

COLING 2012

**24th International Conference on
Computational Linguistics**

**Proceedings of the
2nd Workshop on Sentiment Analysis
where AI meets Psychology
(SAAIP 2012)**

**Workshop chairs:
Sivaji Bandyopadhyay and Manabu Okumura**

**15 December 2012
Mumbai, India**

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Proceedings of the 2nd Workshop on Sentiment Analysis where AI meets Psychology (SAAIP 2012)

Sivaji Bandyopadhyay and Manabu Okumura (eds.)
Revised preprint edition, 2012

Published by The COLING 2012 Organizing Committee
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Preface

In recent times, research activities in the areas of Opinion, Sentiment and/or Emotion in natural language texts and other media are gaining ground under the umbrella of affect computing. Huge amount of text data are available in the Social Web in the form of news, reviews, blogs, chats and even twitter. Sentiment analysis from natural language text is a multifaceted and multidisciplinary problem. The existing reported solutions or available systems are still far from perfect or fail to meet the satisfaction level of the end users. There are many conceptual rules that govern sentiment and there are even more clues (possibly unlimited) that can map these concepts from realization to verbalization of a human being. Human psychology that relates to social, cultural, behavioral and environmental aspects of civilization may provide the unrevealed clues and govern the sentiment realization. In the present scenario we need constant research endeavors to reveal and incorporate the human psychological knowledge into machines in the best possible ways. The important issues that need attention include how various psychological phenomena can be explained in computational terms and the various artificial intelligence (AI) concepts and computer modeling methodologies that are most useful from the psychologist's point of view.

Regular research papers on sentiment analysis continue to be published in reputed conferences like ACL, EACL, NAACL, EMNLP or COLING. The Sentiment Analysis Symposiums are also drawing the attention of the research communities from every nook and corner of the world. There has been an increasing number of efforts in shared tasks such as SemEval 2007 Task#14: Affective Text, SemEval 2013 Task#14: Sentiment Analysis on Twitter, TAC 2008 Opinion Summarization task, TREC-BLOG tracks since 2006 and relevant NTCIR tracks since 6th NTCIR that have aimed to focus on different issues of opinion and emotion analysis. Several communities from sentiment analysis have engaged themselves to conduct relevant conferences, e.g., Affective Computing and Intelligent Interfaces (ACII) in 2009 and 2011 and workshops such as "Sentiment and Subjectivity in Text" in 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, Workshop on Computational Approaches to Subjectivity and Sentiment Analysis (WASSA) in ECAI 2010, ACL 2011 and ACL 2012, FLAIRS 2011 special track on "Affect Computing", Sentiment Elicitation from Natural Text for Information Retrieval and Extraction (SENTIRE 2011 and SENTIRE 2012), EMOTION SENTIMENT & SOCIAL SIGNALS (ES³ 2012) in the satellite of LREC 2012, Practice and Theory of Opinion Mining and Sentiment Analysis in conjunction with KONVENS-2012 (PATHOS-2012), Workshop on Intelligent Approaches applied to Sentiment Mining and Emotion Analysis (WISMEA, 2012), 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) and so on.

Since our first workshop in conjunction with the International Joint Conference on NLP (IJCNLP) in Chiang Mai, Thailand during Nov. 7-13, 2011 was quite successful (with 20 submissions and more than 30 participants from many countries), we planned to conduct our next workshop in conjunction with the International Conference on Computational Linguistics (COLING) being held in Mumbai, India, during Dec. 8-15, 2012. Inspired by the objectives we aimed at in the first edition of the workshop, the warm responses and feedbacks we received from the participants and attendees and the final outcome, the purpose of the 2nd edition of the Workshop on Sentiment Analysis where AI meets Psychology (SAAIP 2012) is to create a framework for presenting and discussing the challenges related to sentiment, opinion and emotion 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. The workshop consists of a keynote talk and presentations of technical papers that have been selected after peer review from the submissions received.

The workshop starts with an invited keynote talk titled “Appraisal: a functional linguistic perspective on evaluation” by Prof. J R Martin, Department of Linguistics, University of Sydney. The talk briefly recapitulates the past two decades of research on how linguists working within the framework of systemic functional linguistics have been developing appraisal theory as a tool for analysing evaluation in discourse. The talk outlines a brief overview of the current model and then moves on to address a number of the challenges that have arisen over the years – including distinguishing inscribed from invoked attitude, determining the prosodic domain of attitude selections and the role of attitude in the negotiation of affiliation. The talk concludes by the end notes on the recent work in Maton’s Legitimation Code Theory, its sociological perspective on axiologically charged constellations of meaning in particular, in relation to the above mentioned challenges.

In connection to such challenges for classifying emotions in short texts, Phillip Smith and Mark Lee present a Combinatory Categorical Grammar (CCG) based approach along with a hypothesis in which the authors adapt contextual valence shifters to infer the emotional content of a text. For classifying sentiments using machine learning approach, Basant Agarwal and Namita Mittal propose two feature selection methods, Probability Proportion Difference (PPD) and Categorical Probability Proportion Difference (CPPD) to select the relevant features. Braja Gopal Patra, Amitava Kundu, Dipankar Das and Sivaji Bandyopadhyay introduce the classification of interviews of cancer patients into several cancer diseases based on features like TF-IDF of unigram, bigram, trigram, emotion words and the SentiWordNet similarity by employing k-NN, Decision Tree and Naïve Bayes classifiers.

