

2021 3rd International Symposium on Smart and Healthy Cities (ISHC 2021)

**Toronto, Ontario, Canada
28-29 December 2021**



**IEEE Catalog Number: CFP21BL9-POD
ISBN: 978-1-6654-6744-5**

**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:	CFP21BL9-POD
ISBN (Print-On-Demand):	978-1-6654-6744-5
ISBN (Online):	978-1-6654-6743-8

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

2021 3rd International Symposium on Smart and Healthy Cities (ISHC) **ISHC 2021**

Table of Contents

Message from the General Chairs	ix
Message from the Program Chairs	x
Committees	xi
Reviewers	xii

2021 3rd International Symposium on Smart and Healthy Cities (ISHC)

Application of BIM and GIS in Emergency Management of Smart Cities	1
<i>Yichuan Zhang (Sichuan University of Arts and Science, China) and Jie Li (Sichuan University of Arts and Science, China)</i>	
Discussion on Calculation Method of Equivalent Area of Building Lightning Strike	6
<i>Ling Jin (Shanghai Pudong New Area Meteorological Bureau, China)</i>	
Evaluation and Optimization of Smart Rural Logistics System in Zhengzhou City under the Concept of Smart City	9
<i>Mengzhuo Zhang (Zhengzhou College of Finance and Economics, China) and Juan Zheng (Zhengzhou College of Finance and Economics, China)</i>	
An Study on Clustering Algorithm-Driven Product Innovation	17
<i>Mingyang Li (High School of Shandong Experiment, China), Yueen Li (Shandong Jianzhu University, China), and Jiacheng Zhang (Shandong Jianzhu University, China)</i>	
The Network Ecological Governance Model in Smart City	23
<i>Shixiu Cui (Shanghai University of Political Science and Law, China)</i>	
Intelligent Parking Lot Assistance System Based on Machine Vision and A* Algorithm	28
<i>Lin Hu (Shenzhen Technology University) and Zhiping Liu (Shenzhen Technology University)</i>	
A Novel Car-Following Model by Considering Driver's Behaviors with Fuzzy Inference Method ...	36
<i>Yadan Zhou (Xi'an University of Technology, China) and Rong Fei (Xi'an University of Technology, China)</i>	
A General Cloud Service Architecture of Smart City Based on Component Assembling	41
<i>Wuhao Guo (Asiainfo Security Technologies Co., Ltd., China), Min Zhu (Nanjing LES Information Technology Co.Ltd, China), and Desheng Qi (Nanjing Normal University, China)</i>	

