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Preface

In recent times, research activities in the areas of Opinion, Sentiment, Emotion and/or Mood in natural language texts, speech, music and other media have become the mainstream research under the umbrella of subjectivity analysis and affective computing. These tasks are considered vital from various academic and commercial perspectives since a decade. The popularity of the Internet and the rapid expansion of social media have made available online a variety of user generated contents. However, the major challenges are how to process the user generated contents such as texts, audio and images and how to organize them in some meaningful ways.

The common interest areas where Artificial Intelligence (AI) meets sentiment analysis can be viewed from four aspects of the problem and the aspects can be grouped as Object identification, Feature extraction, Orientation classification and Integration. The existing reported solutions or available systems are still far from being perfect or fail to meet the satisfaction level of the end users. The main issue may be that there are many conceptual rules that govern sentiment and there are even more clues (possibly unlimited) that can convey these concepts from realization to verbalization of a human being. Human psychology may provide the unrevealed clues and govern the sentiment realization. The important issues that need attention include how various psychological phenomena can be explained in computational terms and which AI concepts and computational methodologies will be proved as the most useful ingredients from the psychologist's point of view.

Sentiment analysis from natural language texts is a multifaceted and multidisciplinary problem. Research efforts are being carried out for identification of positive or negative polarity of the evaluative text and also for the development of devices that recognize human affect, display and model emotions from textual contents. Identifying strength of sentiment in figurative texts or aspects and categories from the reviews, detecting stance from the tweet data, identifying the psychological condition of persons from chat even detecting sentiment in clinical texts and the moods from music etc. are the recent trends in the field of sentiment analysis.

Mood analysis from music is an emerging area in Music Information Retrieval (MIR). The popularity of downloading and purchasing of music from online music shops have increased. Similarly, with rapid evolvement of technology, music is just a few clicks away, on almost any personal gadget be it computers, portable music players, or smart phones. This fact underlines the importance of developing an automated process for its organization, management, search as well as generation of playlists and various other music related applications. Recently, MIR based on emotions or moods has attracted the researchers from all over the world because of its highly motivated implications in human computer interactions.

In addition to Question Answering or Information Retrieval systems, Topic-sentiment analysis is being applied as a new research method for mass opinion estimation (e.g., reliability, validity, sample bias), psychiatric treatment, corporate reputation measurement, political orientation categorization, stock market prediction, customer preference or public opinion study and so on. Techniques from Artificial Intelligence play the important roles in these tasks. In recent times, regular research papers continue to be published in reputed conferences like ACL, NAACL, EMNLP, COLING, IJCNLP, CICLing, EACL etc. The Sentiment Analysis Symposiums are also drawing the attention of the research communities from every nook of the world. There has been an increasing number of efforts in shared tasks such as SemEval 2007 Task: Affective Text, SemEval 2013-2016 Task: Sentiment Analysis on Twitter, SemEval 2014-2016: Aspect-Based Sentiment Analysis, SemEval 2015: Sentiment Analysis of Figurative Language in Twitter, SemEval 2015: CLIPEval Implicit Polarity of Events, SemEval 2016: Detecting Stance in Tweets, SemEval 2015-2016: Clinical TempEval, TAC 2008 Opinion Summarization

task, TREC-BLOG tracks since 2006, and relevant NTCIR tracks since 6th NTCIR that aimed to focus on different issues of opinion and emotion analysis. Research activities on Sentiment Analysis have been performed in several languages other than English. The shared task Sentiment Analysis in Indian Languages (SAIL) Tweets in 2015 has been organized to detect the sentiment from Bengali, Hindi and Telugu tweets. The shared task Aspect-Based Sentiment Analysis in SemEval 2016 has also targeted sentiment analysis in the languages like Arabic, Chinese, Dutch, French, Russian, Spanish and Turkish including English. Some of the important names e.g., MediEval: Emotion in Music and MIREX: Audio Music Mood Classification are the evaluation campaigns for the mood classification from music using audio. The 16^{th} International Society for Music Information Retrieval (ISMIR) is one of the most reputed conferences in the field of music and has published many papers related to music mood.

Several communities from sentiment analysis have engaged themselves to conduct relevant conferences, e.g., 6^{th}Affective Computing and Intelligent Interfaces (ACII), 5th Annual Conference Behavioural Models & Sentiment Analysis Applied to Finance in 2015, symposiums such as Sentiment Analysis Symposium in 2015, and workshops such as Sentiment Analysis Innovation, "Sentiment and Subjectivity in Text" collocated with COLING-ACL 2006, "Sentiment Analysis – Emotion, Metaphor, Ontology and Terminology (EMOT)" in LREC 2008, Opinion Mining and Sentiment Analysis (WOMSA) 2009, "Topic-Sentiment Analysis for Mass Opinion Measurement (TSA)" in CIKM 2009, "Computational Approaches to Analysis and Generation of Emotion in Text" in NAACL 2010, 6^{th} Workshop on Computational Approaches to Subjectivity and Sentiment Analysis (WASSA) in EMNLP 2015, FLAIRS 2011 special track on "Affect Computing", 5^{th}Sentiment Elicitation from Natural Text for Information Retrieval and Extraction (SENTIRE 2015), 5^{th} Workshop on EMOTION, SOCIAL SIGNAL, SENTIMENT AND LINKED OPEN DATA (ESLOD 2014) in the satellite of LREC 2014, "Practice and Theory of Opinion Mining and Sentiment Analysis" in conjunction with KONVENS-2012 (PATHOS-2012), Intelligent Approaches applied to Sentiment Mining and Emotion Analysis (WISMEA, 2012), Socio-Affective Computing, Emotion and Sentiment in Social and Expressive Media, workshop on "Issues of Sentiment Discovery and Opinion Mining (WISDOM, 2012)", and a bunch of special sessions like Sentiment Analysis for Asian Languages (SAAL, 2012), Brain Inspired Natural Language Processing (BINLP, 2012), Advances in Cognitive and Emotional Information Processing (ACEIP, 2012), Language Technologies for Indian Social Media in 2014 and so on.

