Keynotes

Going beyond Shallow Semantics
Martha Palmer
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Abstract
Shallow semantic analyzers, such as semantic role labeling and sense tagging, are increasing in accuracy and becoming commonplace. However, they only provide limited and local representations of words and individual predicate-argument structures. This talk will address some of the current challenges in producing deeper, connected representations of eventualities. Available resources, such as VerbNet, FrameNet, and TimeBank, that can assist in this process, will also be discussed, as well as some of their limitations.

Bio
Martha Palmer is a Full Professor at the University of Colorado with joint appointments in Linguistics and Computer Science and is an Institute of Cognitive Science Faculty Fellow. She recently won a Boulder Faculty Assembly 2010 Research Award. Beginning with her dissertation work at Edinburgh and her first job as a Research Scientist at Unisys, her research has been focused on trying to capture the meanings of words in representations that the computer can use to build up meanings of complex sentences and documents. These representations can in turn be used to improve the computer's ability to perform question answering, information retrieval, and machine translation. Current approaches rely on techniques for applying supervised machine learning algorithms, which use vast amounts of annotated training data. Therefore, she and her students, both at Colorado and previously at the University of Pennsylvania, are engaged in providing data with word sense tags and semantic role labels for English, Chinese, Arabic, and Hindi, funded by DARPA and NSF. They also use machine learning algorithms to develop automatic sense taggers and semantic role labelers, and to extract bilingual lexicons from parallel corpora. A more recent focus is the application of these methods to biomedical journal articles and clinical notes, funded by NIH. She is a co-editor for both the Journal of Natural Language Engineering and LiLT, Linguistic Issues in Language Technology. She is a past President of the Association for Computational Linguistics, past Chair of SIGLEX and SIGHAN, and is currently the Director of the 2011 Linguistics Institute to be held in Boulder, Colorado.
Abstract

Multimedia data is now produced by more and more sources and in more and more formats: documents, email, transactions, tweets, audio files, videos, sensor readouts. With the proliferation of the sources and formats of data, the extraction of information from these data is becoming ever more challenging. Magnifying this is that the information must frequently be extracted from many distinct data streams: information about an attack on the British pound sterling might come from Hong Kong and New York as well as London, and from news reports as well as from trading records. Magnifying the challenge still further is that the information must frequently be extracted in real time to be of value: it is of little use to know today that cardiac monitors warned yesterday of a sudden and catastrophic heart attack. In this talk, I will start by outlining these problems, which have led to the emergence of a new and exciting field of research: multimedia stream mining. Subsequently, I will introduce the novel methods required to perform multimedia stream mining, such as constructing, managing, and adapting applications for the extraction of information in real time. Such applications are built as topologies of classifiers deployed on a set of processing nodes. In order to meet the demands imposed by the nature of the problem, it is critical that these processing nodes be heterogeneous (so different nodes can play different roles) and that the application be distributed (so that the nodes can operate largely independently but still function in a coordinated way). I will conclude this talk by arguing that multimedia stream mining requires the development of novel processing and computing paradigms, such as stream computing and semantic computing as well as the design of new user interfaces and applications.

Bio

Mihaela van der Schaar is Professor in the Electrical Engineering Department at the University of California, Los Angeles. Her research interests include multimedia networking, communication, processing, and systems, multimedia stream mining, dynamic multi-user networks and system designs, online learning, network economics and game theory. She is an IEEE Fellow, a Distinguished Lecturer of the Communications Society for 2011-2012, the Editor in Chief of *IEEE Transactions on Multimedia* and a member of the Editorial Board of the *IEEE Journal on Selected Topics in Signal Processing*. She received an NSF CAREER Award (2004), the Best Paper Award from *IEEE Transactions on Circuits and Systems for Video Technology* (2005), the Okawa Foundation Award (2006), the IBM Faculty Award (2005, 2007, 2008), the Most Cited Paper Award from *EURASIP: Image Communications Journal* (2006), the Gamenets Conference Best Paper Award (2011) and the 2011 IEEE Circuits and Systems Society Darlington Award Best Paper Award. She received three ISO awards for her contributions to the MPEG video compression and streaming international standardization activities, and holds 33 granted US patents. For more information about her research visit: [http://medianetlab.ee.ucla.edu/](http://medianetlab.ee.ucla.edu/)