Training Agents Using Deep Reinforcement Learning and Asynchronous Actor-Critic Agents

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1 Introduction

1.1 Overview

My project aims to investigate an algorithm to play an Atari game using deep reinforcement learning and asynchronous actor-critic agents (A3C). Although this task has been done before with other agents, I aim to use the A3C algorithm which has been rendered some success in other Deep Reinforcement Learning environments. To set up the agent, I will be using the OpenAI Gym to set up the training environment and TensorFlow to do the actual Deep Learning part.

1.2 Timeline

1. I plan to get a better overview of how Deep Learning works, getting a better grasp of Markov Decision Process.

2. Make a basic implementation of a deep learning algorithm using the OpenAI Gym of CartPole and Deep Q Network.

3. Based off the previous step, I will try applying the RL algorithm on the game Space Invaders, modifying it as needed.