Guest Editorial Preface

Advances in Deep and Machine Learning for Data Mining, Knowledge Representation, and Reasoning

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In this issue, with a clear understanding on how deep and machine learning tools/techniques are employed for data mining, knowledge representation, and reasoning, we have successfully accepted the following research studies.

In "Analysis of Sentiment on Movie Reviews Using WE-SALSTM", authors reviewed movies to further analyze sentiments based on an integration of Word Embedding and Self Attention Long Short Term Memory. In their study, there different experiments were performed on IMBD dataset, and the maximum performance score was 88.67% F1 score. They have proved that word embedding was a great choice to get combined with SALSTM.

In "Testing Exchangeability With Martingale for Change-Point Detection", authors proposed a new exchangeability test for a random sequence. It primarily considered a martingale based approach, where their main contributions were: 1) an additive martingale, which is more amenable for designing exchangeability tests by exploiting the Hoeffding-Azuma lemma; and 2) different betting functions for constructing the additive martingale. Their idea was primarily focused on active learning, where change happened over time.

In "Forward Context-Aware Clickbait Tweet Identification System", authors designed a clickbait tool that can be applied on data from social media, such as Facebook and Twitter. For this, authors proposed deep learning-based architecture with external knowledge that helped train on social media post and descriptions; the pre-trained model obtained the sentence level contextual feature as knowledge; and the LSTM layer helped prevail the word level contextual feature. Authors claimed that they achieved a clickbait identification accuracy of 0.847 that outperformed the previously reported baseline study.

In "A Survey of Fog Computing-Based Healthcare Bigdata Analytics and Its Security", authors outlined the growing use of wearables within Internet of Things (IoT), where they multi-modal data from various smart health applications were considered. Their study primarily based on fog computing – an emerging distributed computing review. Authors outlined the issues, such as communication latency and data security associated with processing medical big data in cloud backend that can happen due to enormous volume of data generation. In their review, authors provided a) the role of machine learning based edge intelligence in fog layer for data processing; and b) a comprehensive analysis by highlighting the strength and improvements in the existing literature.

In “Multi-Step Clustering Approach of Myelinated Nerve Fibers in Experimental Neuromorphology”, authors brought up a new approach for cluster analysis based on morpho-functional features, where a clear implementation (in R) was provided.

In “CoAP-Based Lightweight Interoperability Semantic Sensor and Actuator Ontology for IoT Ecosystem”, the authors discussed on the current gap for interoperability among heterogeneous IoT devices that remained at the semantic layer. Since the deployment of semantic technique increases the processing time and complexity, authors proposed a lightweight (CoAP Lightweight Interoperability Semantic Sensor and Actuator Ontology) CLISSA with minimal and essential properties considered for a CoAP communication that has a maximum of 64kb payload for messaging. Authors compared existing ontologies with the proposed lightweight CLISSA ontology.

In “Detection and Classification of Leukocytes in Blood Smear Images: State-of-the-Art and Challenges”, the authors thoroughly discussed computer vision tools and/or techniques that help understand digital pathology in terms of objectivity and reproducibility. On the whole, their study presented a review of state-of-the-art detection, segmentation, and classification techniques for white blood cell analysis. Besides, the crucial steps involved in these techniques, mathematical foresights, performance evaluation techniques, issues and future directions were discussed.

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