Analysis of Carbon Emission Status in Building Sector of One Province in China	47
<i>Haowei Xing (Zhejiang University, PR China), Weijia Feng (Zhejiang University, PR China), Jianchao Zhang (Zhejiang University, PR China), Yuqian Wang (Zhejiang University, PR China), and Yi Yang (Zhejiang University, PR China)</i>	
Construction Path of Smart Medical System for the Aged in Community Based on Internet	52
<i>Shuang Liang (Jiangsu Health Development Research Center, China), Yan Liu (Jiangsu Health Development Research Center, China), Yongquan Li (Jiangsu Health Development Research Center, China), Yan Cheng (Jiangsu Health Development Research Center, China), Dingjie Zhou (Jiangsu Health Development Research Center, China), Chun Yang (Jiangsu Health Development Research Center, China), and Qin He (Nanjing Positive Health Eldercare Service Center, China)</i>	
The Sensorless Nursing System Based on 5G Internet of Things	57
<i>Hong Zhang (Tongji University, China), Qiangsheng Zhang (Suzhou Mylight Intelligent Technology Co., Ltd., China), Zhifeng Diao (Tongji University, China), and Fanglei Sun (ShanghaiTech University, China)</i>	
Point Cloud Splicing Based on 3D-Harris Operator	61
<i>Yu Zhong (State Grid Jiangsu Electric Power Engineering Consulting Co., China), Fan Bai (State Grid Jiangsu Electric Power Engineering Consulting Co., China), Yong Liu (State Grid Jiangsu Electric Power Engineering Consulting Co., China), Lei Huang (State Grid Jiangsu Electric Power Engineering Consulting Co., China), Xing Yuan (State Grid Jiangsu Electric Power Engineering Consulting Co., China), YuBing Zhang (State Grid Jiangsu Electric Power Engineering Consulting Co., China), and JinHang Zhong (Xi'an Jiaotong University, China)</i>	
A Study on Data-Driven Product Innovation Model	67
<i>Yueen Li (ShandongJianzhu University, China), Jin Gu (ShandongJianzhu University, China), Na Liu (ShandongJianzhu University, China), and Xinzhi Han (ShandongJianzhu University, China)</i>	
Short Text Classification via Hypergraph Convolution Network	72
<i>Yunju Zhang (Anshun Power Supply Bureau of Guizhou Power Grid Co., Ltd., China), Ming Guo (Anshun Power Supply Bureau of Guizhou Power Grid Co., Ltd., China), Qiang Yan (Anshun Power Supply Bureau of Guizhou Power Grid Co., Ltd., China), and Guangyou Shen (Anshun Power Supply Bureau of Guizhou Power Grid Co., Ltd., China)</i>	
Segmentation of 3D Point Clouds Based on Boundary Refined Supervoxel	77
<i>Jingyuan Yu (Shanghai University, China), Qinghua Yang (Shanghai University, China), Xiaowei Tu (Shanghai University, China), and Liyong Liu (Shanghai University, China)</i>	
Commercial Application of XR and Digital Twin Technology in Smart City	84
<i>Shujing Gao (Tianjin Normal University, China)</i>	
Human Identification Based on mmWave Radar Using Deep Convolutional Neural Network ...	90
<i>Baori Zhou (Fudan University, China), Jicun Lu (Fudan University, China), Xuping Xie (SGR Semiconductors Inc., China), and Hua Zhou (Fudan University, China)</i>	
Research on Product Kansei Intention Model based on BP Neural Network	95
<i>Yueen Li (Shandong Jianzhu University, China), Qi Feng (Shandong Jianzhu University, China), Shengnan Wang (Shandong Jianzhu University, China), Xinzhi Han (Shandong Jianzhu University, China), and Lei Yang (Shandong Jianzhu University, China)</i>	

Research on the Location and Path Optimization of Joint Distribution of Fresh Food Cold-Chain Logistics in the Context of Big Data	99
<i>Zhong Zheng (Nanning University, China) and Wenting Huang (Nanning University, China)</i>	
Research on Climate Prediction Based on Deep Learning	107
<i>Wenting Song (National University of Defense Technology, China) and Xin Ma (National University of Defense Technology, China)</i>	
Object Geometric Primitives Detection from 3D Point Clouds Based on the Profiles on Cutting Planes	110
<i>Liyong Liu (Shanghai University, China), Xiaowei Tu (Shanghai University, China), Qinghua Yang (Shanghai University, China), and Jingyuan Yu (Shanghai University, China)</i>	
Deep User Interest Mining Network Based on Attention Mechanism and Deep Learning	116
<i>Jipeng Li (Qilu University of Technology (Shandong Academy of Sciences), China)</i>	
Exploring Neighborhood Service and Development Strategies by Multi-Dimensional Sentiment Analysis of Online Restaurant Review	120
<i>Chang Liu (College of Design and Innovation, Tongji University, P.R.China), Lei Li (College of Electronic and Information Engineering, Tongji University, P.R.China), Chen Shan (College of Electronic and Information Engineering, Tongji University, P.R.China), Xinyu Hu (College of Electronic and Information Engineering, Tongji University, P.R.China), Zhifeng Diao (College of Design and Innovation, Tongji University, P.R.China), and Mao-en He (College of Design and Innovation, Tongji University, P.R.China)</i>	
Analysis on the Management of Enterprise Science and Technology Investment Core Elements Based on BP Neural Network Model—Taking the Scientific and Technological Investment of UAV Aerial Survey Technology as an Example	126
<i>Qifan Wu (PowerChina Chengdu Engineering Corporation Limited, China), Lei Dai (PowerChina Chengdu Engineering Corporation Limited, China), and Jinghua Xi (PowerChina Chengdu Engineering Corporation Limited, China)</i>	
A Police Resource Optimization System Based on Intelligence Research, Judgment and Analysis	131
<i>Shuo Wen (Guangdong Police College, Guangzhou, China), Qi Wu (Guangdong Police College, Guangzhou, China), Peixin Wang (Guangdong Police College, Guangzhou, China), Zhilong Ye (Guangdong Police College, Guangzhou, China), Jinying Zheng (Guangdong Police College, Guangzhou, China), Weiting Huang (Guangdong Police College, Guangzhou, China), Xi Li (Guangdong Police College, Guangzhou, China), Shangxuan Jiang (Guangdong Police College, Guangzhou, China), and Xiaomin Li (Guangdong Police College, Guangzhou, China)</i>	
Learning Attention Augmented Spatial-Temporal Normality for Video Anomaly Detection	137
<i>Yang Liu (Fudan University, China), Shuang Li (Tianjin University, China), Jing Liu (Fudan University, China), Hao Yang (Fudan University, China), Mengyang Zhao (Fudan University, China), Xinhua Zeng (Fudan University, China), Wei Ni (Shanghai East-bund Research Institute on NSAI, China), and Liang Song (Fudan University, China)</i>	

