

Productivity and the Discovery Procedure

A discovery procedure, as Chomsky famously discussed in *Syntactic Structures*, is a theory which, in combination of a universal theory of language, can produce an appropriate grammar on a corpus of language specific input. The pursuit of a discovery procedure was deemed premature. In one form or another, subsequent research in language acquisition and theoretical linguistics has set on the less ambitious project of evaluation procedure: Among a set of available grammars, which one is the best given a linguistic corpus?

I would like to suggest that a discovery procedure is now within striking distance. I will describe a principle of learning and generalization, which is almost surely domain general, that is capable of discovering productive generalizations in a linguistic corpus but avoiding spurious ones. Crucially, the search for productivity can be carried out recursively, allowing the learner to discover regularities that hold for subregions of language. The mechanical nature of this approach will be illustrated by a live simulation of learning the infamous German noun plural system: first by me, someone who knows no German at all thereby simulating a German-learning child, followed by quantitative results from a fully implemented computational model, which is competitive against deep learning models but requires only a fraction of the training data.