Requirement 12 Report - Reinforcement Learning in MineRL

Overview

The goal for this sprint was to produce a basic reinforcement learning model for training an AI agent in the world of Minecraft, to both build upon in future sprints, and to provide a baseline for comparison for pure reinforcement learning. As suggested by the research we did beforehand, pure reinforcement learning in Minecraft does not go well. The environment is too open to exploration with too many actions available to the agent for randomly generated actions to quickly produce meaningful results. I tried producing a few different models and testing a few different iterations with negligible results. The models I produced never seemed to do better than random chance. The videos uploaded alongside the code and this report show the erratic, nonconstructive behavior of the AI, and how the agent rarely, if ever, produces meaningful actions. This shows how the decision to combine behavioral cloning and reinforcement learning, as we will do in the next sprint, is necessary for producing a better model than pure reinforcement learning on its own.