7. Different Kinds of Supervised Learning: classification vs regression

classification vs regression

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Classification maps **feature vectors** to **categories**. The number of categories need not be two - they can be as many as needed. **Regression** maps feature vectors to **real numbers**. There are other kinds of supervised learning as well.

For a more thorough statistical background on classification and regression, please check out the following links. Classification Regression

Classification or Regression? 1

1/1 point (graded)
Question 1: We want to come up with a classifier that classifies each news article into one of the following categories: politics, sports, entertainment. Is this a classification problem or a regression problem?

- (•) classification
- ( ) regression

✔

Solution:

Because we would like to predict the **category** an article would belong to, this problem is a classification problem.

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Classification or Regression? 2

1/1 point (graded)

Question 2: We want to estimate the price of bitcoin after 30 days. Is this a classification problem or a regression problem?

- ○ classification
- ◉ regression ✔

Solution:

Because we would like to predict the **real** number price of bitcoin, this is a regression problem.

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Different Types of Learning

1.0/1.0 point (graded)

Choose the type of learning that best corresponds to each of the following statements.

1)Labelled training and test examples

- (•) supervised learning
- ( ) unsupervised learning
- ( ) semi-supervised learning
- ( ) active learning
- ( ) transfer learning
- ( ) reinforcement learning

✔

2)Using knowledge from one task to solve another task

- ( ) supervised learning
- ( ) unsupervised learning
- ( ) semi-supervised learning
- ( ) active learning
- (•) transfer learning
- ( ) reinforcement learning

✔

3)Learning to navigate a robot

- supervised learning
- unsupervised learning
- semi-supervised learning
- active learning
- transfer learning
- reinforcement learning ✔

✔

4)Deciding which examples are needed to learn

- supervised learning
- unsupervised learning
- semi-supervised learning
- active learning ✔
- transfer learning
- reinforcement learning

✔

5)Data with no annotation

- supervised learning
- unsupervised learning
- semi-supervised learning
- active learning
- transfer learning
- reinforcement learning

✔

6)Training and test examples with limited annotation

- supervised learning
- unsupervised learning
- semi-supervised learning
- active learning
- transfer learning
- reinforcement learning

✔

Solution:

Fully labelled training and test examples corresponds to supervised learning.
Limited annotation is semi-supervised learning, and no annotation is unsupervised

learning. Using knowledge from one task on another task means you're “transferring" information. Learning how to navigate a robot means learning to act and optimize your actions, or reinforcement learning. Deciding which examples are needed to learn is the definition of active learning.

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