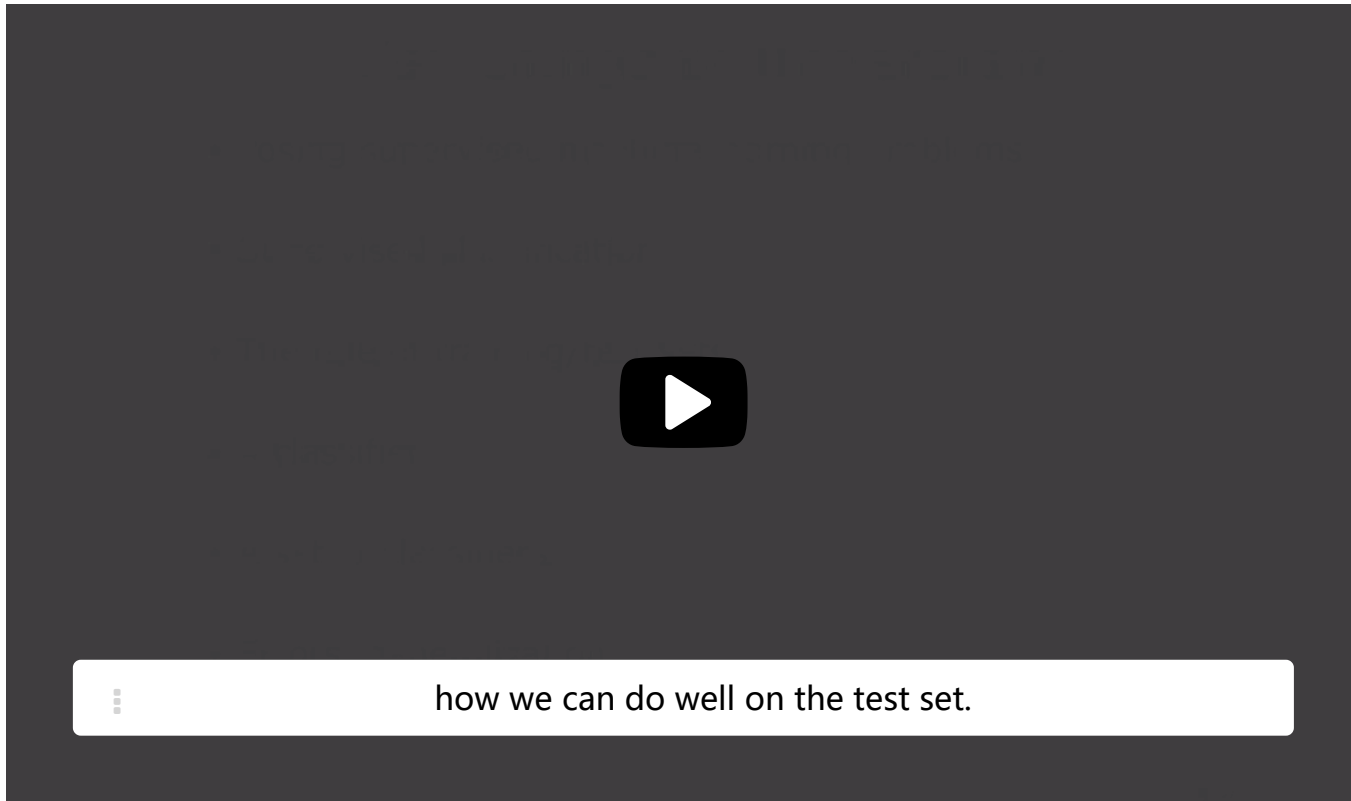


## 7. Different Kinds of Supervised Learning: classification vs regression



the mapping.

Classifier is the mapping that we wish to learn from the training set.

A set of classifiers is the set of alternatives that we consider when we see the training set,

and pick out of that set the best fitting classifier.

Errors-- we talked about training error.

And we talked about generalization,

how we can do well on the test set.



[End of transcript. Skip to the start.](#)

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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.

Submit

You have used 1 of 3 attempts

 Answers are displayed within the problem

## 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.

Submit

You have used 1 of 3 attempts

 Answers are displayed within the problem

## Different Types of Learning

1/1 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.

Submit

You have used 1 of 3 attempts

 Answers are displayed within the problem

## Discussion

Show Discussion

**Topic:** Unit 1 Linear Classifiers and Generalizations (2 weeks):Lecture 1. Introduction to Machine Learning / 7. Different Kinds of Supervised Learning: classification vs regression