Artificial Intelligence

Classic Paper Award 2021

Planning and acting in partially observable stochastic domains

Leslie Pack Kaelbling, Michael Littman, Anthony Cassandra

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This is arguably the most well-known paper for introducing the Partially Observable Markov Decision Process (POMDP) from the field of Operations Research to the field of AI. It summarized the theoretical formalism of POMDPs (as well as novel algorithmic contributions) from the lens of an AI research perspective and did so in a highly accessible and intuitive manner that demystified the technicalities of POMDPs for generations of AI researchers. The introduction and popularization of the POMDP in the field of AI not only contributed to the formal modern perspective of sequential decision-making in AI, but it also had a significant impact on the robotics community, which has adopted the POMDP as a fundamental representational formalism.

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