

Behavioral considerations of automation

Iman Moosavi

We explore two forms of human-algorithm interaction in decision-making contexts, focusing on interactions resulting from the automation. Unlike typical augmentation interactions—where algorithms provide recommendations to human decision-makers for a single task—we investigate scenarios in which a human and an algorithm collaborate across sequential decision-making tasks. In one case, an algorithm completes a task and passes its output to a human for a subsequent task. In the other, a human completes the initial task, and the results are utilized by an algorithm for the next decision-making task. To study this interaction, we designed a lab experiment involving a demand-forecasting task followed by a newsvendor inventory planning task. In our setup, a forecaster who is privileged with private information, forecasts the demand, and a newsvendor uses these forecasts to determine order quantities. By assigning either humans or algorithms to the forecaster and newsvendor roles, we create three treatments: human forecaster-human planner, algorithmic forecaster-human planner, and human forecaster-algorithmic planner. Our findings show that the behavior of both human planners and human forecasters change when they interact with an algorithm versus a human taking the other role. Furthermore, we show that automating the planning task does not lead to an overall increase in profit due to the changes in forecasters' behavior.