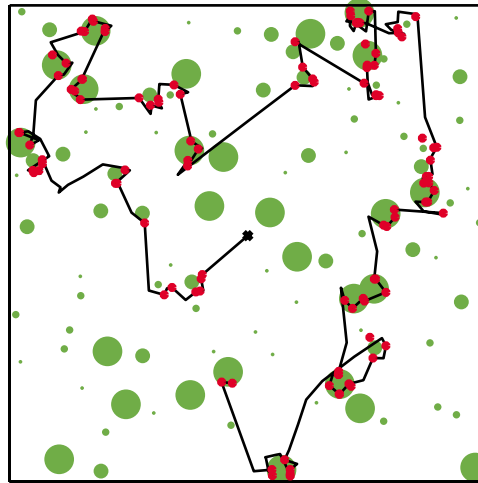




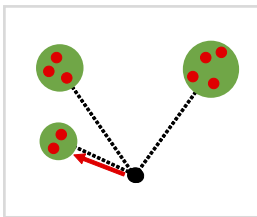
Screenshot of the virtual orchard



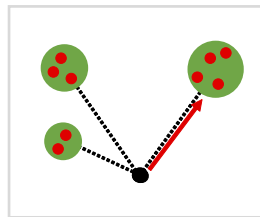
Overhead view of the orchard, showing one participant's path. Green dots represent trees, with size indicating the number of apples on the tree. Red dots are where the participant stopped to pick apples.

Model comparison: Which tree to visit next?

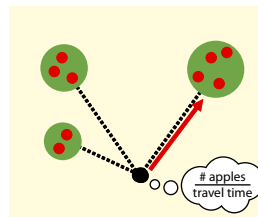
We compared two naïve foraging models (foragers always visit the nearest or largest tree) and three variations on an optimal foraging model (in which the forager tries to maximize their rate of apple collection).



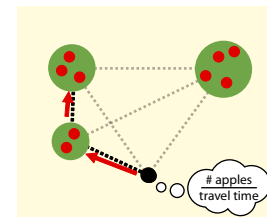
Nearest tree
Always go to the closest tree



Largest tree
Always go to the tree with the most apples



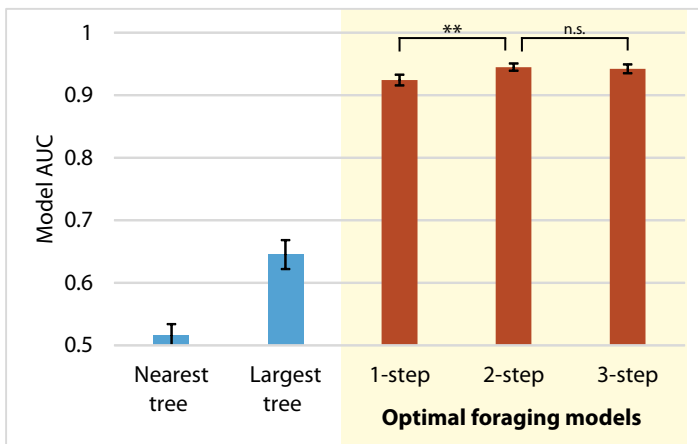
Optimal 1-step forager
Maximize rate (= ratio of apples to travel time), but only consider one tree at a time



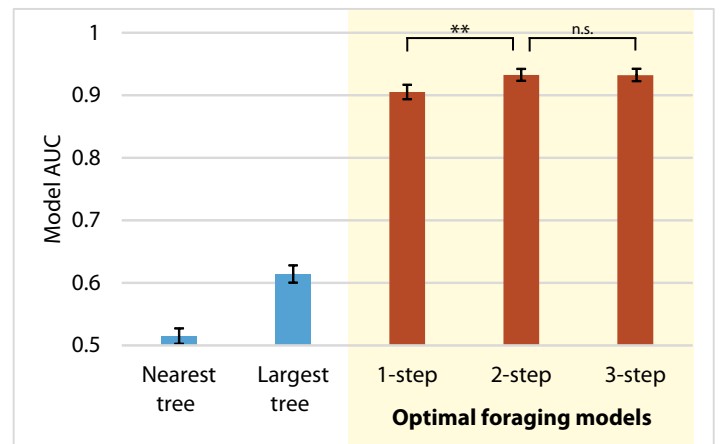
Optimal 2-, 3-step forager
Maximize rate over 2-tree (or 3-tree) paths, not just over single trees

Model performance in predicting human behavior

Scores are the ROC area under the curve (AUC). An AUC value near 0.5 indicates chance performance, while AUC = 1.0 means the model predicts human behavior perfectly. The optimal foraging models are far superior to the nearest or largest tree models, and the 2-step path model predicts human behavior modestly (but significantly) better than a 1-step optimal foraging model.



Experiment 1: Good apples are red, bad apples are yellow



Experiment 2: Good and bad apples are drawn from overlapping distributions (redder apples more likely to be good)