

# **2023 15th International Conference on Developments in eSystems Engineering (DeSE 2023)**

**Baghdad, Iraq  
9 – 12 January 2023**



**IEEE Catalog Number: CFP2356I-POD  
ISBN: 979-8-3503-3515-6**

**Copyright © 2023 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:	CFP2356I-POD
ISBN (Print-On-Demand):	979-8-3503-3515-6
ISBN (Online):	979-8-3503-3514-9

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## TABLE OF CONTENTS

"Industrie 4.0" and Smart Manufacturing: A State of the Art Review .....	1
<i>Ahmed Thamer Hassan, Amjad Barzan Abdulghafour, Luma Al-Kindi</i>	
Performance Comparison of an Implemented Wired and Wireless Micro Smart Grid.....	7
<i>Ahmed O. Abdulridha, Israa B. Al-Mashhadani, Shaimaa M. Hashim, Kaiser A. Reshak</i>	
Modify Multiple Object Detection and Tracking to Improve the Execution Time .....	13
<i>Rashad N. Razak, Hadeel N. Abdullah</i>	
Investigation on the Integrated Cloud and BlockChain (ICBC)Technologies to Secure Healthcare Data Management Systems .....	19
<i>Aymen M. Badr, Lamia C. Fourati, Samiha Ayed</i>	
A Hybrid Modified ABC-PSO Algorithm for Optimal Robotic Path Planner .....	27
<i>Nadia I. Khalil, Hadeel N. Abdullah, Layth A. Hassnawi</i>	
AI-Based Portable Gesture Recognition System for Hearing Impaired People Using Wearable Sensors .....	33
<i>Noor E. Al-Qaisy, Bilal R. Al-Kaseem, Yousif Al-Dunainawi</i>	
Proposed Deep Learning System for Arabic Text Detection and Recognition .....	39
<i>Ghufraan J. Salman, Mohammed S. M. Altaei</i>	
Deep Learning Model for Binary Classification of COVID-19 Based on Chest X-Ray .....	45
<i>Reham S. Saeed, Bashra C. Alwawi</i>	
A Hybrid Digital and Optical Double Color Image Encryption Scheme Using a Nine-Dimensional Chaotic System.....	50
<i>Rusul A. Muttashar, Raad S. Fyath</i>	
iCan: Psychological Look in Future Using Augmented Reality Technology .....	56
<i>Hessam Rastegari, Hoshang Kolivand, Peter Hawkins</i>	
Comparison of Machine Learning Algorithms for Classification of Late Onset Alzheimer's Disease .....	60
<i>Abbas S. Alatrany, Abir Hussain, Saad S. J. Alatrany, Jamila Mustafina, Dhiya Al-Jumeily</i>	
Advanced Optimization Techniques & Its Application in AI-Powered Breast Cancer Classification.....	65
<i>Surajit Das, Subhodeep Mukherjee</i>	
An Efficient Approach for Resilience and Reliability Against Cascading Failure .....	71
<i>Daniel Vistro, Attique U. Rehman, Zufishan Hameed</i>	
Preliminary Study: Professional Collaboration Application with Project Management Tools .....	77
<i>Tam K. Jun, Sathiapriya Ramiah</i>	
AD-Hoc Routing Protocols in WSN-WiFi Based IoT in Smart Home.....	82
<i>Shayma Wail Nourildean, Mustafa Dhia Hassib, Yousra Abd Mohammed</i>	
Enhancing Intrusion Prevention in Snort System .....	88
<i>Sarah Abdulrezzak, Firas Sabir</i>	

