



# Sequential Persuasion and Information Design



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## Abstract

In Bayesian persuasion, a more-informed principal influences the actions of a less-informed agent by signaling information. We introduce a dynamic model of Bayesian persuasion, where the principal and the agent interact over time. The agent takes actions in each time step based on the current state, the principal's advice/signal, and their belief about the external parameter. Meanwhile, the action of the agent updates the state according to a stochastic process. The model is a generalization of the Markov decision process while it can also be seen as a special type of Markov games. It arises naturally in a number of applications, e.g., an app (the principal) can advise its user (the agent) on possible choices between actions based on additional real-time information the app has. In this talk, I will introduce this sequential model and present several complexity and algorithmic results about sequential information design, i.e., the problem of designing an optimal signaling strategy for the principal in this sequential model.

## Biography

Jiarui Gan is a lecturer at the Department of Computer Science, University of Oxford, working in the Artificial Intelligence & Machine Learning research theme. Prior to joining Oxford he was a postdoctoral researcher at Max Planck Institute for Software Systems in Germany. He obtained a PhD in Computer Science from the University of Oxford. He is broadly interested in algorithmic problems in game theory and multiagent systems. His recent work received the Outstanding Paper Honorable Mention at the AAI'22 conference.