How to frame a task as a machine learning problem.

**Supervised Machine Learning**

Learn to create models that combines inputs to produces useful predictions even with unseen data. When we train the model we provided it with labels (for an email spam ML algorithm can be either *spam* or *not-spam*)

The features is the way we represent data

Features can be words in the email, the to and from address (in general every piece of information we might extract from that email to represent it for our machine learning system

We might have also **unlabel example**. Like a mail that we don’t know yet if it is a spam or not and we need to classify it

**Model**: it does the predicting. Is what we try to create throught a process of learning from data

## Framing: Key ML terminology

ML system learn how to combine input to produce useful predictions on never before seen data.

**Label**: thing we’re predicting (y variable) in simple linear regression. Can be the future price of an house, the kind of animal shown in a picture, the meaning of an audio clip…

**Feature**: is the input variable (x variable) for simple linear regression. We could have million of features for more sophisticated machine learning project.

**Model**: define relationship between features and label. Two phases of a model

* **Training**: creating a or learning the model
* **Inference**: applying the trained model to unlabel examples

**Regression** model: predicts continuous values. Answer questions like *What is the value of a house in California? What is the probability that a user will click on this ad?*

**Classification** model: predicts discrete values. *Is a given email message spam or not spam=? is this an image of a dog, a cat, or an hamster?*