4th Smart Cities Symposium (SCS 2021)

IET Conference Publications 791

Online
21-23 November 2021

ISBN: 978-1-7138-5961-1

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© (2021) by the Institution of Engineering and Technology
All rights reserved.

Printed with permission by Curran Associates, Inc. (2022)

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

Automated Recognition of Dental Caries Using K-Means and PCA Based Algorithm 1
Sandeep Kumar, Shilpa Rani, Rasveen Singh

Reconstruction of Wire Frame Model of Complex Images Using Syntactic Pattern Recognition 8
Shilpa Rani, Deepika Ghai, Sandeep Kumar

A Review: E-Nose and Air Purifier System Based on Emerging Technology for Smart City Applications 14
Sandeep Kumar, Shilpa Rani, Rasveen Singh

IOT Based Heart Defect Monitoring System 20
Belide Prudhvi Raj, Gade Sai Harshitha, Bhaskarabatla Archana, Sohan Eluri

IoT Based Solar Monitoring System for Smart City: An Investigational Study 25
M V V Prasad Kantipudi, Shilpa Rani, Sandeep Kumar

A Trustworthy Cloud Environment Using Homomorphic Encryption: A Review 31
Zainab Salman, Wael M Elmedany

Improved 2-Level Data Security Approach Using DNA Cryptography 37
I M Awwal, J A Ojekunle, O A Abisoye, G A Babalola, A B Olatunde, A O Shadrack

Smart Cities and Potential Legal Issues in Kingdom of Bahrain 42
Hanan Almawla, Fatema Janahi

Introducing Self-Sustainable Cloud Platform for Data Management and Extraction of Actionable Knowledge for Smart Healthcare Industry: A COVID-19 Case Study 47
Anuradha Thakarea, Mohit Burkuleb, Shravani Nimbolkarc, Marzieh Khakifiroozd

Distinguishing Between Traffic Crash White Spots and Black Spots Using Classification and Regression Trees 54
U Gazder, K J Assi

Speech Emotion Recognition 60
Doniparthi Sriharsha, Chalamalla Akhil Reddy, Puttapaka Kranthi Kumar, Ramagowni Siva Kumar

Software Testing Framework for ERP Systems Based on Agile Development 65
B Alkhaldi, M Hammad

File Based Malware Detection Using Ensemble Method 72
Punna Sai Teja Shashank, Shaik Manzur Elahi, Saadam Sai Sumanth, Bochu Dhanraj, G Suryanarayana

Mapping Features to Source Code Based on Execution Trace 77
Faisal Buzaid, Mustafa Hammad

Artificial Intelligence for Crowd Detection System: A Survey 83
Maram Saleh Alfaraj, Ebrahim Mattar

Design and Implementation of a Smart Low-Cost Breathing Assistive System Targeting COVID19 Patients 88
A Azzam, S Aljazeeri, A Alsaffar, M Jassim, Z Bahri

Deep Learning for Building Construction Floorplans 94
Aaed K Shahada, Ebrahim Mattar

Code Smell Severity Detection Using Machine Learning 100
Shaima Hejres, Mustafa Hammad

Note Taking Application with Optical Character Recognition and Bio-Metric Security 108
Madiraju Pranay Kashyap, Nallawar Sanket, Tammana Amrutha, Chiluka Akhila, Thimmapuram Madhuri

Autonomous Car Washing Station Based on PLC and HMI Control 114
Farhan Mumtaz, Atif Saeed, Muhammad Nabeel, Saim Ahmed

Survey on Load Balancing Techniques and Resource Scheduling in Cloud Computing 119
K L Raghavendhar Reddy, Amit Lathigara, Rajanikanth Aluvalu

Simulation of PLC Ladder Logic Programming for an Automated Glass Bottle Molding and Refilling Plant 125
Mustafa Mujahed Khan, Omar Marwan Abou Shawareb, Rajkumar Palaniappan, Vikneswaran Vijean, Fizza Ghulam Nabi, Ahmad Hesham Abou Shawareb, Nawal Kaleem Khan

An Efficient Crop Yield Prediction System Using Machine Learning Algorithm 131
Saiteja Kunchakuri, Saishivani Pallerla, Sathya Kande, Nageswara Rao Sirisala