Inverse Kinematics Optimization for Humanoid Robotic Legs Based on Particle Swarm Optimization.....	94
<i>Hayder S. Radeaf, Mohammed Z. Al-Faiz</i>	
Deep Learning-Based Speech Enhancement Algorithm Using Charlier Transform.....	100
<i>Sally A. Jerjees, Hala J. Mohammed, Hayder S. Radeaf, Basheera M. Mahmmod, Sadiq H. Abdulhussain</i>	
Hybrid Zero-Knowledge Access Control System in e-Health.....	106
<i>E. Chin, S. Amin, Intan Kamsin, N. Zainal</i>	
A Complete Log Files Security Solution Using Anomaly Detection and Blockchain Technology .....	112
<i>Tshun K. Chan, Intan F. B. Kamsin, Salmiah Amin, Nur K. Zainal</i>	
An Intelligent Routing Approach for Multimedia Traffic Transmission Over SDN.....	118
<i>Mohammed Al Jameel, Triantafyllos Kanakis, Scott Turner, Ali Al-Sherbaz, Wesam S. Bhaya, Mohammed Al-Khafajiy</i>	
Dezvent - Digitalizing Attendance System with 2FA and Face Recognition Implementation.....	125
<i>Julia Juremi, Zoe L. M. Yi</i>	
A Comparative Time Series Analysis of the Different Categories of Items Based on Holidays and Other Events.....	131
<i>Shatha Ghareeb, Mohamed Mahyoub, Jamila Mustafina</i>	
Optimal Sensor Placement Strategy for Structural Health Monitoring with Application of the Aqueduct El Hnaya of Carthage.....	137
<i>Wael Doghri, Ahlem Saddoud, Lamia Chaari</i>	
Recommendations for Developing an Affordable IoT-Based Flood Monitoring and Early Warning System.....	143
<i>Krishan S. Pillay, Kamalanathan Shanmugam, Muhammad E. Rana</i>	
Design and Implementation of Algorithmic Stock Trading.....	149
<i>P. Blackmun, Sahar Al-Sudani, Dhiya Al-Jumeily</i>	
Automated Plant Disease Diagnosis in Apple Trees Based on Supervised Machine Learning Model.....	160
<i>Palash Aich, Ali Al Ataby, Mohamed Mahyoub, Jamila Mustafina, Yog Upadhyay</i>	
AIRBNB Price Prediction Using Machine Learning.....	166
<i>Mohamed Mahyoub, Ali Al Ataby, Jamila Mustafina, Yog Upadhyay</i>	
Abstract Pattern Image Generation Using Generative Adversarial Networks .....	172
<i>Mohamed Mahyoub, Friska Natalia, Sud Sudirman, Sadiq H. Abdulhussain, Basheera M. Mahmmod</i>	
Analysis of Feature Selection and Phishing Website Classification Using Machine Learning .....	178
<i>Shatha Ghareeb, Mohamed Mahyoub, Jamila Mustafina</i>	
Sign Language Recognition Using Deep Learning .....	184
<i>Mohamed Mahyoub, Friska Natalia, Sud Sudirman, Jamila Mustafina</i>	
The Acceptance and Readiness of Micro-Credentials and Its Barriers in the Tech-Related Job Market in Malaysia.....	190
<i>Koe Yueh, Intan F. Kamsin, Jerry Fuh</i>	

