

NoL Special Issue: Cognitive computational neuroscience of language

A core goal of language research is to achieve a mechanistic understanding of the processes involved in sentence comprehension, and of the functional organization of the underlying neural substrates.

In recent years, deep learning language models have reached remarkable performance on many complex language tasks. A rapidly evolving research program at the interface of artificial intelligence and cognitive neuroscience focuses on the question of whether these computational models can serve as models of language processing in the human brain.

The time is ripe to synthesize some of this cutting-edge research. This special issue of *Neurobiology of Language* invites submissions — theoretical and empirical — at the intersection of computational linguistics, neuroscience of language, and psycholinguistics. The central question is whether the level of performance on sentence comprehension tasks displayed by deep learning language models is achieved through mechanisms comparable to the ones employed by the human brain. The focus should be on how the architecture, the training task, and the internal representations of deep learning language systems compare and relate to those of the language network in the human brain.

We welcome proposals and studies that adopt different approaches to combining artificial neural networks and (different kinds of) neural data. Contributions may include, but are not limited to, neural network models of sentence processing and/or other language processes, empirical evaluations of the neural or cognitive plausibility of existing natural language processing models, or meta-analyses of prior attempts to computationally model brain responses during language comprehension. We are also interested in publishing a limited number of position/opinion papers that discuss the promise and challenges of computational models in the study of the neurobiology of language.

It is crucial that all contributions clearly specify what we learn about language processing mechanisms and the brain by developing and evaluating computational models. Researchers interested in this issue, but who are not sure whether their work fits the special topic issue are encouraged to contact the special issue editors.

All contributions will be peer-reviewed and will be published on a rolling basis if considered acceptable.

Guest editors:

Alessandro Lopopolo - University of Potsdam

Milena Rabovsky - University of Potsdam

Ev Fedorenko - MIT

Roger Levy - MIT

Roel Willems - Radboud University

TIMELINE:

Deadline for First Submission: December 2021

Deadline for First Reviews: March 2022

Deadline for Resubmission: May 2022

Deadline for Second Reviews: July 2022

Deadline for Collection to be Finalized: Sept 2022