Summary of RL in Continuous Spaces

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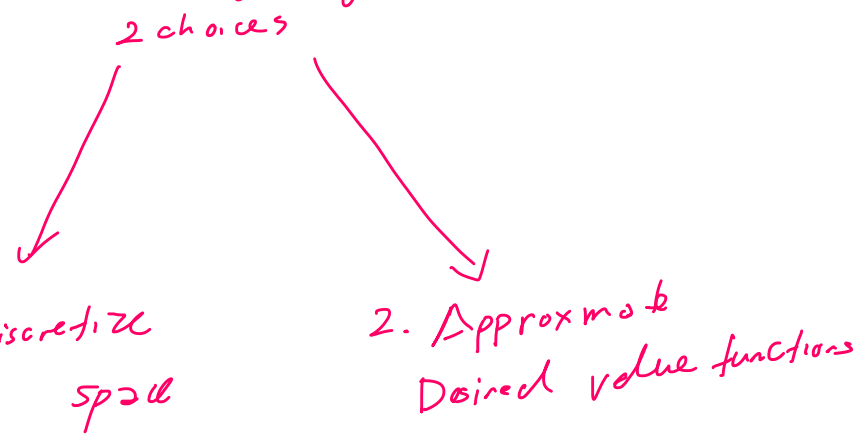
Summary

- Traditional reinforcement learning techniques use a finite MDP model
- The limitations of such techniques are that we are limited to discrete state & action spaces
- Extend our learning Algorithms



Discretization

- Performed using grids
  - → Constant Grid
  - → Tile Coding
  - → Coarse Coding
- Allows for indirect approximation of the value function

Approximating Feature Value Function

- first, define a feature transformation function $x(s)$
- Computing a linear combination of those features $\hat{v}(s, w) = x(s)^T \cdot w$
- Using non-linear feature transforms like [illegible] allows use to use

radial basis functions ...

a linear combination to approximate non-linear characteristics / relationships.

- We use an Activation function $f()$, to represent non-linear relationships across a combination of features

$$\hat{v}(s, w) = f(x(s)^T \cdot w)$$

Next: Deep Neural Networks for Reinforcement Learning