

Introduction of *Linguistic And Cognitive Approaches To Dialog Agents* Symposium

An one-day symposium at AISB 2010 (29 March - 1 April 2010), De Monfort University, Leicester, UK
<http://sig.media.eng.hokudai.ac.jp/AISB10/LaCATODA2010/>

Symposium chair: Rafal Rzepka (Hokkaido University, Japan)

Motivation:

The age of information explosion gives us a whole new spectrum of possibilities for creating an intelligent machine. Many marvelous ideas of the dawn of Artificial Intelligence research faced problems of exceptions and the impossibility of manual input of all needed knowledge, but today we have vast amounts of data from sensors and text so that we can rethink classical AI methods and approaches. The increased use of WWW, RFID, Bluetooth, etc. could allow us to determine standard human behaviors, emotions or 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 us, our environment and our feelings. 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 or speak naturally. We are interested in original 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. The symposium intends 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.

Topics of interest include but are not limited to (in alphabetical order):

- Affective computing
- Agent-based information retrieval
- Artificial humor
- Common sense knowledge and reasoning
- Computational cognition
- Daily life dialog systems
- Emotional intelligence simulations
- Ethical reasoning
- Language acquisition
- NLP text mining techniques
- Preference models
- Unlimited question answering
- User modeling
- Wisdom of Crowds approaches
- World knowledge acquisition
- Systems and approaches combining above topics

Symposium contributions:

We invited unpublished, original work as short papers (up to 6 pages) or full papers of up to 8 pages (double column). Fourteen submissions were received and eleven were accepted for presentation at the symposium. The symposium also includes one invited talk.

Acknowledgements:

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Programme Committee:

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Invited Talk

Speaker: Brandon Rohrer (Sandia Labs, USA)

Title: Applying concept acquisition to dialogue generation

Abstract: In language, as in much of AI, a lot of effort is expended to ground symbols, that is, to infer a semantic interpretation. An alternative to this top-down approach, concept acquisition, creates concepts from low-level data to which symbol labels can then be attached. Deep semantic interpretations of this type may extend the capabilities of dialog agents past the barriers they typically encounter now. In this talk I present a general method for concept acquisition that could be used to provide a semantic basis for language. The notion of "concept" used here is just a set of precepts. At the lowest level, precepts are raw sensory information, such as pixel values or auditory tones. At higher levels, precepts are sets of other precepts, such as spoken words or images of complete faces. The concept acquisition algorithm I propose is called a kx-tree. It is an unsupervised learning algorithm that groups states without making many of the assumptions common to clustering data. It iteratively subdivides the state space into regions, some of which contain clusters of state observations. Each cluster region constitutes a concept, in the sense that the region can be used to represent all of the states it contains in a general way, without specifying states individually. This is the basis for abstraction and formation of higher level concepts. The concepts found by kx-trees can be used again as inputs to a higher level of kx-trees, resulting in a hierarchical network of kx-trees and perhaps arbitrarily abstract concepts. Because kx-trees handle inputs of all types, they could feasibly associate high-level, multi-modal percepts with a semantic label.