

Reinforcement Learning

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see “Machine Learning” – Tom Mitchell,
chapter 13 on RL

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Different Aspects of “Machine Learning”

- Supervised learning
 - Classification - concept learning
 - Learning from labeled data
 - Function approximation
- Unsupervised learning
 - Data is not labeled
 - Data needs to be *grouped, clustered*
 - We need distance metric
- Control and action model learning
 - Learning to select actions efficiently
 - Feedback: goal achievement, failure, *reward*
 - Control learning, reinforcement learning

Goal Achievement - Rewards

- “Reward” today versus future (promised) reward
- Future rewards not worth as much as current.
- \$100K + \$100K + \$100K + ...
INFINITE sum
- Assume reality ...: **discount factor** , say γ .
- \$100K + γ \$100K + γ^2 \$100K + ...
CONVERGES.