Artificial Intelligence Goes All-In: Computers Playing Poker

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Abstract: Artificial intelligence has seen several breakthroughs in recent years with games such as checkers, chess, and go often serving as milestones of progress. Poker is another game entirely, with players having their own asymmetric information about what's happening in the game. In this talk, I will describe a decade long research program to build AI that can cope with the hallmarks of poker – deception, bluffing, and manipulating what other players know. This research culminated in two landmark results: Cepheus playing a perfect game of limit poker in 2014, and DeepStack beating poker pros at the game of no-limit poker in 2016. These two computer programs take very different approaches, and shed light on what is required to play a game at an expert-level and what is required to play it perfectly.