A decision analyst's perspective on AI: With machines that make data-driven decisions, where do we need people?

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Assistant Professor Eeva Vilkkumaa. Credit: Aalto University / Kukka-Maria Rosenlund

Decision analysis is a field that develops analytical models for better decision-making. One interesting question is whether artificial intelligence can replace people as decision makers—and if, then under what circumstances.

AI algorithms that make decisions are prevalent. They choose appropriate content and advertisements for us when we surf the internet; they answer our questions as chatbots when we need help; they approve and decline loan applications.

At its best, AI is an excellent decision-maker. The circumstances need to be right for it, though.

To make good decisions, AI needs either vast amounts of data on earlier decisions and their quality, or the opportunity to broadly test different decision strategies. The latter approach, which stems from reinforcement learning, works especially well when the strategies can be reliably tested in a simulated environment, that is, detached from real life. This is clear when we think, for instance, of the chatbot: A company would be unwise to let the AI test random answers on real, unsuspecting customers.

Moreover, it is important that a performance measure (or, technically, a reward function) can be defined to evaluate the algorithm's decisions. In the case of the chatbot, the advice the AI gives can be considered good when it solves the customer's problem; for an advertiser, it is central that a purchase decision is reached.

People's relevance in the decision-making process becomes emphasized when there are no large high-quality data sets available, no possibility to broadly test different decision strategies, or if a clear performance measure for evaluating the algorithm's decisions is hard to come by. The former problem applies, for instance, to longer-term strategic decisions in companies. This is because even large data sets cannot foretell the

future: data always looks backwards, unable to anticipate events that have never happened before.

A performance measure, on the other hand, can be difficult to find when there are different and possibly conflicting objectives involved. For instance, content targeting in Facebook works efficiently in the sense that people are happy to click on links that support their existing views. But what if, instead of maximizing time on Facebook, the objective is to broaden the scope of societal discussion or reduce discord? How could these objectives even be measured in a way that an algorithm can understand?

In any case, AI algorithms are constantly being improved, and at their best they make our lives considerably easier. With their help, we can find interesting connections from masses of data that people would otherwise never even think about. So even if AI so far is not replacing people as decision-makers, it can definitely help us make better decisions.

Provided by Aalto University

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