Identifying a Student as a Subject of Educational Activity: Methodology and Web-Based Application .....	196
<i>Natalya Chernova, Raisa Akhunzianova, Abbas Alatrani, Jamila Mustafina</i>	
Predicting the Effectiveness of ‘stop and Search’ Police Interventions Using Advanced Data Analytics.....	202
<i>Bradley Marimbire , Dhiya Al-Jumeily, Abdulaziz Al-Nahari, Waris K. Ahmadzai, Wasiq Khan</i>	
Study on Communicative Robots Assisting Elderly Persons .....	209
<i>Samar Taleb, Lamia C. Fourati, Mohamed Fourati</i>	
Architectural Design and Recommendations for a Smart Wearable Device for Women's Safety .....	215
<i>Manahil Manahil, Raed Abdulla, Muhammad Ehsan Rana</i>	
Early Prediction of COVID-19 Infection with IoT and Machine Learning .....	221
<i>Chow Man Pan, Kamalanathan Shanmugam, Muhammad Ehsan Rana, Manoj Jayabalan</i>	
Technology-Driven Implementation of Smart Entrances in Public Places During the COVID-19 .....	227
<i>Moo Chi Yuen, Muhammad Ehsan Rana, Kamalanathan Shanmugam, Raed Abdulla</i>	
Automated Face Mask Detection Using Artificial Intelligence and Video Surveillance Management .....	233
<i>Goh Yih Shien, Kamalanathan Shanmugam, Muhammad Ehsan Rana</i>	
Aspect-Based Sentiment Analysis on Movie Reviews .....	237
<i>Brentton Kit, Minnu Helen Joseph</i>	
Gesture Recognition Techniques .....	244
<i>Varun Sharma, Hoshang Kolivand, Shiva Asadianfam, Manoj Jayabalan, Dhiya Al-Jumeily</i>	
Point-Based Gesture Recognition Techniques.....	250
<i>Varun Sharma, Hoshang Kolivand, Dhiya Al-Jumeily, Manoj Jayabalan, Shiva Asadianfam</i>	
A Comparative Study on Transformer-Based News Summarization.....	256
<i>Ambrish Choudhary, Mamatha Alugubelly, Rupal Bhargava</i>	
Agriculture 4.0 from IoT, Artificial Intelligence, Drone, & Blockchain Perspectives.....	262
<i>Ali N. Jasim, Lamia C. Fourati</i>	
BlockChain-Based Cooperative UAVs for Secure Data Acquisition and Storage.....	268
<i>Bilel Najeh, Aicha I. Hentati, Mohamed Fourati, Lamia C. Fourati, Ahmad Alanezi</i>	
Multi-UAVs-Based SDN, IoT, and Cloud Architecture for Hostile Areas Supervision.....	274
<i>Aicha I. Hentati, Lamia C. Fourati, Lobna Krichen, Ahmad Alanezi</i>	
The Impact of the COVID-19 Pandemic on Retrenchment, Vaccinations, and Global Happiness.....	280
<i>Ng W. Shen, Jullisha Sasikumar, Wong Y. Hung, Osama R. Khan, Vivian N. Z. Hui, Sahar Al-Sudani, Huaqun Guo, Zhiyuan Zhang, Zhengkui Wang</i>	
A System Implementation: Point-Of-Sales (POS) System Integrated with Business Intelligence (BI) Capability Focused on SME in Indonesia .....	287
<i>Faiz M. Al Kautsaf, Mohammad N. M. Nizam, Khalida S. Harun</i>	
The Role and Potential Applications of Cloud Computing in the Banking Industry .....	293
<i>Muhammad E. Rana, Lai Z. Ji</i>	
Improved Traditional Fitness Model by Applying Big Data Analysis.....	299
<i>Muhammad Ehsan Rana, Lin Yanyu, Vazeerudeen Abdul Hameed, Nowshath Kadhar Batcha</i>	

