2nd Smart Cities Symposium (SCS 2019)

IET Conference Publications 758

Bahrain
24 – 26 March 2019

ISBN: 978-1-5108-9673-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2019) by the Institution of Engineering and Technology
All rights reserved.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact the Institution of Engineering and Technology
at the address below.

Institution of Engineering and Technology
P. O. Box 96
Stevenage, Hertfordshire
U.K. SG1 2SD

Phone: 01-441-438-767-328-328
Fax: 01-441-438-767-328-375

www.theiet.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PUBLIC FOOD PROJECT - FRAMEWORK FOR PUBLIC FOOD NETWORK FOR SMART CITIES 1
K. Dokic ; T. Lauc ; B. Radisic

INTERNET OF THINGS AND INTELLIGENT PELTIER COLD/HOT AIR CONDITIONING SYSTEM 7
M. M. M. Al-Khalidy and A. M. I. Ahmed

ETHNICITY RECOGNITION UNDER DIFFICULT SCENARIOS USING HOG 13
S. Al-Azani and E.-S. M. El-Alfy

IMPROVING OBFUSCATED KEY GENERATION PHASE FOR SECRET PAIRWISE VEHICULAR COMMUNICATION SESSIONS 18
S. Al-Shareeda and F. Ozguner

EVALUATION OF WEB APPLICATION SESSION SECURITY 24
J. Hasan and A. M. Zeki

A NOVEL APPROACH TO MITIGATE IOT GATEWAY DISCONNECTIVITY USING FALLBACK MECHANISM 28
H. Tarpara ; J. Kotak ; J. Pathak ; Y. Chudasama

A COMPARATIVE ANALYSIS ON SECURITY OF MQTT BROKERS 33
J. Kotak ; A. Shah ; A. Shah ; P. Rajdev

LITERATURE REVIEW FOR VIDEOCONFERENCING IN COURT "E-JUSTICE-KINGDOM OF BAHRAIN" 38
F. Ali and H. Al-Junaid

THE SMART MOSQUE OF THE ARABIAN GULF: SOLUTIONS FROM THE PAST FOR A SUSTAINABLE, ENERGY-EFFICIENT MOSQUE 43
H. E. Al-Khalifa

SMART CULTURAL HERITAGE: TECHNOLOGIES AND APPLICATIONS 49
M. Khalaf

LAUNCHING SMART CITIES TO SUPPORT THE ECONOMIC DIVERSIFICATION IN THE GCC REGION 55
G. A. Mousa ; E. A. Elamir ; A. M. Desoky

DESIGNING OF AN IMMACULATE SMART CITY WITH CLOUD BASED PREDICTIVE ANALYTICS 61
N. Sengupta and R. Chinnasamy

SCALABLE PARALLEL SVM ON CLOUD CLUSTERS FOR LARGE DATASETS CLASSIFICATION 68
M. S. M. Haque ; G. Latif ; M. R. Hasan ; M. Arifuzzaman ; S. S. Shafin ; Q. A. Rahman

EVALUATION OF BAYESIAN CLASSIFIER FOR SALT DOME DETECTION USING TEXTURE ANALYSIS 73
G. M. Binmakhashen ; H. Luqman ; M. Ahmed

USING GABOR FILTER BANK WITH DOWNSAMPLING AND SVM FOR VISUAL SIGN LANGUAGE ALPHABET RECOGNITION 79
G. M. Bin Makhashen ; H. A. Luqman ; E.-S. M. El-Alfy

MAGNETO-CALORIC-EFFECT-BASED QUASI-STATIC COOLING SYSTEM 85
A. Saad ; A. Jamal ; A. Othman ; K. Daif ; Z. Bahri ; O. Al-Abbasi ; M. Nabhan

BLOCKCHAIN SECURITY ARCHITECTURE: A REVIEW TECHNOLOGY PLATFORM, SECURITY STRENGTH AND WEAKNESS 90
L. Al-Abbasi and W. El-Medany

IOT SECURITY: A REVIEW OF CYBERSECURITY ARCHITECTURE AND LAYERS 95
H. Y. Ali and W. El-Medany

MPC TRACK FOLLOWER FOR SELF-DRIVING CARS 102
W. Farag and Z. Saleh

SMART EMERGENCY RESPONSE SYSTEM FOR ROAD ACCIDENTS WITH AUTOMATIC ACCIDENT DETECTION 108
A. Shubham ; K. Deogharia ; A. Bundela ; A. Chaturvedi ; L. Sharma ; S. Srivastava ; A. Kshitij

