

Valuation as inference: A New Model for the Effects of Fixation on Choice

Submission ID 3000265
Submission Type Poster
Topic Cognitive Science
Status Submitted
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SUBMISSION DETAILS

Presentation Type Either Poster or Oral Presentation

Presentation Abstract Summary To infer a state of the world, organisms need to integrate information to make a decision. In perception, there is strong evidence that such inference is performed in a Bayesian way. Here, we propose that consumer choice is similarly Bayesian: an agent maintains a posterior distribution over the "goodness" of an item, which starts out as a prior distribution and gradually narrows as the agent gathers more evidence. The utility of an item is then derived from the moments of the posterior distribution, allowing for uncertainty aversion. We use this goodness inference model (GIM) to explain fixation-induced choice biases observed in published data. GIM fits the data better than the leading model, the attentional drift-diffusion model (aDDM). However, we find that introducing a flexible, collapsing decision boundary to aDDM brings it on par with GIM. We make predictions for the effects of varying the prior distribution and the reliability of goodness information. Overall, our results open the door to applying principled, inference-based accounts to value-based decision-making.

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Keywords

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| Bayesian inference |

decision modeling