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Curiouser and Curiouser: Childrens intrinsic exploration of mazes and its effects on reaching a goal.

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Abstract

Children are naturally curious, and now even reinforcement learning models within machine learning are channeling this child-like curiosity. Pathak et-al (2017) created the ICM (Intrinsic Curiosity Model) in which curiosity serves as an intrinsic reward signal to enable the agent to explore its environment and learn skills, in this case a maze game called Doom. We study this inherent ability in children by having them explore mazes, with and without goals built using DeepMind software. In our pilot data we found that kids are adept at exploring the maze, readily and without prompt. We suggest a relationship between exploration and performance on a maze task, such that performance in the curiosity driven maze exploration task, is correlated with finding a goal in a second separate maze, even when the initial path to the goal is blocked. We also show side-by-side comparisons of the ICM vs. children exploring on our mazes.