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Analyzing cultural evolution by iterated learning

Much of the knowledge that human beings have about their world comes not from direct experience, but from interacting with others. This raises an interesting question: what are the consequences of learners learning from other learners? I will present both theoretical and empirical results on the implications of such a process of "iterated learning" for the information being transmitted between learners. Specifically, I will show that iterated learning with Bayesian learners, each observing data generated by the previous learner and then selecting hypotheses in accordance with Bayes' rule, results in convergence to a distribution over hypotheses determined by the prior of the learners. This result has implications both for methods for developing methods for investigating the inductive biases of human learners, and for understanding how those biases influence the evolution of concepts and languages. I will describe the results of a series of experiments bearing out the basic predictions of analysis for simple cognitive abstractions such as functions and categories as well as more complex linguistic objects such as frequency distributions and systems of color terms.