EDITORIAL

Editorial: Affective and sentimental computing

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In the current big data era, we have witnessed the rapid growth of a large amount of data from various platforms like social media communities, mobile applications, web content providers and so on. Facing such a large volume of Web data, we need an efficient method to understand the high-level semantics and predict public emotional perceptions. Therefore, the computational techniques and machine learning models for sentiment analysis, opinion mainlining, emotion classification and so on, which aims to understand the opinions and sentiments of these large volumes of data are critical. These computational models and methods have been further revolutionized with the recent development of deep learning paradigms in artificial intelligence.

Furthermore, this research topic is the inter-disciplinary area which involves not only the machine learning, artificial intelligence and data mining in the computer science but also the knowledge and theories from psychology, behavioral science and information systems. There has also been a wide range of potential applications, including financial market, communication studies, educational technologies, and so on of these techniques. To this end, this special issue focuses on the recent computational models, methods, and applications in the affective and sentimental computing.

This special issue consists of 13 articles which provide a snapshot of recent advances in affective and sentimental computing. These papers not only contain various applications like social media, spam analysis, opinion mining but also survey studies about social networks and recommender systems. The summary of these papers is as follows.

To address the limitation of weak semantics in text, 'Leveraging Semantics for Sentiment Polarity Detection in Social Media' investigates the impact of various resources like BabelNet for extracting semantic information. The effectiveness of integrating semantic and lexical information for sentiment analysis is verified through the experiments conducted on four datasets.

The second article, 'Ensemble Learning on Visual and Textual Data for Social Image Emotion Classification', proposes an ensemble method which exploits five classifiers for emotion classification for social images. The performance of classification accuracy for deep and hand-crafted image presentations is compared.

Another important research issue in social media is related to user behavior analysis. To predict the user retweet, a novel model of user preferences, which takes the user topic specific emotion into account, is proposed in 'Topic Specific Emotion Detection for Retweet Prediction'.

A survey study 'On Relational Learning and Discovery in Social Networks: A Survey' conducts an in-depth analysis of the recent studies about heterogeneous social networks in terms of community detection and link prediction.

The one-to-many identification process becomes a critical research topic with the rapid growth of various computing devices in the Internet of things (IoT). In 'Polychronicity

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Tendency-based Online Behavioral Signature', a logistic model tree is adopted to achieve such an identification based on Polyphasia dichotomy and extracted intrinsic features.

Authors of 'Top K Representative: A Method to Select Representative Samples based on K Nearest Neighbors' develop a novel method for sampling data called Top K representative to tackle the problems caused by outliers in active learning. The proposed method can be further applied to text classification, sentiment analysis, and text summarization.

How to understand public opinions on the released news is a typical research task in sentiment analysis. 'A Hybrid Model for Opinion Mining based on Domain Sentiment Dictionary' proposes a hybrid method for opinion mining by proposing three layers sentiment dictionary to improve various conventional classification models like SVM, GBDT and so on.

In the article 'Spam Analysis of Big Reviews Dataset Using Fuzzy Ranking Evaluation Algorithm and Hadoop' presents a fuzzy model solution to deal with the problem of online spam reviews based on the linguistic variables. The accuracy of the proposed fuzzy model has been verified in both sample review and Amazon review datasets.

There has been an article to reveal the potential of employing Long Short-Term Memory (LSTM) neural networks for sentiment analysis. In 'Using Long Short-Term Memory Deep Neural Networks for Aspect-based Sentiment Analysis of Arabic Reviews', authors use a character-level bidirectional LSTM for feature extraction and aspect-level LSTM for sentiment classification.

In the context of education, sentiment analysis has been applied in the teaching evaluation. Specifically, the article 'Sentiment Analysis in Teaching Evaluations Using Sentiment Phrase Pattern Matching (SPPM) based on Association Mining' investigates the problem of how to obtain the sentimental feedback from the open-end questionnaires in the teaching evaluation by proposing a new method called sentiment phrase pattern matching (SPPM).

'Dynamic Optimisation based Fuzzy Association Rule Mining Method' is a relevant study to the above article. The authors of this article aim to address the problem of sharp boundaries by developing a fuzzy association rule method, the accuracy, effectiveness, and efficiency of which are verified empirically and theoretically.

A typical application domain of sentiment analysis is the financial market. 'FineNews: Fine-grained Semantic Sentiment Analysis on Financial Microblogs and News' proposes a fine-grained method to identify the positive and negative signals based on lexical and semantic features from financial microblogs and official news.

The article 'Factorization-based Primary Dimension Modelling for Multidimensional Data in Recommender Systems' thoughtfully reviews the mainstream of approaches and models in recommender systems and further exploits Tucker models to unify multidimensional profiles for top-N item recommendations.

To sum up, we believe that this special issue can be a valuable reference to academia, researchers, and industrial practitioners who are interested in the recent advancement in affective and sentimental computing techniques.