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RL for Multi-Agent Mobile Rearrangement

Given my interest in Reinforcement Learning, my curiosity in this project was a no-brainer. As I currently only have experience with RL through self-studying with the Sutton and Barto RL book and learning PyTorch through multiple tutorials, I have only experienced RL's impact on video games. Having a chance to apply it to various fields, in our case to Embodied AI, is exciting.

From what I understood from the given paper, the states are the locations of the objects, the actions of the agent interact with the environment, the observation is what the agent sees using its sensors, and the reward would most likely be from the percent of completion and accomplishing the do no harm test. Thus, assuming our loss function relates to the norm of two states as mentioned in the journal, whether through calculating the distance, rotation, or an IoU, it makes me wonder what existing algorithm we would use to accomplish learning. While it seems clear that CNNs will be used to get images of the observation and states, regarding what specific algorithm to use is a different question. As my knowledge is limited to DQNs, it makes me curious to find out if one already exists, and if not, will this project effectively create one? I can't wait to see what we can accomplish in this project, and if we succeed, how it can impact the world.

Watching AI that becomes ever close to humans, especially in the case of becoming "conscious," is what motivates me. Thus, in this project, I hope to incorporate new algorithms and develop new methods to create an agent that behaves more like a human. While the ultimate goal of the project is to create a super-human AI that can rearrange items, the first accomplishment is to create a makeshift human. While my current aspirations would be to achieve this feat, it's clear to me that if we reach it, I bank that RL is the key to progress.