Affective Reasoning for Big Social Data Analysis

Proposal for a Special Issue of
IEEE Transactions on Affective Computing

Guest Editors

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Background and Motivation

As the Web rapidly evolves, Web users are evolving with it. In an era of social connectedness, people are becoming increasingly enthusiastic about interacting, sharing, and collaborating through social networks, online communities, blogs, Wikis, and other online collaborative media. In recent years, this collective intelligence has spread to many different areas, with particular focus on fields related to everyday life such as commerce, tourism, education, and health, causing the size of the Web to expand exponentially.

The distillation of knowledge from such a big amount of unstructured information, however, is an extremely difficult task, as the contents of today's Web are perfectly suitable for human consumption, but remain hardly accessible to machines. The opportunity to capture the opinions of the general public about social events, political movements, company strategies, marketing campaigns, and product preferences has raised growing interest both within the scientific community, leading to many exciting open challenges, as well as in the business world, due to the remarkable benefits to be had from marketing and financial market prediction.

Existing approaches to big social data analysis mainly rely on parts of text in which sentiment is explicitly expressed, e.g., through polarity terms or affect words (and their co-occurrence frequencies). However, opinions and sentiments are often conveyed implicitly through latent semantics, which make purely syntactical approaches ineffective. In this light, this Special Issue focuses on the introduction, presentation, and discussion of novel techniques that further develop and apply affective reasoning tools and techniques for big social data analysis. A key motivation for this Special Issue, in particular, is to explore the adoption of novel affective reasoning frameworks and cognitive learning systems to go beyond a mere word-level analysis of natural language text and provide novel concept-level tools and techniques that allow a more efficient passage from (unstructured) natural language to (structured) machine-processable affective data, in potentially any domain.

Articles are thus invited in areas such as machine learning, weakly supervised learning, active learning, transfer learning, deep neural networks, novel neural and cognitive models, data mining, pattern recognition, knowledge-based systems, information retrieval, natural language processing, common-sense reasoning, and big data computing. Topics include, but are not limited to:

- Machine learning for big social data analysis
- Affective common-sense reasoning
- Social network modeling and analysis
- Social media representation and retrieval
- Multi-modal sentiment analysis
- Affective human-agent, -computer, and -robot interaction
- User profiling and personalization
- Aided affective knowledge acquisition
- Multi-lingual sentiment analysis
- Time-evolving sentiment tracking

The Special Issue also welcomes papers on specific application domains of big social data analysis, e.g., influence networks, customer experience management, intelligent user interfaces, multimedia management, computer-mediated human-human communication, enterprise feedback management, surveillance, art. The authors will be required to follow the Author's Guide for manuscript submission to IEEE ToAC.

Timeframe

Call for Papers out: July 2016
Submission Deadline: December 1st, 2016
Notification of Acceptance: Feburary 1st, 2017
Revised submission Deadline: April 1st, 2017
Final Manuscripts Due: June 1st, 2017

Composition and Review Procedures

The IEEE ToAC Special Issue on Affective Reasoning for Big Social Data Analysis will consist of papers on novel methods and techniques that further develop and apply affective reasoning tools and techniques in the context of big social data analysis. Some papers may survey various aspects of the topic. The balance between these will be adjusted to maximize the issue's impact. All articles are expected to successfully negotiate the standard review procedures for IEEE ToAC. Apart from an open call distributed among several channels including standard announcement via suited mailing lists and at workshops and conferences in the field, we intend to individually encourage a number of submissions, in particular best presentations of the ICDM SENTIRE and KDD WISDOM workshop series organized by part of the guest editors as satellite of the IEEE ICDM and ACM KDD conferences. We anticipate approximately 4 papers in the Special Issue.

About the Editors

ERIK CAMBRIA received his BEng and MEng with honors in Electronic Engineering from the University of Genoa in 2005 and 2008, respectively. In 2012, he was awarded his PhD in Computing Science and Mathematics following the completion of an EPSRC project in collaboration with MIT Media Lab, which was selected as impact case study by the University of Stirling for the Research Excellence Framework (REF2014). After two long-term research visits at HP Labs India and Microsoft Research Asia, he worked as Lead Investigator in NUS Cognitive Science Programme till 2014. Today, Dr Cambria is an Assistant Professor at NTU School of Computer Science and Engineering, a Research Fellow at NTU Temasek Labs, and an Adjunct Scientist at A*STAR IHPC. His current affiliations also include the Rolls-Royce@NTU Corporate Lab, A*STAR SIMTech, and MIT Synthetic Intelligence Lab. Dr Cambria is Associate Editor of Elsevier KBS and IPM, IEEE CIM, Springer AIRE, Cognitive Computation, and Editor of the IEEE IS Department on Affective Computing and Sentiment Analysis. He is recipient of several awards, e.g., the Temasek Research Fellowship, and is involved in many international conferences as Workshop Organizer, e.g., ICDM, Track Chair, e.g., FLAIRS, PC Member, e.g., AAAI, and Keynote Speaker, e.g., CICLing. He is also Fellow of the Brain Sciences Foundation, which was co-founded and mentored by the late Turing-award winner Marvin Minsky, and Founder of SenticNet Ltd.

AMIR HUSSAIN obtained his BEng (with the highest 1st Class Honours) and PhD (in novel neural network architectures and algorithms) from the University of Strathclyde in Glasgow, Scotland, UK, in 1992 and 1997 respectively. He is currently Professor of Computing Science, and founding Director of the COSIPRA Laboratory at the University of Stirling in Scotland, UK. His research interests are inter-disciplinary and industry-focussed, and include multimodal big data cognitive and sentic computing techniques and applications. He has conducted and led collaborative research with industry (attracting over US$3m in research grants, as Principal Investigator); partnered in major European research programs, and supervised more than 20 PhDs. He has published over 270 papers, including over a dozen books and 80 journal papers. He is founding Editor-in-Chief of the journals: Cognitive Computation (Springer Neuroscience, USA), and Big Data Analytics (BioMed Central), and Chief-Editor of the Springer Book Series on Socio-Affective Computing, and SpringerBriefs on Cognitive Computation. He is Associate Editor of the IEEE Transactions on Neural Networks and Learning Systems, a member of several Technical Committees of the IEEE Computational Intelligence Society (CIS), founding publications co-Chair of the IINNS Big Data Section and its annual INNS Conference on Big Data, and Chapter Chair of the IEEE UK & RI Industry Applications Society.

ALESSANDRO VINCIARELLI is with the University of Glasgow, where he is a senior lecturer (associate professor) at the School of Computing Science and an associate academic at the Institute of Neuroscience and Psychology. His main research interest is social signal processing, the domain aimed at modeling analysis, and synthesis of nonverbal behavior in social interactions. In particular, he has investigated approaches for role recognition in multiparty conversations, automatic personality perception from speech, and conflict analysis and measurement in competitive discussions. Overall, he has published more than 100 works, including one authored book, five edited volumes, and 31 journal papers. He has participated in the organization of the IEEE International Conference on social computing as a program chair in 2011 and as a general chair in 2012, he has initiated and chaired a large number of

international workshops, including the Social Signal Processing Workshop, the International Workshop on Socially Intelligence Surveillance and Monitoring, the International Workshop on Human Behavior Understanding, the Workshop on Political Speech, and the Workshop on Foundations of Social Signals. Furthermore, he is or has been the principal investigator of several national and international projects, including a European Network of Excellence (the SSPNet). He is the cofounder of Klewel, a knowledge management company recognized with several awards.