Classification

To attempt classification, one method is to use linear regression and map all predictions greater than 0.5 as a 1 and all less than 0.5 as a 0. However, this method doesn't work well because classification is not actually a linear function.

The classification problem is just like the regression problem, except that the values we now want to predict take on only a small number of discrete values. For now, we will focus on the **binary classification problem** in which y can take on only two values, 0 and 1. (Most of what we say here will also generalize to the multiple-class case.) For instance, if we are trying to build a spam classifier for email, then $\mathbf{x}^{(i)}$ may be some features of a piece of email, and y may be 1 if it is a piece of spam mail, and 0 otherwise. Hence, y$\in$\{0,1\}. 0 is also called the negative class, and 1 the positive class, and they are

sometimes also denoted by the symbols "-" and "+." Given $\mathbf{x}^{(i)}$, the corresponding $\mathbf{y}^{(i)}$ is also called the label for the training example.