Guest Editorial Preface

Adaptive Swarm Intelligence Algorithms for Wireless Sensor Networks in IoT

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The eminent role of Swarm Intelligence helps in various computational problems. It is predicted that mobile data traffic will reach 19.01 exabytes per month by the year 2022. In April 2020, new statistics have been released about the social networking users, Which has a range of 2000-2498 Million active participants. Even, the Internet of Things (IoT) era has been started, as, the universe is ready to restructure the entire household appliances to combat Pandemic disasters, Ex. A leading Air-conditioner (A/C) firm has started its research on producing Virus Free Eco-friendly A/C's. Thus, the entire globe is revolving around Wireless Sensor Networks (WSN) and their application towards IoT devices. The research community is anticipated to work on Adaptive Algorithms and Technologies of WSN in IoT

The Special Issue on Adaptive Swarm Intelligence Algorithms for Wireless Sensor Networks in IoT focuses on the novel research and development in adaptive swarm intelligence algorithms for various wireless networks and IoT Platforms.

The greater focus towards this special issue is on the dissemination of swarm intelligence and bio-inspired algorithms for various performance enhancements of Wireless sensor and IoT Networks. The coverage of this special issue deals with extensive models, algorithms, architectures for the modern platform of WSN, such as Routing, Intelligent Sensing, Security, and Health Informatics.

This special issue of the International Journal of Swarm Intelligence Research (IJSIR) contains seven papers that cover a range of aspects of Swarm Intelligence in various active fields of technology like Wireless Multimedia Sensor Network, Geographic Routing, Regression Analysis, Unmanned Aerial Vehicles, wireless sensor networks, and Game Theory. Each of these papers has undergone full double-blind peer review, before being selected for this special issue.

In the first paper, "A Voronoi-Ant Colony-Based Routing (VoR-Ant-R) Algorithm for WMSNs," a Voronoi-Ant colony-based Routing (VoR-Ant-R) algorithm is proposed for WMSNs to discover the energy holes and finds the shortest path from the source to destination in the WMSNs even though faces some obstacles. The WMSNs are constructed using the Voronoi structure to bypass energy holes. After bypassing the energy hole in the path; an ACO is introduced to select a neighborhood node for data forwarding. This ACO constructs the shortest optimized path to enhance the performance of the WMSNs. The proposed work is experimentally compared with other algorithms such as IEEABR, EEABR, SC, and BEES. The simulation results show that VoR-Ant-R can increase energy efficiency, success rate, reduces energy consumption, and latency.

"Towards Design of an Efficient Sensing Data Acquisition Scheme for UAVs-Assisted Wireless Sensor Networks" presents a non-cooperative Game Theory (GT)-based CHs selection algorithm and load-balanced cluster formation scheme. Next, to provide timely delivery of sensing information using

UAVs, a hybrid meta-heuristic-based optimal path planning algorithm is proposed by combing the best features of Dolphin Echolocation and Crow Search meta-heuristic techniques. In this research work, a novel objective function is formulated for both load-balanced CHs selection and optimal path planning problems. Results analyses demonstrate that the proposed scheme significantly performs better than the state-of-art schemes.

The third paper, "Defense and Detection of DDOS Attack Using Secured Geographic Routing," deals with the Protected Geographic Routing Protocol (SGRP), which will improve the efficiency of the transmission method by choosing a specific source node. The paper suggested that the Protected Spatial Routing Protocol (PSRP) would recognize and isolate such threats. Several modeling time estimation studies have been carried out to analyze the simulation time and the efficiency of the proposed routing technique. The proposed routing technique demonstrates the performance by calculating the Packets Delivery Ratio(PDR) and Energy consumption. The Routing protocol is used in many applications such as the Industrial Internet of Things (IoT)

In the fourth paper, "A PSO-Enabled Multi-Hop Clustering Algorithm for VANET," the authors have proposed a PSO-enabled multi-hop technique is proposed, which helps in VANET (Vehicle Ad-hoc Network) to select the route and find the stable cluster head and remove the malicious node from the network to avoid the false messages. The proposed technique is based on PSO enable clustering and its importance in VANET. When using this approach in VANET, the packet delivery rate has increased by 20%.

In the fifth paper, "Predicting the Death Rate Around the World Due to COVID-19 Using Regression Analysis," the authors have carried out an analysis of COVID-19, regression analysis was performed by applying the differential equation and ordinary differential equation (ODE) to the parameters. Thus, this work will forecast the total cases, deaths, and infected cases very shortly based on different values of the reproduction rate. In this work, the comparison was shown based on 4 different productive rates, i.e. 2.45, 2.55, 2.65, and 2.75. Two separate datasets are used for the analysis; the first dataset is for China, and the second dataset is for world data.

The sixth paper, "A Secure Energy-Aware Game Theory (SEGaT) Mechanism for Coordination in WSANs," a mechanism for coordination in WSANs is presented for having better coordination in wireless sensor actor networks. The method has different levels for the fulfilling of specified actions. It is based on the energy-aware actor selection (EAAS), the first step is the selection of the number of actors and its procedure, which is followed by the process of choosing the optimal set of the team of sensors with each actor to execute the operation and finally, the selecting the trusted node within this team to eventually nail down the operation in the network for its proper functioning and minimum trade-off in the energy.

In the final paper, "Hybridizing Convolutional Neural Network for Classification of Lung Diseases," the authors have proposed, by integrating the Space Transformer Network (STN) with CNN, a new hybrid deep learning architecture called STNCNN was proposed. The model is applied to the dataset from the Kaggle repository for an NIH chest radiograph. Indeed, STNCNN has an accurate value of 69% concerning the whole data set, while the accuracy values of Vanilla Grey, Vanilla RGB, and Hybrid CNN are 67.8%, 69.5%, and 63.8%, correspondingly. STNCNN requires significantly less time to train, but at the cost of somewhat less reliable validation.

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