ULIENet: User Localization in Indoor Environments Via Neural Networks 137
Qasem Abu Al-Haija, Ahmad Al Badawi

Analysis and Prediction of Accidents 142
Cheruku Deeksha, Devarapalli Manasa Reddy, K Samyuktha, Raman Dugyala

Assessment of Different Artificial Neural Networks for Predicting Bridge Deck Condition 146
N Elshaboury

Cybersecurity of Smart Cities: A Glimpse 152
M Lakhouil, A El Murabet, A Abtoy

Prediction and Classification of Traffic Data with KNN and RFR for a Smart Internet of Vehicles System 157
Aadhi Aadhavan, Afreen Ahmed, Valli Meenaa Vellaian, K P Dhanush, Sujatha Rajkumar

Automated Border Control Systems: A Literature Review 163
Nashiya Mamad Chaki, Mohammed W Ashour

Integration of Remote Sensing Techniques into Oil and Gas Upstream Operations: A Comparative Study 169
Kate S Isidro, Mohammed W Ashour

Object/Obstacles Detection System for Self-Driving Cars 175
Muhammad Qasim Siddiqui, Mohammed W Ashour

Digital Intelligent Virtual Assistant (DIVA) with Natural Speech and Accent Recognition 181
Juwairiya Sayed, Mohammed W Ashour

Fuzzy Modelling of Electroencephalography for Decoding Techniques 187
Hessa J Al-Junaid

Remote Sensing and GIS at the Heart of the Smart Management of El Jadida City (Morocco) 193
I El Mjiri, A Rahimi, A Bouasria

A Systematic Review on COVID-19 Vaccine and Statistical Analysis 197
Laasya Priya Reddy Mandapati, Mudrakola Swapna

Symptomatic Covid-19 Detection 203
Anwar Shaik, Jahnavi Suram, Raman Dugyala

Estimate the Performance of Applying Machine Learning Algorithms to Predict Defects in Software Using Weka 206
Fatima Alshaikh, Wael Elmedany

Water Quality Monitoring System in Aquaculture Environment Based on Internet of Things 212
M Udin Harun Al Rasyid, Nur Rosyid Mubtadai, Sritrusta Sukaridhoto, Romy Ardianto, Nurul Fahmi, Aditya Yogi Dwi Nugraha, Mohamad Faisal

Picture Quality Improvisation Using Image Dehazing for Improving Surveillance Frameworks 218
Paltya Anil Naik, Pyreddy Nikhil Kumar Redd, More Pavan Kalyan, Sunanda Yadla

Robust Real-Time Approach of Face Detection in Open Places 223
Nanzeen Sulthana, Simran Shaik, Nanam Vaishnavi, G S Prasada Reddy

Comparative Economic Analysis of District Cooling and Conventional Cooling Systems – Case Study in Diyar Al Muharraq (DAM) Development Project 229
A Ashoor Helal, A Y Abdalla

Anomaly Detection in Water Distribution Systems 236
Attuluri Harsha Vardhan, Bramhadevara Subramanyam, Mola Lakshmi Reddy, Gongalla Gowtham Reddy, A Ramesh

A Comparison Study of MABC, ACO, ABC and PSO Load Balancing Algorithms 240
Sureddy Shivani Reddy, Bejjanki Shravani, Kalakuntla Sreeja, Murlidher Mourya

Simple Realization of New Techniques in Generation of Energy 246
Khalaf Alzyoud, Ayman Al-Rawashdeh, Ali S Dalabeeh

Modelling Scenarios for Faulted Squirrel-Cage Six-phase Induction Machine (6PIM) 250
Mohamed Amine Fnaiech, Salwa Baserrah, Mohab Mangoud

E-Commerce Shopcart for Smart Cities 255
Nithin Katla, Sridhar Meesala, Ch Laasya Reddy, V Uma Maheswari

Schedule Recommendation System 261
Kotapally Sai Nath, Rahul Dev Bodiga, Manideep Soma, V Uma Maheswari

Utilization of BIM to Achieve Sustainable Building Designs in Bahrain 266
M H Shana'Ah, F A Al Khalifa

A Model to Predict Malicious Data in Smart Home Applications Using Deep Learning Algorithms 271
K S Niraja, Krishna Keerthi Chennam, R Madana Mohana, Gurram Venkata Siva Nandan

