Abstract

We analyze how advice from an AI affects complementarities between humans and AI, in particular what humans know that an AI does not know: “unique human knowledge.” In a multi-method study consisting of an analytical model, experimental studies, and a simulation study, our main finding is that human choices converge toward similar responses improving individual accuracy. However, as overall individual accuracy of the group of humans improves, the individual unique human knowledge decreases. Based on this finding, we claim that humans interacting with AI behave like “Borgs,” that is, cyborg creatures with strong individual performance but no human individuality. We argue that the loss of unique human knowledge may lead to several undesirable outcomes in a host of human–AI decision environments. We demonstrate this harmful impact on the “wisdom of crowds.” Simulation results based on our experimental data suggest that groups of humans interacting with AI are far less effective as compared to human groups without AI assistance. We suggest mitigation techniques to create environments that can provide the best of both worlds (e.g., by personalizing AI advice). We show that such interventions perform well individually as well as in wisdom of crowds settings.

Keywords: Artificial intelligence, unique human knowledge, future of work, wisdom of crowds, analytical model, machine learning, AI–human complementarity