Understanding Human Communication

Florian Jaeger
Director, Center of Language Science Associate Professor, Brain and Cognitive Sciences Associate Professor, Linguistics

CURRENT RESEARCH

Understanding the ways in which humans can decode language

The stunning ability to communicate abstract messages is a quintessential human trait that uniquely defines us in the animal kingdom. Despite incredible variance in the ways that people talk, including pronunciation, the words we choose, and the structures we produce, we are able to understand one another. Dr. Florian Jaeger, of the University of Rochester, seeks to understand the computational cognitive systems that allow the human brain to communicate information at a rate and complexity that far exceeds that of other animals. The primary goal of Dr. Jaeger and his collaborators in the the Human Language Processing (HLP) Lab, is to understand the perceptual and motor inference processes that underlie our ability to communicate robustly. For example, how do we compress the high dimensional acoustical signal that arrives at our ears sufficiently to process it further? What neural codings allow us to do so within milliseconds? This ability points to cognitive and neural systems that are tuned to the statistics of the speech signal, thereby allowing the millisecond-by-millisecond prediction and compression that facilitates efficient language understanding. His research has implications that span a vast spectrum including understanding language processing, language learning, the social perception of others, automatic speech recognition, speech synthesizers, and the fundamental basics of linguistic theory.

Research at the HLP lab begins with the development of theoretical mathematical frameworks. These models are implemented and tested in behavioral and brain imaging experiments --theory and experimentation inform each other, leading to the incremental refinement of both. A central component in this work is a...

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AFFILIATION

University of Rochester

EDUCATION

- Postdoc, in Psychology, 2006 , University of California, San Diego
- Ph.D., in Linguistics, 2006 , Stanford University
- N.A., in Brain and Cognitive Science, 2004 , MIT
- N.A., in Linguistics, 2000 , University of California, Berkeley
- M.A., in Computer Science and Linguistics, 2000 , Humboldt University at Berlin

AWARDS

- Alfred P. Sloan Research Fellow, 2011-2013
- National Science Foundation CAREER Award, 2012-2017
- Wilmot Assistant Professor of Sciences, 2010-2012
- Jerrold J. Katz Young Scholar Award, 2007
- Scientific Advisory Board to the German Academic Exchange Network, 2006-2009

RESEARCH AREAS

Life Science, Neurological / Cognitive, Neurological / Cognitive

FUNDING REQUEST

Your contributions will support the continued research of Dr. Jaeger as he seeks to understand the computational cognitive systems that allow the human brain to communicate information at an incredible rate. Your donations will support the $200K to $300K per year required for running the lab or the $10K to $40K for equipment. Donations will also support specific equipment that will contribute to research questions that Dr. Jaeger otherwise would have been unable to do!