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Proceedings of the 7th Workshop on Cognitive Aspects of Computational Language Learning

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Introduction

The 7th Workshop on Cognitive Aspects of Computational Language Learning (CogACLL) took place on August 11, 2016 in Berlin, Germany, in conjunction with the ACL 2016. The workshop was endorsed by ACL Special Interest Group on Natural Language Learning (SIGNLL). This is the seventh edition of related workshops first held with ACL 2007, EACL 2009, 2012 and 2014, EMNLP 2015, and as a standalone event in 2013.

The workshop is targeted at anyone interested in the relevance of computational techniques for understanding first, second and bilingual language acquisition and change or loss in normal and pathological conditions.

The human ability to acquire and process language has long attracted interest and generated much debate due to the apparent ease with which such a complex and dynamic system is learnt and used on the face of ambiguity, noise and uncertainty. This subject raises many questions ranging from the nature vs. nurture debate of how much needs to be innate and how much needs to be learned for acquisition to be successful, to the mechanisms involved in this process (general vs specific) and their representations in the human brain. There are also developmental issues related to the different stages consistently found during acquisition (e.g. one word vs. two words) and possible organizations of this knowledge. These have been discussed in the context of first and second language acquisition and bilingualism, with cross linguistic studies shedding light on the influence of the language and the environment.

The past decades have seen a massive expansion in the application of statistical and machine learning methods to natural language processing (NLP). This work has yielded impressive results in numerous speech and language processing tasks, including e.g. speech recognition, morphological analysis, parsing, lexical acquisition, semantic interpretation, and dialogue management. The good results have generally been viewed as engineering achievements. However, researchers have also investigated the relevance of computational learning methods for research on human language acquisition and change. The use of computational modeling has been boosted by advances in machine learning techniques, and the availability of resources like corpora of child and child-directed sentences, and data from psycholinguistic tasks by normal and pathological groups. Many of the existing computational models attempt to study language tasks under cognitively plausible criteria (such as memory and processing limitations that humans face), and to explain the developmental stages observed in the acquisition and evolution of the language abilities. In doing so, computational modeling provides insight into the plausible mechanisms involved in human language processes, and inspires the development of better language models and techniques. These investigations are very important since if computational techniques can be used to improve our understanding of human language acquisition and change, these will not only benefit cognitive sciences in general but will reflect back to NLP and place us in a better position to develop useful language models.

We invited submissions on relevant topics, including:

- Computational learning theory and analysis of language learning and organization
- Computational models of first, second and bilingual language acquisition
- Computational models of language changes in clinical conditions
- Computational models and analysis of factors that influence language acquisition and use in different age groups and cultures
- Computational models of various aspects of language and their interaction effect in acquisition, processing and change

- Computational models of the evolution of language
- Data resources and tools for investigating computational models of human language processes
- Empirical and theoretical comparisons of the learning environment and its impact on language processes
- Cognitively oriented Bayesian models of language processes
- Computational methods for acquiring various linguistic information (related to e.g. speech, morphology, lexicon, syntax, semantics, and discourse) and their relevance to research on human language acquisition
- Investigations and comparisons of supervised, unsupervised and weakly-supervised methods for learning (e.g. machine learning, statistical, symbolic, biologically-inspired, active learning, various hybrid models) from a cognitive perspective.

Acknowledgements

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Table of Contents

Conference Program

Thursday, August 11, 2016

9:00–9:05 ***Welcome and Opening Session***

9:05–9:35 **Session 1 - Language in Clinical Conditions**

9:05–9:35 *Automated Discourse Analysis of Narrations by Adolescents with Autistic Spectrum Disorder*
Michaela Regneri and Diane King

9:35–10:30 ***Invited Speaker I***

10:30–11:00 ***Coffee Break***

11:00–11:30 **Poster Session**

11:00–11:30 *Detection of Alzheimer's disease based on automatic analysis of common objects descriptions*
Laura Hernandez-Dominguez, Edgar Garcia-Cano, Sylvie Ratté and Gerardo Sierra Martínez

11:00–11:30 *Conversing with the elderly in Latin America: a new cohort for multimodal, multilingual longitudinal studies on aging*
Laura Hernandez-Dominguez, Sylvie Ratté, Boyd Davis and Charlene Pope

11:00–11:30 *Leveraging Annotators' Gaze Behaviour for Coreference Resolution*
Joe Cheri, Abhijit Mishra and Pushpak Bhattacharyya

11:00–11:30 *From alignment of etymological data to phylogenetic inference via population genetics*
Javad Nouri and Roman Yangarber

11:00–11:30 *An incremental model of syntactic bootstrapping*
Christos Christodoulopoulos, Dan Roth and Cynthia Fisher

Thursday, August 11, 2016 (continued)

11:30–12:30 Session 2: Child Directed Language

11:30–12:00 *Longitudinal Studies of Variation Sets in Child-directed Speech*
Mats Wirén, Kristina Nilsson Björkenstam, Gintaré Grigonyté and Elisabet Eir Cortes

12:00–12:30 *Learning Phone Embeddings for Word Segmentation of Child-Directed Speech*
Jianqiang Ma, Çağrı Çöltekin and Erhard Hinrichs

12:30–14:00 ***Lunch Break***

14:00–15:00 ***Invited Talk II***

15:00–15:30 Session 3: Learning Artificial Languages

15:00–15:30 *Generalization in Artificial Language Learning: Modelling the Propensity to Generalize*
Raquel Garrido Alhama and Willem Zuidema

15:30–16:00 ***Coffee Break***

16:00–17:00 Session 4: Language Acquisition

16:00–16:30 *Explicit Causal Connections between the Acquisition of Linguistic Tiers: Evidence from Dynamical Systems Modeling*
Daniel Spokoyny, Jeremy Irvin and Fermin Moscoso del Prado Martin

16:30–17:00 *Modelling the informativeness and timing of non-verbal cues in parent-child interaction*
Kristina Nilsson Björkenstam, Mats Wirén and Robert Östling

Thursday, August 11, 2016 (continued)

17:00–17:35 Panel and Closing Session

17:00–17:30 ***Panel***

17:30–17:35 ***Closing Session***