The Fairness Fair: Bringing Human Perception into Collective Decision-Making

Hadi Hosseini
Pennsylvania State University

Fairness is one of the most desirable societal principles in collective decision-making. It has been extensively studied in the past decades for its axiomatic properties and has received substantial attention from the multiagent systems community in recent years for its theoretical and computational aspects in algorithmic decision-making. However, these studies are often not sufficiently rich to capture the intricacies of human perception of fairness in the ambivalent nature of the real-world problems. We argue that not only fair solutions should be deemed desirable by social planners (designers), but they should be governed by human and societal cognition, consider perceived outcomes based on human judgement, and be verifiable. We discuss how achieving this goal requires a broad transdisciplinary approach ranging from computing and AI to behavioral economics and human-AI interaction. In doing so, we identify shortcomings and long-term challenges of the current literature of fair division, describe recent efforts in addressing them, and more importantly, highlight a series of open research directions.