

# **2023 7th International Symposium on Innovative Approaches in Smart Technologies (ISAS 2023)**

**Istanbul, Turkiye  
23-25 November 2023**



**IEEE Catalog Number: CFP23JZ6-POD  
ISBN: 979-8-3503-8307-2**

**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:	CFP23JZ6-POD
ISBN (Print-On-Demand):	979-8-3503-8307-2
ISBN (Online):	979-8-3503-8306-5

**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



7<sup>th</sup> International Symposium on Innovative Approaches in Smart Technologies

November 23-25, 2023, İstanbul, Türkiye

## Table of Contents

Author Index.....	vi
Table of Contents.....	ix
Automatic Clustering by Geometric Method of Tangent Lines with Points .....	1
Increasing Artificial Intelligence’s ContextDependent Grasping, through Cloninger's Planes of Being Theory.....	6
Energy Consumption Level Classification using Stepwise Dynamic Nearest Neighbor Algorithm .....	11
Long Term Short Memory with Particle Swarm Optimization for Crude Oil Price Prediction .....	16
Light Weight Semantic Segmentation: A Modified DDRNET Approach Trained on Cityscapes and COCO-Stuff Datasets for Efficient Image Analysis.....	20
Assessing the Impact of ChatGPT in a PHP Programming Course.....	25
Classification of Sign language Using VGG16 and VGG19.....	45
LiDAR Tabanlı 3B Yığın Stok Kütleli Ölçümü.....	51
Potential Use of Technical Virtual Power Plant Approach in Distribution Network for Mitigation of Contingencies .....	55
Using 3d Digital Tools to Create a Digital Musical Instrument For A System Called HapticSOUND.....	61
Design of Majority Decoded Codes and Decoding Algorithm Based on Error Propagation Analysis.....	66
A Novel Attention-based Explainable Deep Learning Framework Towards Medical Image Classification.....	70
Analysis Of Key Factor For Energy Efficiency Of Passenger Ships - Shore Power Supply .....	78
Healthcare opportunities through Blockchain .....	82
Enhanced Preprocessing Stage For Feature Extraction of Deepfake Detection Based on Deep Learning Methods ....	87
An adaptive Particle Swarm Optimization to Solve Modern Security System .....	93
Implementing Deep Learning and CNNs for Vehicle Detection to Alleviate Highway Traffic Congestion .....	100
Design and Frequency Characterization of a Rose Antenna Produced with 3D Printing .....	106
Comparative Performance Evaluation of Fractional Fuzzy Inference System for A High-Order System.....	110
A Survey Study on Secure Image Transmission and Noncoherent Chaos Communication System .....	116
Implementing Generative AI and Large Language Models in Education.....	123
A Pretraining Strategy to Improve Faithfulness in Abstractive Text Summarization.....	129



**7<sup>th</sup> International Symposium on Innovative Approaches in Smart Technologies**

**November 23-25, 2023, İstanbul, Türkiye**

Assessing Audio-Based Transformer Models for Speech Emotion Recognition .....	133
Machine Learning Based Feature Optimization and Early Detection System in Heart Diseases.....	140
Optimizing Switched Reluctance Motor Control with Direct Torque and Flux Control (DTFC) through PV Array Integration .....	146
Design and Implementation of a Character Printing System Using EOG Signals .....	153
Holistic Methodology for Analyzing Power System Contingencies of 33KV Network for Grid Reliability Assessment: A Comprehensive Study .....	158
Multi-Disease Detection in Retinal Imaging Using Patch-Based Attention Mechanism.....	164
Effects of the Tap Staggering Volt/VAr Control Method on Online and Adaptive Protection System in Grids with Wind Energy Sources.....	168
Elderly Fall Detection System with ESP32 Module and Edge Impulse Studio.....	176
An Ontology Learning Framework for unstructured Arabic Text.....	182
No-core optical fiber sensor based on surface plasmon resonance for temperature measurement .....	194
Developing a Portable Smart Ventilator: A Prototype that Balances Cost and Functionality.....	201
Smart IoT-Based Diabetes Management System .....	207
New Generation Server Management System: LİMAN .....	213
Performance Evaluation of a SCARA Robot Manipulator for Trajectory Tracking Based on Error Criteria Minimization .....	220
Sensor-less DTC Control of SRM for EV Using Artificial Intelligence.....	225
User Behavior Analytics in Advanced Persistent Threats: A Comprehensive Review of Detection and Mitigation Strategies.....	232
Tailored Learning Rates for Reinforcement Learning: A Visual Exploration and Guideline Formulation .....	238
Efficient Resource Management in IoTs Using Evolutionary and Swarm Intelligence Algorithms .....	245
Underrepresented Tones: Addressing Skin Bias in Medical Imaging for Eczema, Psoriasis, and Melanoma Detection Using CNNs.....	252
Secure Federations: Addressing the Security Challenges in Federated Learning and PrivacyPreserving AI .....	258
Time Synchronization Sensitivity Analysis of Power System Phasor Measurement Applications.....	264
Software in the Loop (SIL) Simulation for an Autonomous Multirotor Flight Planning and Landing with ROS and Gazebo .....	270
From Dungeons to Dashboards: Integrating GameBased Character Sheet in University Environment .....	280
Improving the Route Planning of Battery Electric Freight Vehicles through Speed Optimization .....	286
Parallel JSO-Based Approach to Task Scheduling Problems in Cloud Systems.....	292



