The RL Super-Learning Bot-Machine-Program

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Abstract

Boom!

The idea is to simultaneously learn a model and use that model to plan in some set of domains. The model is represented as a probabilistic program P we can sample new world states from. That is, a model is a random variable from a current state and some random input to a representation of the world and the reward. If there are S states, the set of all of states = S = P(S). A model is then:

$$P : \Omega \times \mathcal{S} \to \mathcal{S}$$

Suppose the set of all type-consistent well forms programs defines a language L. We have an initial set of actions $A_i nit$ which are syntactic transformations on P. I.e.,

$$a : \mathcal{L} \to \mathcal{L}\cdot$$

0.1 Building a model

We build the model by applying syntax transformations to the model A model is evaluated by how well it performs in the

0.2 Domain

We wil use the Arcade Learning Environment