Post-Pandemic Sustainable and Smart Urbanism: A Review of Bahrain 276
M H Shana'Ah, F A Al Khalifa

Landscape of Morocco's Smart Cities Projects and Initiatives 282
M Talbi, A El Murabet, A Abtoy

Eco-Friendly Auto Lacing Smart Shoes for Fitness and Facile Navigation Using IoT 287
Shaik Rasool, Uma N Dulhare

Promoting Electric Vehicles in Small Islands Developing States for Energy Efficiency - A Case Study of Trinidad and Tobago 293
Suresh Vishwakarma, Ruchi Tyagi, Curtis Boodo

Image Captioning Using CNN and LSTM 300
Gourishetty Sairam, Mounika Mandha, Penjarla Prashanth, Polisetty Swetha

Youths' Awareness Towards Renewable Energy Resources in the Kingdom of Bahrain 304
M A Alaqal, F A Al Khalifa

Smart Cities Data Analysis Using Fog Computing 311
Krishna Keerthi Chennam, Rajanikanth Aluvalu, V Uma Maheswari, V Sowmya Devi

Sixth Sense Robot Controlled by Image Processing Using Open Source 317
Belide Prudhvi Raj, Surya Teja Kannegulla, Sohan Eluri

City-Based Approach for GPU Kernel Execution Trace Visualisation 322
Abdulla Ebrahim, Mustafa Hammad, Ahmed M Zeki, Abdulla Alqaddoumi

Application of AI on Moisture Damage of Modified Asphalt Binders 328
M Arifuzzaman, M Islam, M Hossain, M H Tito, M Anwar, A Al Fuhaid

Alzheimer's Disease Detection and Classification Using Machine Learning Techniques 333
Mrinal Bachute, Nishad Vyas, Saanil Khanna, Keta Modi, Chinmay Katpatal

Evaluating Sustainable and Smart Urbanism in Bahrain 340
S R Job, F A Al Khalifa

EEG-Based Emotion Classification Using Deep Neural Network 346
Mohammed Sallout, Ebrahim Mattar

Automatic Music Transcription Using CNN Neural Networks on Segmented Audio 354
Hasan H Aljamea, Ebrahim A Mattar

Handling Tactful Data in Cloud Using PKG Encryption Technique 359
Bhageerath Chakravorthy Gajarla, Aditya Vardhan Rebba, Karthik Shetty Kakathota, Mahesh Kummari, S Shitharth

Detecting Impersonators in Examination Halls Using AI 365
A Vishal, T Nitish Reddy, P Prahasit Reddy, S Shitharth

Detection of Plant Diseases and Nutritional Deficiencies from Unhealthy Plant Leaves Using Machine Learning Techniques 372
Debolina Nath, Pushan Kumar Dutta, Anup Kumar Bhattacharya

Text Summarization Using NLTK with GUI Interface 378
Sankineni Prathyusha, Soundarya Jadhav, Kalyan Kommu, Muni Sekhar Velpuru

Impact of Performance: SSD Vs YOLOV3 Machine Learning for Mask Detection and Temperature Sensing Device 382
Mohammed Majid M Al-Khalidy, Amna Mohammed, Rasha Nasser, Zainab Zuhair

An Improved Inelastic Nonlinear Modelling of Steel-Concrete Composite Beams Based on a Higher-order Beam Theory 389
Md Alhaz Uddin, Md Arifuzzaman, Muhammad Tariq Bashir, Ismail Saifullah

Fake Profile Identification Using ANN 396
Vivek Kulkarni, Donapati Aashritha Reddy, Pulikanti Sreevani, Rudaram Nikhil Teja

Hybrid Bad Smell Detection Approaches Based on Historical Changes of LOC 401
Hanan Alwadi, Mustafa Hammad

Feasibility of Using 3D Printed Formwork for Construction of Pier 407
M S Alam, E A Hasan, F A A Aziz, M Arifuzzaman

Structural Behavior of Non-Uniform Mat Foundation on Weak Sandy Soil 412
Zubair Imam Syed, Nada Issa Alkhatib, Md Arifuzzaman