SMART TRAFFIC SIGN BOARDS (STSB) FOR SMART CITIES 114
D. P. Bhatt and M. Tiwari

MACHINE LEARNING BASED MODEL FOR TRAFFIC PREDICTION IN SMART CITIES 118
F. H. Alshamrani ; H. F. Syed ; M. A. Elhussein

SMART SOLUTIONS AND ARCHITECTURAL DESIGN: A FRAMEWORK FOR BUILDING SERVICE SYSTEMS' DESIGN 124
W. Abdelhameed and W. Saputra
SMART SUSTAINABLE NEIGHBOURHOOD DESIGN: A PROTOTYPE FOR BAHRAIN 128
F. A. Nickahdar and F. A. Al Khalifa
SUSTAINABLE SMART URBANISM INDICATORS IN BAHRAIN 134
F. A. Al Khalifa
THE ROLE OF MAKERSPACES AND SMART CITIZENS IN SHAPING BAHRAIN AS A SMART CITY 140
N. A. Almurbati
MULTI-POSITIONS CONTROL USING SMARTPHONE 145
S. A. Al-Mawsawi ; M. Almakana ; F. Alansari
ALLIANCING BETWEEN THE DOCUMENTING AND THE RENOVATION OF HISTORICAL BUILDINGS IN ACCELERATING ECONOMIC GROWTH IN BAHRAIN 149
I. H. Elghonaimy
SMART PARKING SYSTEM USING SENSORS AND CLOUD BASED NETWORK FOR SMART CITIES APPLICATIONS 155
V. Rajvanshi ; S. Chaturvedi ; D. Yadav ; L. Sharma
MMWAVE TECHNOLOGY: AN IMPETUS FOR SMART CITY INITIATIVES 159
S. Jaswal ; D. Yadav ; D. P. Bhatt ; M. Tiwari
SURVEY OF USING MOBILE CLOUD COMPUTING FOR SMART EDUCATION 163
A. Alalawi and A. Al-Omary
A REVIEW PAPER ON BATTERIES CHARGING SYSTEMS WITH THE STATE OF CHARGE DETERMINATION TECHNIQUES 167
A. T. Mohamed
EFFICIENT BANDWIDTH UTILIZATION USING RESERVED BITS OF TRANSMISSION CONTROL PROTOCOL HEADER 173
S. Garg ; P. Sharma ; D. Mehrotra
USING OF GPUS TO ENHANCE CMS EVENT DETECTION: CURRENT CHALLENGES AND FUTURE PROSPECTIVE 179
A. Subah ; A. M. Zeki ; A. Alqaddoumi ; M. Hammad
SUSTAINABILITY AND G.I.S. APPLICATION IN OPERATING SMART CAMPUSES IN THE SMART CITIES 184
I. H. Elghonaimy and W. E. Mahmoud
SMART CITY: A REVIEW OF MATURITY MODELS 190
B. S. Mohsin ; H. Ali ; R. Alkaabi
WEB AND MOBILE APPLICATIONS' TESTING USING BLACK AND WHITE BOX APPROACHES 200
Z. A. Hamza and M. Hammad
ELECTROENCEPHALOGRAPHY SYNTHESIS OF HAND MOVEMENT: EVENTS FEATURES DETECTION, CLASSIFICATION, FOR ROBOTICS APPLICATIONS 204
E. A. Mattar ; A. H. Alhamad ; M. A. Elhawy ; A. Khalid ; H. N. Alshomali
AN IMPROVED GRID TIED PHOTOVOLTAIC SYSTEM 210
M. Taleb ; N. Mansour ; K. Zehar
LOSS OF LOAD EXPECTATION CALCULATION FOR POWER PLANT 216
I. S. Qamber
ELECTRICAL CHARACTERIZATION AND VISIBILITY STUDY OF A DIESEL -PVWIND HYBRID POWER SYSTEM WITH THE ADDITION OF STORAGE DEVICES FOR A REMOTE AREA 220
A. T. Mohamed
CHARACTERIZATION AND IMPLEMENTATION OF BATTERY MANAGEMENT SYSTEM 225
A. T. Mohamed
ELECTROENCEPHALOGRAPHY ADAPTIVE CLASSIFICATION AND DECODING TECHNIQUES 231
M. Sallout and E. Mattar
A SMART SOLUTION TO PROBLEMS OBSERVED IN PARTITION-ROOM SETTING IN SAUDI UNIVERSITIES: A CONCEPTUAL MODEL 237
E. A. Alyahyan ; T. Z. Balharith ; M. A. Elhussein
SMART SELECTION OF VENDORS IN HEALTH SERVICES 243
F. A. Hussain and H. Al-Junaid
TRAFFIC MANAGEMENT SYSTEM USING VANET ON CLOUD AND SMART PHONE 248
A. J. Hasan and A. Al-Omary

