Editor's Note

RESEARCH in Agents and Multiagent Systems has matured significantly in recent years, representing one of the main branches of Artificial Intelligence and currently there are numerous effective applications of these technologies combined with Deep Learning, Computer Vision or Natural Language Processing, including areas such as healthcare and Ambient Intelligence, smart cities and mobility, Industry 4.0, educational technology, and fintech, among many others. In this regard, the International Conference on Practical Applications of Agents and Multi-Agent System (PAAMS) provides an international forum to present and discuss the latest scientific advances and their effective applications in different sectors, evaluate the impact of the approach and facilitate technology transfer among different stakeholders.

Currently, a series of co-located events specialized in different areas of research are held simultaneously with PAAMS, these being the International Congress on Blockchain and Applications (BLOCKCHAIN), the International Conference on Distributed Computing and Artificial Intelligence (DCAI), the International Conference on Decision Economics (DECON), the International Symposium on Ambient Intelligence (ISAmI), the International Conference on Methodologies and Intelligent Systems for Technology Enhanced Learning (MIS4TEL), and the International Conference on Practical Applications of Computational Biology & Bioinformatics (PACBB).

In this regard, the present Special Issue includes a selection of extended papers presented at the 20th International Conference PAAMS 22 and its co-located events and held in L'Aquila (Italy), July 13-15, 2022. Specifically, the present Special Issue includes the topics described below.

Sevilla-Salcedo et al. proposed the application of state-of-the-art natural language generation models to provide social robots with more diverse, less repetitive and friendlier language when interacting with human users. The authors implemented and evaluated a paraphrasing module and a speech generation module that adapts to the user's conversation, showing great potential.

Carrascosa et al. presented research in the field of Federated Learning and Multi-Agent Systems, proposing a consensus-based learning algorithm called Co-Learning by the authors. Co-Learning uses a consensus process to share the artificial neural network models that each agent learns using its private data and computes the aggregated model.

Michelena et al. proposed an intelligent classification model for Denial of Service (DoS) attack detection, evaluating the performance of six supervised classification techniques (Decision Trees, MLP, Random Forest, SVM, Fisher Linear Discriminant, and Bernoulli and Gaussian Naive Bayes) combined with the PCA feature extraction method for DoS attack detection in MQTT networks.

Martí et al. presented a survey on demand-responsive transportation for rural and interurban mobility. This work brought together papers that discuss, analyze, model, or experiment with demand-responsive transportation systems applied to rural settlements and interurban transportation, discussing their general feasibility, as well as the most successful configurations.

Ferarria et al. presented an investigation on different text representations to train an artificial immune network for text clustering. This work investigated four classes of text structuring methods to prepare documents to be clustered by an artificial immune system called aiNet, evaluating the influence of each structuring method on the quality of the clustering performed.

López-Flórez et al. proposed a solution adopting a YOLOv5 network model for automatic cell recognition and counting in a case study for laboratory cell detection using images from a CytoSMART Exact FL fluorescence microscope. A laboratory test was also performed to confirm the feasibility of the results, successfully recognizing and counting the different cell types.

Durães et al. presented experiments conducted using in-car audio data and deep learning frameworks for the purpose of violence identification. In this regard, the authors created a custom dataset tailored to this specific scenario. Based on the results obtained for that dataset, the EfficientNetB1 neural network demonstrated the highest accuracy (95.06%).

Bernabé-Sánchez et al. proposed a framework to manage and detect errors and malfunctions of the devices that compose an IoT system, considering simple devices such as sensor or actuators, as well as computationally intensive Edge devices which are distributed geographically. This work also presented the edge-cloud ontology (ECO) to organize the IoT system information.

López-Blanco et al. studied the evolution of pollutants in different Spanish cities using Generative Additive Models (GAM), proven to be efficient for making predictions with detailed historical data which have strong seasonalities. This study concluded that during the COVID-19 pandemic containment period, there was an overall reduction in the concentration of pollutants.

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