

Psychocomputational Models of Human Language Acquisition (PsychoCompLA-2008)

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Keywords: language acquisition; syntax acquisition; language learning; language change; computational; linguistics; psycholinguistics; psychology; statistical; innateness; Universal Grammar.

Workshop Topic and History

The workshop is devoted to psychocomputational models of language acquisition. By *psychocomputational*, we mean computational models that are compatible with research in psycholinguistics, developmental psychology and/or linguistics.

This is the fourth meeting of the Psychocomputational Models of Human Language Acquisition workshop following PsychoCompLA-2004, held in Geneva, Switzerland as part of the 20th International Conference on Computational Linguistics (COLING-2004), PsychoCompLA-2005 as part of the 43rd Annual Meeting of the Association for Computational Linguistics (ACL-2005) held in Ann Arbor, Michigan where the workshop shared a joint session with the Ninth Conference on Computational Natural Language Learning (CoNLL-2005), and PsychoCompLA-2007 held in Nashville, Tennessee as part of the 29th meeting of the Cognitive Science Society (CogSci-2007).

Workshop Description

The workshop will present research and foster discussion centered around psychologically-motivated computational models of language acquisition, with an emphasis on the acquisition of syntax. In recent decades there has been a thriving research agenda that applies computational learning techniques to emerging natural language technologies and many meetings, conferences and workshops in which to present such research. However, there have been only a few (but growing number of) venues in which psychocomputational models of how humans acquire their native language(s) are the primary focus.

Psychocomputational models of language acquisition are of particular interest in light of recent results in developmental psychology that suggest that very young infants are adept at detecting statistical patterns in an

audible input stream. Though, how children might plausibly apply statistical 'machinery' to the task of grammar acquisition, with or without an innate language component, remains an open and important question. One effective line of investigation is to computationally model the acquisition process and determine interrelationships between a model and linguistic or psycholinguistic theory, and/or correlations between a model's performance and data from linguistic environments that children are exposed to.

Although the workshop program speaks to many facets of psychocomputational language acquisition modeling, the theme of the workshop this year is: *Computational resources: How much is just right, and does it matter?* The computational resources (e.g., number of calculations per input datum, size of memory store, etc.) employed by current psychocomputational modeling efforts vary tremendously from model to model. However, two important questions have rarely been addressed. How well do a particular acquisition model's resources parallel the resources employed by a human language learner? And, how relevant (or not) is it to establish such a relationship?

Invited Presenters

- **Rens Bod**
Institute for Logic, Language and Computation,
University of Amsterdam, Netherlands
- **Damir Cavar**
University of Indiana, USA and Zadar University,
Croatia Gary Marcus, New York University, USA
- **Jeffery Lidz**
University of Maryland, USA
- **Gary Marcus**
New York University, USA
- **Josh Tenenbaum**
Massachusetts Institute of Technology, USA

Submissions

Abstracts of research on the following topics were invited for submission and review:

- Models that address the acquisition of word-order;
- Models that combine parsing and learning;
- Formal learning-theoretic and grammar induction models that incorporate psychologically plausible constraints;
- Comparative surveys that critique previously reported studies;
- Models that have a cross-linguistic or bilingual perspective;
- Models that address learning bias in terms of innate linguistic knowledge versus statistical regularity in the input;
- Models that employ language modeling techniques from corpus linguistics;
- Models that employ techniques from machine learning;
- Models of language change and its effect on language acquisition or vice versa.
- Models that employ statistical/probabilistic grammars;
- Computational models that can be used to evaluate existing linguistic or developmental theories (e.g., principles & parameters, optimality theory, construction grammar, etc.)
- Empirical models that make use of child-directed corpora such as CHILDES.

Program Committee

Rens Bod, Institute for Logic, Language and Computation, University of Amsterdam, Netherlands

David Guy Brizan, City University of New York, USA (Co-chair)

Damir Cavar, University of Indiana, USA and Zadar University, Croatia
Gary Marcus, New York University, USA

Nick Chater, University of College London, UK

Alex Clark, Royal Holloway University of London, UK

Rick Dale, University of Memphis, USA

Jeffery Lidz, University of Maryland, USA

Gary Marcus, New York University, USA

Lisa Pearl, University of California, Irvine, USA

William Gregory Sakas, City University of New York, USA (Chair)

Josh Tenenbaum, Massachusetts Institute of Technology, USA

Charles D. Yang, University of Pennsylvania, USA

Audience

This workshop brings together researchers from cognitive psychology, computational linguistics, other computer/mathematical sciences, linguistics and psycholinguistics working on language acquisition from a wide variety of perspectives. Diversity and cross-fertilization of ideas is the central goal.

On the Web

Abstracts and some full papers from all PsychoComp-LA workshops are available on the internet at:
<http://www.colag.cs.hunter.cuny.edu/psychocomp>