Camel Detection and Monitoring Using Image Processing and IoT .....	305
<i>Mahmoud Madi, Fayadh Alenezi, Dhiya Al-Jumeily, Yasser Basha, Soliman A. Mahmoud, Wasiq Khan, Yazan Albadersawi, Abir Hussain, Dhafar H. Abd</i>	
BEsafe - Validating URLs and Domains with the Aid of Indicator of Compromise .....	309
<i>Chang D. Khai, Julia Juremi</i>	
Towards Building a System for Predicting Diabetes and Related Conditions Using Machine Learning .....	314
<i>Sahar Al-Sudani, Umesha Selv</i>	
Low-Distortion MMSE Estimator for Speech Enhancement Based on Hahn Moments .....	322
<i>Ammar Al-Zubaidi, Basheera M. Mahmmod, Sadiq H. Abdulhussain, Marwah A. Naser, Abir Hussain</i>	
CNN Aided Surface Inspection for SMT Manufacturing .....	328
<i>Mee Chun Loo, Rajasvaran Logeswaran, Zailan Arabee Abdul Salam</i>	
COVID QA Network: A Specific Case of Biomedical Question Answering.....	333
<i>Amar Kumar, Rupal Bhargava, Manoj Jayabalan</i>	
Using Simulation for Investigating Emergency Traffic Situations .....	339
<i>Irina Makarova, Gulnara Yakupova, Polina Buyvol, Eduard Mukhametdinov, Albert Abashev, Jamila Mustafina</i>	
Improvement of the Personnel Delivery System in the Mining Complex Using Simulation Models .....	345
<i>Irina Makarova, Gulnaz Mavlyautdinova, Vadim Mavrin, Polina Buyvol, Abbas Saad Alatrany, Jamila Mustafina</i>	
Prediction of Component Level Degradation in a Hydraulic Rig Using Machine Learning Methods .....	351
<i>Shyamala Rajasekar</i>	
Deep Audio Embeddings and Attention Based Music Emotion Recognition.....	357
<i>Sparsh Gupta</i>	
COVID-LiteNet: A Lightweight CNN Based Network for COVID-19 Detection Using X-Ray Images .....	363
<i>Aditya Yadav</i>	
Transformer Based Approach for Depression Detection .....	369
<i>Anagha Khaparde, Rik Das, Rupal Bhargava</i>	
Vision-Based Fatigue Detection in Drivers Using Multi-Facial Feature Fusion .....	375
<i>Sancharee Das, Rupal Bhargava</i>	
An Exploratory Study on the Impact of Hosting Blockchain Applications in Cloud Infrastructures .....	381
<i>Ter H. Chee, Muhammad E. Rana</i>	
Identification of Authentic and Counterfeit Viagra Tablets Using Near-Infrared Spectroscopic Methods and Machine Learning Algorithms .....	387
<i>Sarah Rowlands, Dhiya Al-Jumeily, Sulaf Assi</i>	
Palm-Sized Near-Infrared Spectroscopy and Machine Learning Analytics for the Detection of Endogenous Constituents and Drugs in Human Fingernails .....	392
<i>Megan Wilson, Dhiya Al-Jumeily, Ismail Abbas, Jason Birkett, Iftikhar Khan, Leung Tang, Sulaf Assi</i>	

Exploring the Authentication of Covid-19 Vaccines Using Surface-Enhanced Handheld Raman Spectroscopy (SERS) Equipped with Orbital Raster Scattering and Machine Learning.....	398
<i>Megan Watson, Dhiya Al-Jumeily, Jason Birkett, Iftikhar Khan, Sulaf Assi</i>	
Deep Learning-Based Skin Cancer Identification .....	404
<i>Abir Hussain, Dhiya Al-Jumeily, M. N. Sandhua, Basheera M. Mahmmod, Sadiq H. Abdulhussain</i>	
Estimation the Design Paramters of Surface Course Asphalt Concrete by Cyclic and Static Loading .....	411
<i>Hanan Salih, Talal H. Fadhil, Akram S. Mahmoud</i>	
Predicting Strength Criteria of Hardened Concrete Containing Waste Glass Powder .....	417
<i>Shahad S. Mahmoud, Sheelan M. Hama, Akram S. Mahmoud</i>	
Optimal Stability of Brushless DC Motor System Based on Multilevel Inverter .....	422
<i>Yousif Al Mashhadany, Moneer Lilo, Sameer Algburi</i>	
Implement of Intelligent Controller for 6DOF Robot Based on a Virtual Reality Model .....	428
<i>Yousif Ismail Al Mashhadany, Ali Ahmed Alrawi, Zeyid T. Ibraheem, Sameer Algburi</i>	
The Probability of Connectivity in the 2 Way / 2 Lane Platoon-Based V2I Communication Network.....	434
<i>Ahmed Waleed Khalil Al-Nasir, Foad Salem Mubarek</i>	
Double Dual Convolutional Neural Network (D2CNN) for Copy-Move Forgery Detection .....	439
<i>Mahmoud H. Farhan, Khalid Shaker, Sufyan Al-Janabi</i>	
Intelligent Detection System for a Distributed Denial-Of-Service (DDoS) Attack Based on Time Series .....	445
<i>Mustafa Al-Janabi, Khattab M. Ali Alheeti, Abdulkareem Alaloosy</i>	
Improving Prediction for Taxi Demand by Using Machine Learning .....	451
<i>Mustafa M. Ibrahim, Foad S. Mubarek</i>	
Sentiment Classification of Drug Reviews Using Machine Learning Techniques .....	457
<i>Mohammad A.-A. A. Hameed, Khalid Shaker, Haitham A. Khalaf</i>	
Design and Implementation a Low-Cost Smart House Automation System Using Bluetooth and Sensor Technology .....	463
<i>Wasan A. Majeed, Salah A. Aliesawi</i>	
Semantic Segmentation and Depth Estimation of Urban Road Scene Images Using Multi-Task Networks .....	469
<i>Mohamed Mahyoub, Friska Natalia, Sud Sudirman, Abdulmajeed H. J. Al-Jumaily, Panos Liatsis</i>	
Identify Type of Lung Infection from Lung Patients X-RAY Image LIVERAGING Computer Vision .....	475
<i>Mohamed Mahyoub, Thomas Coombs, Manoj Jayabalan, Jamila Mustafina, Abir Hussain</i>	
Data Augmentation Using Generative Adversarial Networks to Reduce Data Imbalance with Application in Car Damage Detection.....	480
<i>Mohamed Mahyoub, Friska Natalia, Sud Sudirman, Panos Liatsis, Abdulmajeed H. J. Al-Jumaily</i>	