Digitalization and Reviving the Water Frontage Following the Concept of Smart Cities After COVID 19 Pandemic 418
Islam Hamdi Elghonaimy, Dalia Hussein Eldardiry

Polarity Correlation to Estimate Underground Water Pipe Leak 425
Mostefa Ghassoul

Learning in Post-Covid Times: One Step Towards Interactive Learning Spaces 430
Burhan Basmah, Almadhoob Huda

Best Cloud Node Prediction and Matchmaking Using Cloud Resource Prediction Pattern 435
T Tamilvizhi, R Surendran, N Krishnaraj

Online Cloud Smart Service on Student Voting, Book Search and Educational Server 442
R Surendran, T Tamilvizhi, S Gowri

Design of Adaptive Mold Machine for Vacuum Forming Processes 448
Abdullah Fadi Albaitam, Noureddine Mansour, Salman Alaraibi

Roadmap of Green Internet of Things (IoT) and Its Services: Let Us Survey Starts with Smart Hotel Application 454
T Tamilvizhi, R Surendran, M Mathan Kumar

Design of a Light Stair-Climbing Mobile Carrier 461
K A Alomari, M F Abbas, B K Alisa, S H Alwadaei, Y T Alkhan, S Baserrah

Smart Game Development on Removal of Every K Player and Find the Winner Using Linked List Concepts 467
R Surendran, T Tamilvizhi, N Krishnaraj

Measurement of Variation of Ultraviolet Radiation Due to Different Greenhouse Gases Using Internet of Things 474
Subhradip Biswas, Satyadip Biswas, Satrajit Nandi, Raju Basak, Pushan Kumar Dutta#

Detection of Money Laundering in Bitcoin Transactions 478
Ahmad Al Badawi, Qasem Abu Al-Haija

Investigation of a Cleaned PV Panels for Two Regions 485
Isa S Qamber

A Hybrid (Grid-PV) Charging Power Station 490
Hala Ebrahim Hasan, Raghad Omar Dweirj, Maamar Taleb

An Automated Surface Water Cleaning Robot for Ponds and Water Reservoirs 499
Pushan Kumar Dutta, Sayan Nag, Mounodip Chakraborty, Samrat Nandy

Effect of Aspiration Versus Mechanical Suction in an Integrated Semi-Automated Sensor Actuator System to Reduce Barotrauma in Urgent Medical Condition 504
Pushan Kumar Dutta, Digantika Das

Internet of Things - Based Smart Campus – a Review 510
M V V Prasad Kantipudi, Suresh Velamuri

Cotton Disease Detection Based on Deep Learning Techniques 516
Gnyana Harshitha, Sandeep Kumar, Shilpa Rani, Arpit Jain

The Impact of Smart Sustainable Urbanism on the Real Estate Sector 522
M A Alaradi, F A Al Khalifa

Implementation of Convolutional Neural Network for Covid-19 Diagnosis 528
Mrinal Bachute, Niraj Maheswari, Lakshay Narang, Atharva Sunil, Saurabh Kewlani

Blockchain-Based IoT Security in Healthcare 534
Azhar Alsunbul, Wael M Elmedany

Securing IoT Data at Physical Layer by Using RC6 Encryption Technique 540
Afia Murad Ashraf, Wael Elmedany

Authentication in IoT Devices Using Blockchain Technology: A Review 548
Amreen Ashraf, Wael Elmedany

Security Threats of Application Programming Interface (API's) in Internet of Things (IoT) Communications 555
Shayma Altayaran, Wael Elmedany

An Intelligent Agent for E-Government Call Center 561
Latifa Mohd Sale Al-Abbasi, Wael Elmedany, Nabil M Hewahi

Benefit and Cost Analysis for Utilizing Machine Learning in Geospatial Projects 569
E A Alburshaid, M A Mangoud

Examining YOLO for Real-Time Face-mask Detection 574
Sarah Hraybi, Mostafa Rizk

Integration of Cloud with AI to Predict Crop Diseases 579
K Manikanta Vamsi, Ch Abhinav Chandu, S Santosh, S Shitharth

PharmServ: A Digital Platform to Facilitate Searching for Pharmaceuticals in Lebanon 584
Mostafa Badran, Sergio Kareh, Mostafa Rizk

Author Index