
Planning with Affordances

Abstract

We introduce a novel approach to planning that combines the concept of affordances [?] with a standard planning algorithm, Value Iteration. Classical planning algorithms suffer from combinatoric state-space explosions [?] that cripple their effectiveness. Thus, in order to fully realize the potential of planning algorithms, we have sought to make these previously difficult problems more tractable; through the use of our affordance framework we seek to “guide” the agent as it plans, significantly reducing the size of exponential state-spaces. To accomplish this, we propose a planning algorithm that prunes the state action space using affordances. Evaluation is performed in the Minecraft domain on several path planning tasks - we demonstrate a significant increase in speed and reduction in state-space exploration across 5 different path planning tasks.

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