**7<sup>th</sup> International Symposium on Innovative Approaches in Smart Technologies**

**November 23-25, 2023, İstanbul, Türkiye**

CloudSpot: Enhancing Wi-Fi Hotspot Management with Cloud-driven Innovations .....	298
An Innovative Risk Score Based Corporate Access Control Management System .....	303
BC-4Track: A Blockchain based System for Vehicle Tracking Management .....	308
TokenX: A Digital Sales Platform for B2C Payment and Finance Solutions .....	313
A Generic Remote Key Loading Method for Enhancing Payment Systems.....	318
Artificial Intelligence Computer-Aided Diagnosis to automatically predict the Pediatric Wrist Trauma using Medical X-ray Images.....	323
Explainable Artificial Intelligence Computer-Aided Diagnosis for Heart Myocardial Infarction .....	330
Detection and Classification of Agricultural Pest and Vermin's using Full-Convolutional Neural Network .....	337
RWRR: Remind Weighted Rounding Robin for Load Balancing in Fog Computing .....	343
ANOVA Method Reveals Key Factors Influencing Geopolymer Strength: A Comprehensive Evaluation of Input Variables .....	350
Advancing Human-Machine Interaction: Speech and Natural Language Processing.....	355
Optimizing Energy Efficiency in Distributed Web Systems.....	360
Ethereum Blockchain Smart Contract Vulnerability Detection Using Deep Learning.....	365
A Deep Artificial Neural Network-Based Daphne Leaf Classification Study .....	370
Exploration Strategies in Adaptive Traffic Signal Control: A Comparative Analysis of Epsilon-Greedy, UCB, Softmax, and Thomson Sampling.....	374
Stand For Research And Optimization Of DC Electric Drives With Digital Program Control .....	382
Explainable Multiscale Kernel Depth-wise Separable Convolutional Framework with Attention for COVID-19 Prediction from Chest X-ray .....	393
Automatic transformation of UML-RT models into nuXmv model checker .....	397
Integration of Wi-Fi, VLC, WiMAX, 4G, and 5G Technologies in Vehicular Ad Hoc Networks: A Comprehensive Review .....	403
A Novel Time of Use Tariff Scheme Using Artificial Hummingbird Algorithm for Demand Side Management of a Residential City in Bangladesh.....	409
Evaluation of Feature Detection and Extraction Methods for Landmark Separability in Visual Localization .....	416
Effect of Viscous Damping Coefficient on Suppression of Structural Earthquake-Induced Vibrations with Tuned Liquid Column Dampers.....	420
Experimental and Numerical Investigation of the Mitigation of Structural Vibrations Caused by Ground Acceleration with TLC D Application.....	426
Linguistics for Crimes in the World by AIBased Cyber Security .....	432