Brain Tumor Segmentation in Fluid-Attenuated Inversion Recovery Brain MRI Using Residual Network Deep Learning Architectures .....	486
<i>Mohamed Mahyoub, Friska Natalia, Sud Sudirman, Abdulmajeed H. J. Al-Jumaily, Panos Liatsis</i>	
A Novel Predictive Model for Housing Loan Default Using Feature Generation and Explainable AI .....	492
<i>Mohamed Mahyoub, Shatha Ghareeb, Jamila Mustafina</i>	
Intracranial Hemorrhage Detection and Classification from CT Images Based on Multiple Features and Machine Learning Approaches .....	498
<i>Mohamed A. A. Majeed, Omar Al Okashi, Azmi T. Alrawi</i>	
Enhancing TEEN Protocol Using the Particle Swarm Optimization and BAT Algorithms in Underwater Wireless Sensor Network.....	504
<i>R. D. Jalal, S. A. Aliesawi</i>	
Intelligent Detection System for Multi-Step Cyber-Attack Based on Machine Learning .....	510
<i>Khattab M. Ali Alheeti, Abdulkareem Alzahrani, Omar H. Jasim, Duaa Al-Dosary, Hamsa M. Ahmed, Muzhir Al-Ani</i>	
Real-Time Healthcare Monitoring and Treatment System Based Microcontroller with IoT.....	515
<i>Yousif Al Mashhadany, Mahmood K. Awsaj, Lamia C. Fourati</i>	
A Tri-Classes Method for Studying the Impact of Nodes and Sinks Number on Received Packets Ratio of MANETs Routing Protocols.....	521
<i>Hamid A. A. Al-Asadi, Huda A. Ahmed</i>	
K-Nearest Neighbor Algorithm for Efficient Heart Disease Classification System .....	527
<i>Ahmed S. Abdalkafor, Khattab M. A. Alheeti</i>	
A Transfer Learning Based Intrusion Detection System for Internet of Vehicles .....	533
<i>Achref Haddaji, Samiha Ayed, Lamia C. Fourati</i>	
BrandTrend: Understanding the Trending Games and Gaming Influencers for Better Gaming Peripheral Promotion .....	540
<i>Tan W. Z. Ashley, Lim J. Han, Kowit Tan, Rong K. T. Avin, Ashlinder K. A. Singh, Sahar Al-Sudani, Zhengkui Wang</i>	

## Author Index