Preface to Special Issue on Modern Intelligent Systems Concepts

The whole world is experiencing an unprecedented technological revolution lately. The latest developments in Artificial Intelligence and Big Data through the advances recorded in the Internet of Things and cognitive computing sector are that we are only in the beginnings of this revolution.

All these disciplines find their applications in different fields including health, environment, transport, industry, finance, security, and in general in any field that one can think of. Our role as well as our responsibility in this sector may lie in guiding and directing all these methods to contribute to the well-being of all humanity and not to its destruction.

This JAMRIS special issue includes several topics in Intelligent Systems varying from problem modeling to machine learning and deep learning approaches. The included papers are selected from the International Conference on Modern Intelligent Systems Concepts, which was held in Morocco in December 2018 (MISC'2018).

In this special issue four papers are presented. In the first paper, S. Yousfi, M. Rhanoui and M. Mikram propose to guide researchers to choose between one of the most commonly used models CNN and LSTM. To do so, they compared and applied both models for opinion mining from long text documents using real datasets. They compared the performances of both models using real-world datasets collected from electronic newspapers. They found that combining Doc2vec and CNN models slightly surpasses LSTM performances.

In the second paper, Z. Bakraouy, W. Abbass, A. Baina and M. Bellafkih deal with a problem of designing multi-agent systems with fuzzy characteristics to meet the needs of complex modern systems that must deal with imperfect information. To solve this problem, they proposed a new approach for the design of fuzzy multi-agent systems, the model FMASACNQOS (Fuzzy Multi Agents System for Automatic Classification and Negotiation of QOS). The proposed model consists in integrating logic fuzzy in a multi-agent level, by the use of fuzzy agents independent of other system agents. This model can help build complex applications that can benefit from the advantages of the multi-agent approach and the capabilities of fuzzy logic, such as its ability to represent and manipulate imperfect knowledge. The authors applied their Framework in modeling and implementing a system of classification and negotiation of services in a virtual market that based on the Cloud Computing.

As for the third paper, F. Zegrari and A. Idrissi tackle the problem of optimizing and processing large amounts of data in a high heterogeneity system such as the cloud results in a variability of the workload. To ensure the viability of cloud computing, IT resources must be managed effectively by a dynamic monitoring of the current workload of virtual machines (VMs). In their paper, the authors proposed the design of a cloud services simulation tool at the infrastructure level based on cloud computing simulation platform called CloudSim. It allows real-time monitoring of the load of each VM in terms of CPU utilization, memory utilization and bandwidth utilization ratio. The result of this case study can be useful for carry out dynamic environment simulations for VMs monitoring and fast decision making that can be used in load balancing mechanisms. The authors developed a simulator called CloudSimulator based on CloudSim. It enables dynamic and intelligent simulation in the cloud environment and provides monitoring of the current workload of VM resources such as CPU, memory and bandwidth. In this system, the information collected on the current load of resources determines the state of load of each VM that can be used to solve load balancing problems. When an overload is detected on a node, the overloads are transferred to the less loaded nodes. The goal of this study is to manage effectively the Cloud Computing resources to improve the performance of the system.

The last and not the least effort, given by M. Mikram, M. Rhanoui, S. Yousfi and H. Briwa, deals with enhancing the management of unit load devices (ULD) flow. Specifically, they built prediction models: ARIMA following the BOX-JENKINS approach and exponential smoothing methods, in order to obtain more forecasts that are accurate. The authors tested their approach using the operational data of flight processing and the results are compared with four benchmark method (SES, DES, Holt-Winters and Naive prediction) using different performance indicators: MAE, MSE, MAPE, WAPE, RMSE, SMPE. The authors stated that the results obtained with the exponential smoothing methods surpassed the benchmarks by providing forecasts that are more accurate. Following the authors, the sim-

ple exponential smoothing model is a model that minimizes KPIs and therefore considered as the best performing model for their forecast.

We consider that this special session presents some real advances in the field of Intelligent Systems particularly Artificial Intelligence. It contributes to its evolution, its development, its emergence, and particularly in its orientation and good practice in the service of the humanity.

We would like to thank all the authors for their interactions and interesting contributions as well as all the reviewers for their time, advices and suggestions.

In addition, we will not close this preface without warmly acknowledging the great efforts of the Editors, especially Professor Janusz Kacprzyk and the Managing Editor Katarzyna Rzeplinska-Rykala for their great help and support and to any person whom contribute to promote the International Journal JAMRIS.

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