COM668 Project

AGREED PROJECT PROPOSAL DOCUMENT

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Draft Project Title: Teaching robots using 3D simulations

Project Description (300 words):

With current AI research, one of the main bottlenecks is the development of training data to create accurate and realistic models. Using simulations we can speed this up by generating synthetic datasets using accurate physics models. From here, I have set my sights on robots. Currently programming robots requires precise mathematics and timing as to do 'simple' movements for a human such as making a fist, requires cooperation of 15+ servo motors. By using the unity 3D physics engine, we can theoretically build an already trained robot brain which can be purposely designed for specific purposes and trained in the cloud to be implanted directly into a robot.

Project Aim:

Research and subsequent development into a pipeline for simulated robotics training using Unity 3D.

Copyright/IPR/Commercial Sensitivity:

Currently no issues have been raised about the project's copyright or commercial sensitivity

Hardware and Software Resources to be used within the project:

This project will be made using the Unity 3D physics engine along with the Unity ML agents project which allows the development of reinforcement learning models directly through unity. Through the year, I will either build a new RC car using a Raspberry Pi/Arduino or hack a pre-built RC car with a Raspberry pi/Arduino

References (Use Harvard Style):

- none

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