CSCI 446 Artificial Intelligence Project 4 Design Report

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1 Introduction

2 The Racetrack Problem

3 Reinforcement Learning Algorithms

3.1 Value Iteration

3.2 Q-Learning

4 Software Design

For this project we will be using an environment and agent model similar to the wumpus world. Instead of a board we will have a `Track` class that reads in the different tracks from a text file. To run the experiments we will have an `Environment Engine` for each `Track` and `Agent` combo.

The `Agent` will be a virtual class that contains data such as the max acceleration values. It will also contain the virtual method `learn`. Each concrete class will be the implementation of our reinforcement learners. Each of these classes will contain an overridden learn method and algorithm specific functionality. The key difference between the wumpus world `Agent` and this `Agent` is the fact that in this case the `Agent` can see the whole board from the start.

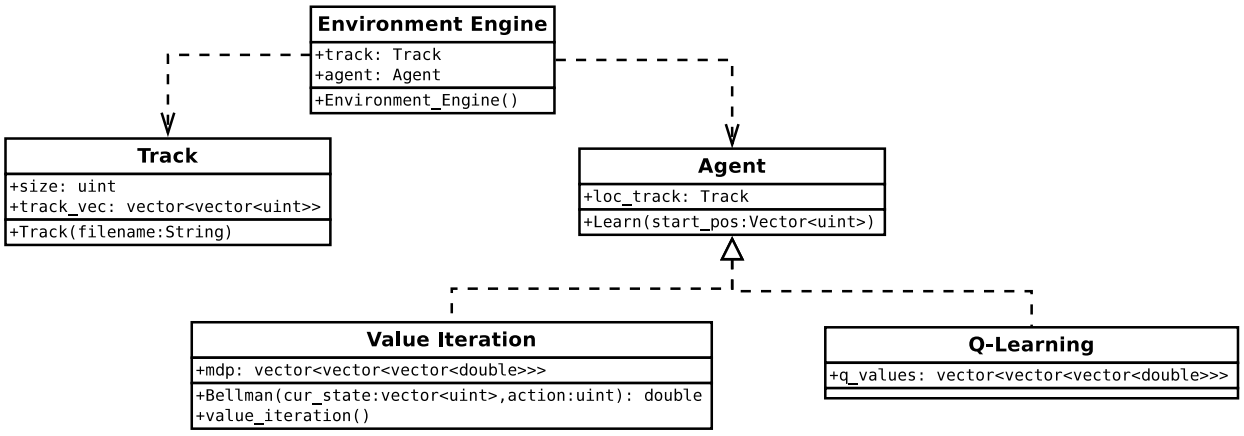

Figure 1: *UML of our design*