geosciences, China)
A Probabilistic and Random Method for the Generation of Bai Nationality Music Fragments .303.  Pengcheng Shang (China University of Geosciences, China), Shan Ni (China University of Geosciences, China), and Li Zhou (China

AIBO - A Sicko AI Brainwave Opera .320
Layout Structure Assisted Indoor Image Generation 323
Text Style Transfer With Decorative Elements 330.  Yuting Ma (NLPR, Institute of Automation, CAS; School of Artificial Intelligence, UCAS), Fan Tang (Jilin University), Weiming Dong (NLPR, Institute of Automation, CAS; CASIA-LLVision Joint Lab), and Changsheng Xu (NLPR, Institute of Automation, CAS; CASIA-LLVision Joint Lab)
Distinguishing the "strong/weak" in the 60 Jingfang Tones and Their Optimal Distribution .337 Gen-fang Chen (Zhejiang Conservatory of Music, China)
MemoMusic: A Personalized Music Recommendation Framework Based on Emotion and Memory 341
Luntian Mou (Beijing University of Technology, China), Jueying Li (University of California, Irvine), Juehui Li (University of California, Irvine), Feng Gao (Peking University, China), Ramesh Jain (University of California, Irvine), and Baocai Yin (Beijing University of Technology, China)
Dance to Music: Generative Choreography with Music using Mixture Density Networks .348  Rongfeng Li (Beijing University of Post and Telecommunication, China),  Meng Zhao (Beijing University of Post and Telecommunication, China),  Xianlin Zhang (Beijing University of Post and Telecommunication,  China), and Xueming Li (Beijing University of Post and  Telecommunication, China)
Music Emotion Recognition through Sparse Canonical Correlation Analysis .354
Violent Scene Detection of Film Videos Based on Multi-task Learning of Temporal-Spatial Features 360
Design and Development of an Intelligent Pet-Type Quadruped Robot .366

Smart Portable Musical Simulation System Based on Unified Temperament .37.2	
Respective Volumetric Heatmap Autoencoder for Multi-person 3D Pose Estimation .377  Minghao Wang (Communication University of China, China), Long Ye (Communication University of China, China), Fei Hu (Communication University of China, China), Li Fang (Communication University of China, China), Wei Zhong (Communication University of China, China), and Qin Zhang (Communication University of China, China)	
Culture-Inspired Multi-modal Color Palette Generation and Colorization: A Chinese Youth Subculture Case .382	
MUSE: Textual Attributes Guided Portrait Painting Generation .386.  Xiaodan Hu (University of Illinois at Urbana-Champaign, USA), Pengfei Yu (University of Illinois at Urbana-Champaign, USA), Kevin Knight (DiDi Labs), Heng Ji (University of Illinois at Urbana-Champaign, USA), Bo Li (University of Illinois at Urbana-Champaign, USA), and Honghui Shi (University of Illinois at Urbana-Champaign, USA)	
Exploring the Application of AI-Generated Artworks for the Study of Aesthetic Processing 39, Vanessa Utz (Simon Fraser University, Canada) and Steve DiPaola (Simon Fraser University, Canada)	?3
The Joint Workshop of the Third IEEE Workshop on Fake Multir and First Workshop on Cross Modal Person Reidentification (Join Workshops: FakeMM '21 & CM-PRID '21)  Detecting and Preventing Faked Mixed Reality .399.  Fabian Kilger (Technical University of Munich; Chair for IT Security), Alexandre Kabil (IMT Atlantique; Chair Cyber CNI), Volker Tippmann (Fraunhofer Gesellschaft; International Innovation Markets), Gudrun Klinker (Technical University of Munich; FAR Augmented Reality Research Group), and Marc-Oliver Pahl (Technical University of Munich)	nt 
An Introduction to the JPEG Fake Media Initiative .406	
Detection of AI-Synthesized Speech Using Cepstral & Bispectral Statistics .412	

Hardness Prediction for More Reliable Attribute-Based Person Re-identification 418
Institute of Technology (KIT), Germany)
Author Index 425