**7<sup>th</sup> International Symposium on Innovative Approaches in Smart Technologies**

**November 23-25, 2023, İstanbul, Türkiye**

Effective Energy Conversion Design for an Electric Vehicle Integrating Solar Energy with an Effective Braking System: A Case Study in Nicosia .....	437
ROS Gazebo and MATLAB/Simulink Co-simulation for Cart-Pole System: A Framework for Design Optimization .....	447
Enhancing Trajectory Following in VTOL Cargo UAVs: Adaptive Control in Changing Payload Scenarios.....	454
Fully automated axial plane segmentation of cervical spinal cord using U-Net in MR scans .....	463
Resolving controversial situations using a hybrid decision-making method based on neuro-fuzzy mathematical apparatus .....	470
Mass-Exchange Processes in Emulsion Treatment with Demulsifier (Chemical Reagent) .....	474
Detection of Distributed Denial-of-Service (DDoS) Attack with Hyperparameter Tuning Based on Machine Learning Approach .....	478
Automated RFID-Based Attendance and Access Control System for Efficient Workforce Management .....	486
Wireless Power Transfer for Smart Power Outlet .....	492
Optimization of Wireless Power Transmission through Resonant Coupling .....	496
GPS and GSM Based Vehicle Tracking System .....	500
High Pressure Water Solar Collector as Potential of Mini Steam Power Plant in Iraq.....	505
Real Time Faults Transformer Protection System by Using Integrated Microcontroller .....	514
Spiking Neural Network for Enhanced Mobile Robots' Navigation Control .....	521
Achieving Optical Fiber Transmission of Over 60 W of Electrical Power and Optical Data .....	529
Development of Coke Chambers Models of Delayed Coking Unit under uncertain initial information .....	533
Detection of Malicious SQL Injections Using SVM and KNN Algorithms .....	538
Fault Diagnosis in Overhead Power Line Using Deep Belief Network.....	543
A Machine Learning Approach to Employee Performance Prediction within Administrative Information Systems	550
Application of Machine Learning Methods for Controlling Catalytic Cracking Plant.....	557
Application of Multi-Sensor Road Feature Detection and Mapping in Kazakhstan and Development of Pole Detection and Analysis Procedure.....	561
Smart Laser Scanning of Uzbekistan's Big Solar Furnace for Performance Optimization .....	566
Cyber Security Method for Phishing and Malicious Link Detection in Social Meda Using Data Mining Techniques .....	571
Emotion Recognition of Humans using modern technology of AI: A Survey .....	579
High-Frequency Waves of The Fifth Generation and Their Effects on The Head and Their Consequences for New Perspectives.....	589



**7<sup>th</sup> International Symposium on Innovative Approaches in Smart Technologies**

**November 23-25, 2023, İstanbul, Türkiye**

Mixture of Optical Quadrature-Phase Shift Keying and Continuous-Phase Frequency Shift Keying Advanced methods for monitoring optical performance in future photonic networks.....	595
Overhead power line inspection using a prediction model based on system analysis Surveillance of Temperature Using a Modeled Optical System .....	599
Energy Consumption Estimation Using Machine Learning with Data from Smart Meters in a Residential Complex Building in Iraq.....	603
The Hyperthermia Calculating in Head Blood by the Specific Absorption Rate (SAR) Influence in Novel Vision..	610
A Proposed Framework for Smart Geo-Fencing For Religious Places.....	616
Comparison of YOLOv8 and Detectron2 on Crowd Counting techniques.....	622
MANET Routing Protocol Performance Comparison: DSDV, AODV, and DSR.....	628
Combating VoIP Spam: A Real-Time Algorithmic Approach.....	635
Optimizing Handwritten Numeral Recognition for English and Devanagari Using MNIST and CPAR Data .....	641
An Automation Perception for Cotton Crop Disease Detection Using Machine Learning.....	647
A Compressive Study on Detection Accuracy Model for DoS Attack in SDN Using Ensemble Learning Techniques .....	653
Failure Prediction Model for Prognostic Health Management in Machine Systems .....	659
Forecasting Power Consumption of Home Appliances using LSTM.....	664
Creating a Smart Medical Bed with IoT Technology for Safe Transportation of Patients with Highly Infectious Diseases.....	671
Implementing an Internet of Things (IoT) system to sort recyclable materials based on color and track the quantity of each color-coded piece.....	675
Binary Classification for Attack Detection using Ensemble Machine Learning Models.....	679