Guest Editorial Preface

Special Issue on Swarm Intelligence in Deep Learning: Recent Theories, Trends, Technologies, and Applications

Satish Chander, Waljat College of Applied Sciences, Rusayl, Muscat, Oman
Binu D, Resbee Info Technologies, India

I am grateful for the opportunity to act as the Guest Editor of the special issue "Swarm Intelligence in Deep Learning: Recent Theories, Trends, Technologies, and Applications" in the International Journal of Swarm Intelligence Research (IJSIR). The articles chosen based on the special issues are the emerging topics that fall within the journal's scope, such as security, image inpainting, summarization, recognition, and so on. Swarm intelligence is helpful to solve both the internal and external issues more flexibly and without central control over the colony. Deep learning is widely used in several application fields like computer vision, recognition, detection, bioinformatics, machine translation, etc. As a result, research on deep learning based on swarm intelligence has recently experienced an incredible boom.

It aims to select high-quality contributions related to the swarm intelligence-based deep learning technologies and applications. Accordingly, the students, engineers, academicians, and researchers were invited, and the call for papers has been circulated to receive and select the right papers for the issue. Followed by the referring process, a total of six research papers were chosen for publication. The chosen papers are miscellaneous in both the research domains and the application areas. The applications are image construction, video summarization, face emotion recognition, intrusion detection, and target detection.

In "An Image Inpainting Method Based on Whale Integrated Monarch Butterfly Optimization-Based Deep Convolutional Neural Network," Manjunath R Hudagi, Dr. Shridevi Soma, and Dr. Rajkumar L Biradar describe an image inpainting method based on Whale integrated Monarch Butterfly Optimization-based Deep Convolutional Neural network (Whale- MBO-DCNN) model.

In "An Innovative Facial Emotion Recognition Model Enabled by Optimal Feature Selection Using Firefly Plus Jaya Algorithm," by Bhagyashri Devi and Mary Synthuja Jain Preetha details the facial emotion recognition based on the optimization-based neural network, in which optimal feature selection is employed using the developed optimization algorithm. Furthermore, the detection is employed using the optimal tuning of the classifier using the hybridized optimization algorithm.

The moving target detection is developed in the research paper "Moving Target Detection Strategy Using the Deep Learning Framework and Radar Signatures," in which the deep learning-based classifier is designed for locating the target. Here, a deep Recurrent Neural Network based fuzzy Bayesian fusion approach (deep RNN based FBF approach) for the detection of moving target using the radar signatures.

L. Jimson and J. P. Ananth introduce an approach for video summarization on the basis of exponential weighed moving average (EWMA)-Jaya based deep convolutional neural network (DCNN), which aims to produce the short summaries from the large data. The input cricket video with various frames is forwarded to the keyframe generation phase, where the keyframes are generated based on DCT and the Euclidean distance in order to select the optimal keyframes.

The application regarding the security issue is developed in "Adam Improved Rider Optimization-Based Deep Recurrent Neural Network for the Intrusion Detection in Cyber-Physical Systems," by

Arvind Kamble and Dr. Virendra S. Malemath. Here, intrusion detection is developed by the swarm intelligence-based Deep learning.

Additionally, the image inpainting technique is devised in one more research paper, in which the e patch-oriented is detected for inpainting operation using E-DBN. It is applicable in all image detection and the recognition field. Here, the adopted technique makes strong supervising of DBN, which captures the manipulated information.

The keywords concerning the special issue of swarm intelligence in deep learning: recent theories, trends, technologies, and applications are deep learning, optimization, intrusion detection, recognition, cybersecurity systems, target detection, and so on.

I hope that the special issue will interest the journal's readers, research scholars, and professionals interested in concepts like deep learning, swarm intelligence, and related applications. Besides, it is helpful for the research scholars to achieve in the concerning field.

Satish Chander
Binu D.
Guest Editors
IJSIR