

Editorial

This special issue of the International Journal of Computational Linguistics Research gathers extended versions of papers that were presented at the AISB 2010 conference and first published in the conference proceedings. The authors of these papers gathered for the first Linguistic Approaches To Dialog Agents (LACATODA) symposium that concentrated on mixing different methods for achieving smarter conversational systems.

A dialog can be considered to be the most sophisticated function of our minds, and building a machine to speak natural language requires combining several very difficult tasks and the consideration of missing information in context. By getting together researchers with different approaches to different problems I wished not only to enrich our mutual understanding of what is needed to build such systems but also to make a community of people who would like to cooperate and create systems using both linguistic and more hardware-oriented cognitive approaches.

Living in the age of information gives us a whole new spectrum of possibilities for creating an intelligent machine. Many marvelous ideas from the dawn of Artificial Intelligence research faced problems with exceptions and the impossibility of inputting all the required knowledge manually. Today, however, we have vast amounts of existing data from sensors and text with which to revisit these Good Old-Fashioned AI methods and approaches. The increased use of WWW, RFID, Bluetooth, etc. could allow us to determine standard human behaviors, emotions, and even moral reasoning according to the Wisdom of Crowds hypothesis. Collective input data could also help to retrieve knowledge about the physical world we live in. By combining Natural Language Processing methods with cognitive approaches, we can discover a new range of intelligent systems that understand our environment, our feelings and us. In this context, we see a role for NLP and cognitive approaches to play in developing a new generation of user-friendly, safe systems that, through interaction with the user and the world, can learn how to reason, behave and speak naturally. For that reason I was interested in papers on systems and ideas for systems that use common sense knowledge and reasoning, affective computing, cognitive methods, learning from broad sets of data and acquiring knowledge, or language and user preferences. By introducing readers this issue I intend to spark an interdisciplinary discussion on joining forces to return AI to its original, broader and deeper goals which are currently represented by AGI – Artificial General Intelligence.

During the IJCAI 2009 Invited Panel on “AAAI Study on Long-Term AI Futures”, top AI researchers presented their thoughts on what kind of problems we need to tackle in the following decades. One dominating motive was to make a machine that is safe and understands human needs. We propose that in order to achieve this goal we must work on systems that combine various skills that lead to a broader and deeper understanding of human behavior, emotions and everyday life. Given that knowledge needed for this goal is more available than ever, we can begin to switch from a “building knowledge for systems” approach to a “building systems for knowledge” approach. For example, the classic dialog system ELIZA was built to use the utterance utterances simply to fool the user into believing that it understands the language. More than two decades later, the A.L.I.C.E. system showed that creating a knowledge database for a talking agent increases its conversation skills. However, we know that teaching a machine to talk about anything is very laborious and inefficient. In the era of the Internet it is easier to retrieve knowledge about a given topic and combine it with other elements needed for understanding as a goal/plan analysis or a reasons/consequences acquisition. Most researchers concentrate on single aspects of these problems, so it seemed expedient to gather all interested developers together in order to exchange our ideas and discuss methods for achieving a higher level, more natural and safer intelligence.

Thanks to the excellent work by Program Committee members in both the conference paper and extended journal paper areas, this issue includes 5 long and 4 short papers on a wide variety of topics.

Anzalone et al. aim at building a friendly machine, which could be entertaining for the user. They show the importance of concept-symbol problem when building an emotional humanoid robot based on Latent Semantic Analysis. The paper is titled “An emotional robotic partner for entertainment purposes”.

Dindo et al. are interested in visual grounding and they present their approach in “Visually- Grounded Language Model for Human-Robot Interaction”. They introduce a computational model for the acquisition of a grounded language model to be used in human-robot interaction. In this work, the reader is given insight into a potential machine that is capable of conducting a verbal interaction with a human in ambiguous situations.

Dybala et al., have showed a new, multistage approach to analyze the emotional changes during a dialog with humorous utterances. Read their “Extending the Chain: Humor and Emotions in HCI” to see what a combination of affective analysis and pun generation can achieve when implemented in a chatbot. It is the first case in which a dialog system controls the affective state of a conversational flow.

To present their question generation method, Kimura et al. wrote a short paper “A Method for Automatically Generating Questions about a User’s Political Interest Using Minutes of Municipal Councils”. There are topics and documents (like city council minutes) that are difficult to search through by a citizen and the authors’ future system is planned to use dialog to help in finding a local politicians interested in solving particular problems.

Komuda et al. in their short paper “Web-mining the emotions — web-crowd based moral reasoning agent” touches on the ethical aspects of systems that are based on uncontrollable data sources such as the World Wide Web or real life sensory input, which is one of the biggest concerns for many researchers and others outside academia. With their Kohlbergian approach they wish to achieve a system that differentiates moral and immoral behavior by retrieving data on a usual consequences of input behavior from the Internet resources.

Li Zhang, in her long paper, titled “Affect Interpretation from Dramatic Improvisation using Character and Contextual Profiles”, introduces new developments on automatic affect sensing in metaphorical figurative language and employed context profiles for affect interpretation.

Ptaszynski et al. introduce an algorithm for finding aggressive expressions used by Internet bullies in their work titled “In the Service of Online Order: Tackling Cyber-Bullying with Machine Learning and Affect Analysis”. They applied an SVM based machine learning method to train a classifier in detection of cyber-bullying and analyzed texts with an affect analysis system in order to find out how the classifier could be improved.

Sjobergh and Araki describe their standup comedy system, which, was the first ever joke system generate its own puns based on human-made humorous texts while attending a robot comedian contest. Their short paper, titled “What Does 3.3 Mean? Relating Humor Generation Evaluation Scores to Real World Performance”, though not strictly scientific, gives a nice view of challenges in Turing test-like situations.

The last but not least, LACATODA 2010 invited speaker, Brandon Rohrer concludes our special issue with his paper “Concept Acquisition for Dialog Agents”. He introduces his original unsupervised learning methods for acquiring concepts that are extremely important for of understanding process not only of dialog agents but also other systems – both physical and virtual.

Sapporo, 22 Feb 2011
Rafal Rzepka
Guest Editor

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