

Showing versus Doing: Teaching by Demonstration

Submission ID 3000263
Submission Type Poster
Topic Cognitive Science
Status Submitted
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SUBMISSION DETAILS

Presentation Type Either Poster or Oral Presentation

Presentation Abstract Summary People and algorithms can learn from expert demonstrations, but an expert may or may not be intentionally teaching. What difference does this make? That is, how does doing a task relate to showing another agent how to do a task? Here, we model showing as a form of Bayesian pedagogy: selecting sequences of actions to maximize the probability that an observer infers the demonstrator's underlying intention. We formulate this computational process as "planning in an observer's belief space" and extend previous accounts of teaching by example to sequential domains. In several behavioral experiments, we demonstrate that people's actions when showing a task is predicted by the model, while their doing a task is not. People's showing trajectories can also more effectively teach "off-the-shelf" inverse reinforcement learning algorithms, indicating the importance of considering intentional teaching when designing learning algorithms.

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Keywords

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inverse reinforcement learning

pedagogy

teaching

social learning

bayesian modeling