Machine Learning I (DATS 6202)

Review of Machine Learning

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Overview

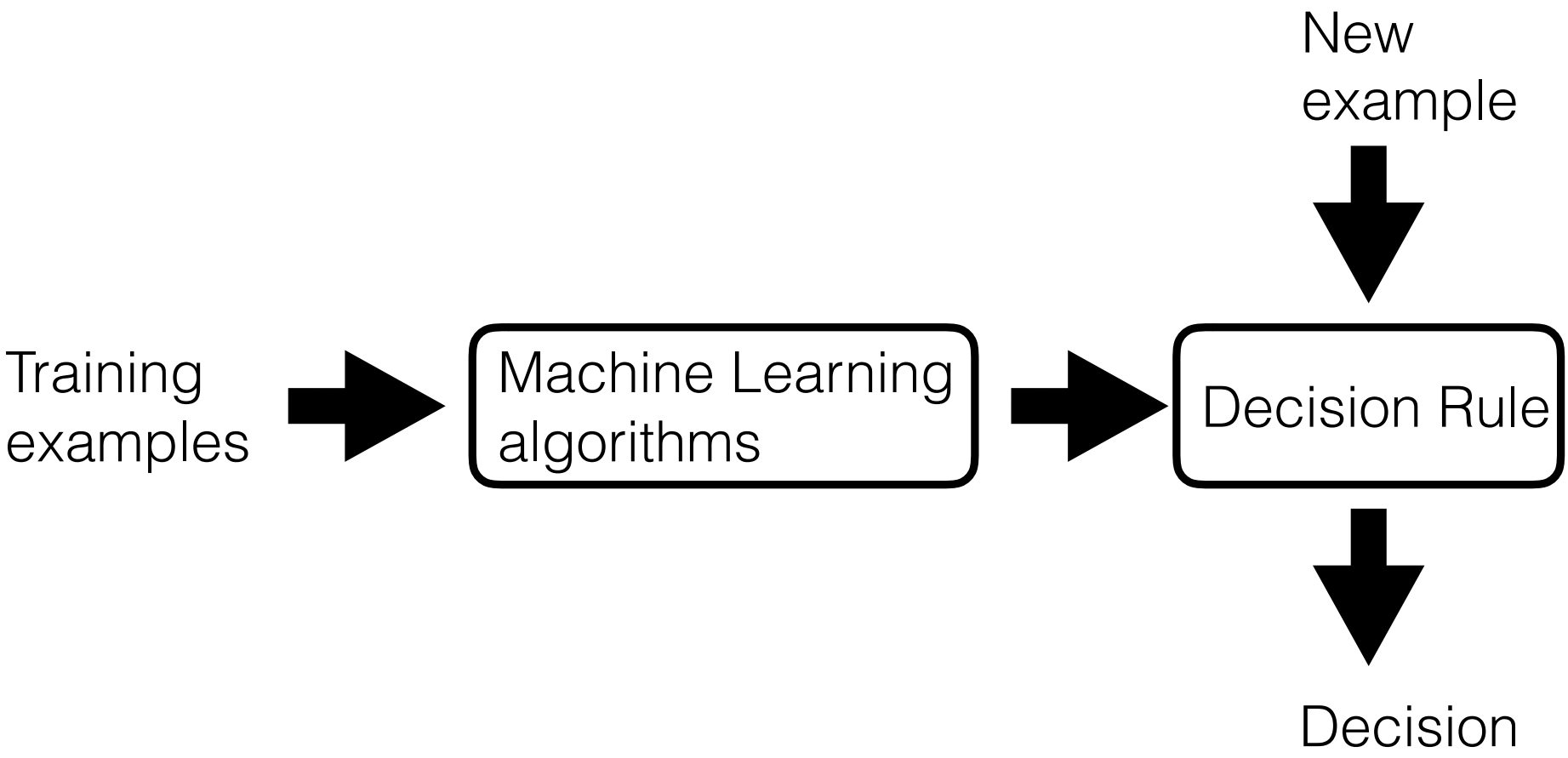
1. What is Machine Learning?
2. Types of learning
3. Syllabus

What is Machine Learning?

- *"Machine learning is about learning to do better in the future based on what was experienced in the past."*
- *"The goal is to devise learning algorithms that do the learning automatically without human intervention or assistance."*
- *"The machine learning paradigm can be viewed as "programming by example.""*
- *"Rather than program the computer to solve the task directly, in machine learning, we seek methods by which the computer will come up with its own program based on examples that we provide."*

`http://www.cs.princeton.edu/courses/archive/spr08/cos511/scribe_notes/0204.pdf`

Diagram of a typical learning problem



Examples of Machine Learning problems

- Optical character recognition
- Face detection
- Spam filtering
- Topic spotting
- Spoken language understanding
- Medical diagnosis
- Customer segmentation
- Fraud detection
- Weather prediction

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Types of learning

- Unsupervised learning
  - Training data does not include desired outputs
- Supervised learning
  - Training data includes desired outputs
- Semi-supervised learning
  - Training data includes a few desired outputs
- Reinforcement learning
  - Rewards from sequence of actions

Syllabus

- Office hour
- Homework
- Final project
- Schedule