Since our previous three workshops in conjunction with the International Joint Conference on NLP (IJCNLP) in Chiang Mai, Thailand during Nov. 7-13, 2011, International Conference on Computational Linguistics (COLING) in Mumbai, India during Dec. 8-15, 2012 and with the International Joint Conference on NLP (IJCNLP) in Nagoya, Japan during the period October 14-18, 2013 were quite successful (with 20, 14, and 10 submissions and more than 30 participants from many countries). Prof. Eduard Hovy and Prof. James Martin were the keynote speakers for the first and second versions of this workshop, respectively. Inspired by the objectives we aimed at in the first three editions of the workshop, the warm responses and feedbacks we received from the participants and attendees and the final outcome, the purpose of the 4^{th} edition of the Workshop on Sentiment Analysis where AI meets Psychology (SAAIP 2016) in conjunction with International Joint Conference on Artificial Intelligence (IJCAI) 2016, is to create a framework for presenting and discussing the challenges related to sentiment, opinion, emotion, and mood analysis in the ground of NLP. This workshop also aims to bring together the researchers in multiple disciplines such as computer science, psychology, cognitive science, social science and many more who are interested in developing next generation machines that can recognize and respond to the sentimental states of the human users. This time we received

twelve submissions and finally eight papers have been accepted.

The keynote presented by Professor Björn Schuller is on seven essential principles to make multimodal sentiment analysis that works in the wild. A web-based interactive speech emotion classification system (WISE) that allows users to upload speech data and automatically classify the emotions was provided by Sefik Emre Eskimez, Melissa Sturge-Appley, Zhiyao Duan and Wendi Heinzelman.

Jasy Liew Suet Yan, Howard R. Turtle presented a work where a set of 48 emotion categories is discovered for the first time inductively from 5,553 annotated tweets through a small-scale content analysis by trained or expert annotators and then a set of 28 emotion categories was refined and tested to find out how representative they are on a larger set of 10,000 tweets obtained through crowd sourcing. While the most existing work in domain adaptation has focused on feature-based and/or instance-based adaptation methods, Bo Wang Maria Liakata, Arkaitz Zubiaga, Rob Procter and Eric Jensen set out to find an effective approach for tackling across-domain emotion classification task on a setof Twitter data involving social media discourse around arts and cultural experiences, in the context of museums. Determining an individual's personality traits is an important concept in Psychology that is also synchronized with our workshop's themes. In this regard, Edward P. Tighe, Jennifer C. Ureta, Bernard Andrei L. Pollo, Charibeth K. Cheng, and Remedios de Dios Bulos conducted research that aims to perform feature reduction techniques on linguistic features from essays and classify the author's personality traits based on the reduced feature set.

Sandeep Sricharan Mukku, Nurendra Choudhary and Radhika Mamidi explored various Machine Learning techniques for the classification of Telugu sentences into positive or negative polarities. In the domain of Bio medical Natural Language Processing (Bio-NLP), Anupam Mondal, Ranjan Satapathy, Dipankar Das and Sivaji Bandyopadhyay described a hybrid approach which is the combination of both linguistic and machine learning approaches to extract the contextual sense-based information from a medical corpus.

Rafal Rzepka, Kohei Matsumoto and Kenji Araki introduced a novel method for utilizing web mining and semantic categories for determining automatically if a given act is worth praising or not and reported how existing lexicons used in affective analysis and ethical judgment can be combined for generating useful queries for knowledge retrieval from a 5.5 billion word blog corpus. Finally, an approach to detect the sentiment of a song based on its multi-modality natures (text and audio) is presented by Harika Abburi, Eswar Sai Akhil Akkireddy, Suryakanth V Gangashetty and Radhika Mamidi.

We thank all the members of the Program Committee for their excellent and insightful reviews, the authors who submitted contributions for the workshop and the participants for making the workshop a success. We also express our thanks to the IJCAI 2016 Organizing Committee and Local Organizing Committee for their support and cooperation in organizing the workshop.

Organizing Committee
4thWorkshop on Sentiment Analysis where AI meets Psychology (SAAIP 2016)
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New York, USA

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Program Schedule

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