In the second session, Alena Neviarouskaya and Masaki Aono propose a method for automatic analysis of attitude (affect, judgment, and appreciation) in sentiment words. Rapid expansion of Web 2.0 with varieties of documents necessitates the annotation and organization of such documents in meaningful ways to expedite the search process. Thus, Akshat Bakliwal, Piyush Arora and Vasudeva Varma present a method to perform opinion mining and summarize opinions at entity level for English blogs and generate object centric opinionated summary from blogs. Yoshimi Suzuki proposes a method for classifying hotel reviews into guest’s criteria, such as service, location and facilities. Such a method can be applied for review summarization.

Less attention in case of emotion recognition in speech at the linguistic level encouraged Nandini Bondale and Thippur Sreenivas to identify paralinguistic emotion markers or emotiphons for two Indian languages, Marathi and Kannada whereas K. Marimuthu and Sobha Lalitha Devi use the Reaction Time (RT) psychological index to understand how the human cognition identifies various sentiments expressed by different lexical sentiment indicators in opinion sentences. Not only cognition, music is also a universal language to convey sentiments. M. R. Velankar and H. V. Sahasrabudde conduct a pilot study on solo instrumental clips of bamboo flute to show that the general sentiments felt by novice Indian listeners are similar to the expected mood of specific raga of Hindustani classical music.

Xiubo Zhang and Khurshid Ahmad propose a new way of studying sentiment and capturing ontological changes in a domain specific context using affect proxies. The analysis results suggest that citations of regulatory entities show strong correlation with negative sentiments in the banking context. Finally, Zeljko Agic and Danijela Merkle conclude the session by presenting Sentscope, a prototype system for collecting sentiment annotation and visualization of daily horoscopes from news portals written in Croatian.

This SAAIP 2012 workshop is being supported by the research project (INT/JP/JST/P-21/2009) entitled “Sentiment Analysis where AI meets Psychology”, 2009 India-Japan Cooperative Programme Project

(DST-JST) jointly funded by Department of Science and Technology, Ministry of Science and Technology, Government of India and Japan Science and Technology, Government of Japan. The research project is implemented by Professor Sivaji Bandyopadhyay, Computer Science and Engineering Department, Jadavpur University, Kolkata, India and Professor Manabu Okumura, Precision and Intelligence Laboratory, Tokyo Institute of Technology, Japan.

We thank Prof. J R Martin for the keynote talk, 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 COLING 2012 Organizing Committee and Local Organizing Committee for their support and cooperation in organizing the workshop.

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2nd Workshop on Sentiment Analysis where AI meets Psychology
COLING 2012
December 15, 2012.

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Keynote Speaker:

Prof.(Dr.) J R Martin, Department of Linguistics, University of Sydney

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2nd Workshop on Sentiment Analysis where AI meets Psychology Program

Saturday, 15 December 2012

09:00-09:15 Opening Remarks

09:15–10:00 *A functional linguistic perspective on evaluation*
Prof. (Dr.) J R Martin

Session 1

10:00–10:40 *A CCG-based Approach to Fine-Grained Sentiment Analysis*
Phillip Smith and Mark Lee

10:40–11:05 *Categorical Probability Proportion Difference (CPPD): A Feature Selection Method for Sentiment Classification*
Basant Agarwal and Namita Mittal

11:05–11:30 *Classification of Interviews - A Case Study on Cancer Patients*
Braja Gopal Patra, Amitava Kundu, Dipankar Das and Sivaji Bandyopadhyay

11:30–12:00 Tea break

Session 2

12:00–12:40 *Analyzing Sentiment Word Relations with Affect, Judgment, and Appreciation*
Alena Neviarouskaya and Masaki Aono

12:40–13:05 *Entity Centric Opinion Mining from Blogs*
Akshat Bakliwal, Piyush Arora and Vasudeva Varma

13:05–14:30 *Classifying Hotel Reviews into Criteria for Review Summarization*
Yoshimi Suzuki

13:30–14:30 Lunch

Session 3

14:30–15:10 *Emotiphons: Emotion Markers in Conversational Speech - Comparison across Indian Languages*
Nandini Bondale and Thippur Sreenivas

15:10–15:35 *How Human Analyse Lexical Indicators of Sentiments- A Cognitive Analysis Using Reaction-Time*
Marimuthu K and Sobha Lalitha Devi

15:35–16:00 *A Pilot Study of Hindustani Music Sentiments*
M.R. Velankar and H.V. Sahasrabudde

16:00–16:30 Tea break

Session 4

16:30–17:10 *Affect Proxies and Ontological Change: A finance case study*
Xiubo Zhang and Khurshid Ahmad

17:10–17:35 *Rule-Based Sentiment Analysis in Narrow Domain: Detecting Sentiment in Daily Horoscopes Using Sentiscope*
Zeljko Agic and Danijela Merkle