A Survey of Recent Advances in Driving Behavior Analysis	145
<i>Jing Liu (Fudan University, China), Yang Liu (Fudan University, China), Chengwen Tian (Fudan University, China), Donglai Wei (Fudan University, China), Mengyang Zhao (Fudan University, China), Wei Ni (Shanghai East-bund Research Institute on NSAI, China), Xinhua Zeng (Fudan University, China), and Liang Song (Fudan University, China)</i>	
A Method of Dynamic Traffic Scene Reconstruction Based on Roadside Lidar	158
<i>Fengxiang Rong (Fudan University, China) and Huiliang Shang (Fudan University, China)</i>	
DXICP: A Fast Registration Algorithm for Point Cloud	163
<i>Dongfang Xie (Fudan University, China), Liang Song (Fudan University, China), and Huiliang Shang (Fudan University, China)</i>	
Emotion Classification from Short-Term EEG Signals in Deep Learning	169
<i>Yanjing Mao (Fudan University, China), Liang Song (Fudan University, China), and Xinhua Zeng (Fudan University, China)</i>	
A Novel Energy-Saving Control Strategy for Air-Conditioning Water System	174
<i>Jue Wang (Shanghai University of Electric Power, China), Chengxin Pang (Shanghai University of Electric Power, China), and Xinhua Zeng (Fudan University, China)</i>	
A Low-Cost Full-Spectrum Water Quality Real-Time Monitoring System	182
<i>Zhicheng Zhou (Shanghai Kino-mems Co., Ltd., China), Jiehui Li (Shanghai Normal University, China), Zhihui Chen (Shanghai AiSeed Semiconductor Co., Ltd., China), and Xinming Ji (Fudan University, China)</i>	
A Scalable Indoor 3D Reconstruction Method Based on RGB-D	187
<i>Wei Zhu (Fudan University, China), Wei Ni (Shanghai East-bund Research Institute on NSAI, China), and Liang Song (Fudan University, China)</i>	
Feature Selection Based on Semantic Information in Complex Indoor Environment	192
<i>Yuxi Ying (Fudan University, China), Wei Zhu (Fudan University, China), Huiliang Shang (Fudan University, China), and Liang Song (Fudan University, China)</i>	
Fast Reconstruction and Optimization of 3D Temperature Field Based-on Kriging Interpolation	198
<i>Kang Li (Shanghai University of Electric Power, China), Xin Li (Shanghai University of Electric Power, China), Chengxin Pang (Shanghai University of Electric Power, China), and Xinhua Zeng (Fudan University, China)</i>	
A Hybrid Model for Multi-Step Prediction of Building Energy Load Based on EWT Extraction and LSTM	204
<i>Zheng Fang (Shanghai University of Electric Power, China), Chengxin Pang (Shanghai University of Electric Power, China), and Xinhua Zeng (Fudan University, China)</i>	
Self-Training Two-Stage 3D Object Detection With Noisy Student	213
<i>LanJian Li (Fudan University, China), Wei Ni (Shanghai East-bund Research Institute on NSAI, China), Xinhua Zeng (Fudan University, China), and Liang Song (Fudan University, China)</i>	
Author Index	219