Input Behavior Library Documentation

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0.1 Preface

The goal of this library is to allow for automatic intelligent behavior creation to aid in the Aquaticus project of capture the flag. This behavior allows the user to load in arbitrary reinforcement learning models using a python script that is embedded in the behavior. With these models, the behavior can approximate the best action to take at any given state.

0.2 Configuration Parameters

There are no configuration parameters for the behavior. It automatically loads all the necessary parameters from the Node Report. This is due to the fact that the loading time for the behavior is high enough that it does not have adequate time to load in parameters specified in the .bhv file.

0.3 Variables Published

Publishes *INP_STAT* which contains state and action information to be parsed and used as training data for the learning algorithms. Also publishes *GRAB_REQUEST* when within range of the flag to automatically capture the flag.

0.4 Functionality

In the OnStartUp method, the behavior reads in the *table.csv* to get information about state setup parameters, heading mode, whether it is optimal or not, and the absolute path to the model. It initializes the embedded python script and then loads the models from the given directory into a python object that is

used for the duration of the behavior. On each iteration, the behavior reads in information from the environment and crafts a state vector containing the necessary, ordered, state information and passes it to the embedded python script to predict which action it should take. The Behavior finally takes the action, which consists of a speed and a heading, and sets those values as the peak of the IvP function.