

Welcome

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Hard Problems of AI

vision



control



Speech Recognition Natural Language Understanding



Planning and Reasoning



Types of Learning

- No Learning: expert systems, Microsoft Word grammar checker.
- Parameter Tuning: setting the sensor variance in a Kalman filter or particle filter.
- Rule Learning: grammar induction, learning the structure of part models in vision.

General Models of Learning

1. Classification: A sequence of pairs $\langle x, y \rangle$ with $y \in \{0, 1\}$.
2. Multiclass Classification: $y \in \{1, \dots, k\}$.
3. Structured Classification: $y \in \{0, 1\}^k$.
4. Regression: A sequence of pairs $\langle x, y \rangle$ with $y \in R$ or $y \in R^k$.
5. Unsupervised or semi-supervised learning.
6. Reinforcement Learning: a sequence of triples $\langle x, a, r \rangle$ where x is an observation, a is an action, and r is a reward.