SMART PARKING SOLUTION FOR CONGESTED AREAS: APPLICATION OF VERTICAL ROTARY SYSTEMS 252
U. Gazder ; A. Shehabi ; K. Fardan ; H. Alkhabbaz ; Z. Ibrahim
AN ADVANCED ROAD-LANES FINDING SCHEME FOR SELF-DRIVING CARS 257
W. Farag and Z. Saleh
AN ADVANCED VEHICLE DETECTION AND TRACKING SCHEME FOR SELFDRIVING CARS 263
W. Farag and Z. Saleh
ANALYSIS AND VISUALIZATION MODEL FOR A GPS DATASET OF MOVING VEHICLE 269
R. Singh ; G. K. Chadha ; P. Sharma ; V. Deep ; D. Mehrotra
SURVEY OF BLACKHOLE ATTACK ON MANET 276
A. Hameed and A. Al-Omary
THE USE OF DATA MINING TECHNIQUES IN CRIME PREVENTION AND PREDICTION 280
W. Al Saidi and A. M. Zeki
PARENTS' AWARENESS AND READINESS FOR SMART DEVICES' CYBERSECURITY 284
A. E. Al-Naser ; A. Bushager ; H. Al-Junaid
CYBER-SECURITY: FUTURE CHALLENGE FOR A SAFER AND SECURE SMART CITY 291
M. A. Jabbar and R. Aluvalu
TOWARDS A CLOUD ORIENTED TECHNOLOGICAL REFERENCE MODEL OF BAHRAIN 297
E. J. Adwan
MULTILAYERED ANTENNA DESIGN FOR SMART CITY APPLICATIONS 305
D. S. S. Satyanarayana and K. M. V. V. Prasad
RISKS OF USING SMART DEVICES FOR DRIVERS 312
U. Gazder ; V. Al-Malki ; M. S. Alam
STRUCTURAL HEALTH MONITORING (SHM) OF AGEING INFRASTRUCTURES IN BAHRAIN 316
M. S. Alam ; M. Arifuzzaman ; Y. Al-Malki
SMART TRANSPORTATION SYSTEM: MOBILITY SOLUTION FOR SMART CITIES 320
S. M. Al-Shariff ; M. S. Alam ; Z. Ahmad ; F. Ahmad
SMART EMERGENCY - A CONTEXTUAL FRAMEWORK FOR COGNITIVE UNDERSTANDING OF IOT DEVICES USING BIG DATA ANALYTICS 326
J. A. Al-Salmi ; A. A. Al-Foori ; A. Y. Al-Jahwari ; F. Hajamohideen
DECENTRALISED HIERARCHICAL APPROACH BASED SMART PARKING SYSTEM 330
B. D. M. Panicker ; J. A. George ; P. Surendran
OLD AL-SEEB SECTOR: A CONTEMPORARY APPROACH TO RE-DESIGN MAJOR URBAN AREAS 334
M. F. Al-Kazee ; R. A. Osman ; K. S. Al-Munaijri ; N. K. Al-Naabi
ADVANCED COMPOSITE MATERIALS FOR CORROSION FREE INFRASTRUCTURE CONSTRUCTION 340
M. S. Alam ; A. Hussein ; M. Arifuzzaman
THE EFFECT OF THE UNPLANNED EXPANSION OF THE URBAN DESIGN OF OMDURMAN CITY 344
A. A. Ibrahim
EXPERIENCING THE CITY: BEYOND THE MATERIAL 348
H. J. S. Mansoor
Author Index