# **Cat and Mouse Reinforcement Learning Model Layout**

This model uses a hierarchy of class objects to organize data and execute a variety of Reinforcement Learning methods for the purpose of comparing these methods, studying the effect of parameter settings on each simulation, and studying the relationship between simulation complexity and learning efficiency. The “Cat and Mouse” Game Classes are designed to facilitate agent reward logic, execute agent policy decisions and provide visualization functionality. The Reinforcement Learning Classes are designed to calculate action-value function relationships, estimate parameterized policy functions, and manage policies utilized in each simulation. The Base Machine Learning Classes are intended to provide basic machine learning functionality as used by each Reinforcement Learning method.

The below hierarchy is intended to help visualize how each class is used. Upstream classes utilize object instances of downstream classes in the order shown:

Game Classes (Learning Environment)

Reinforcement Learning Classes

Base Machine Learning Classes