Improving Human Decision Making through Case-Based Decision Aiding

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Abstract

Case-based reasoning provides both a methodology for building systems and a cognitive model of people. It is consistent with much that psychologists have observed in the natural problem solving people do. Psychologists have also observed, however, that people have several problems in doing analogical or case-based reasoning. Although they are good at using analogs to solve new problems, they are not always good at remembering the right ones. However, computers are good at remembering. I present case-based decision aiding as a methodology for building systems in which people and machines work together to solve problems. The case-based decision-aiding system augments the person's memory by providing cases (analogs) for a person to use in solving a problem. The person does the actual decision making using these cases as guidelines. I present an overview of case-based decision aiding, some technical details about how to implement such systems, and several examples of case-based systems.
Approaches to modeling human decision making behavior have evolved through various phases, as Figure 3.1 shows. According to prescriptive theories, such as economic theory and expected utility theory, humans consider available options in a formal and systematic way and then “choose the one with the highest expected return.” According to prescriptive theories, such as economic theory and expected utility theory, humans consider available options in a formal and systematic way and then “choose the one with the highest expected return.”