Welcome

Regression is one of the most important and broadly used machine learning and statistics tools out there. It allows you to make predictions from data by learning the relationship between features of your data and some observed, continuous-valued response. Regression is used in a massive number of applications ranging from predicting stock prices to understanding gene regulatory networks.

This introduction to the course provides you with an overview of the topics we will cover and the background knowledge and resources we assume you have.

Simple Linear Regression

Our course starts from the most basic regression model: Just fitting a line to data. This simple model for forming predictions from a single, univariate feature of the data is appropriately called "simple linear regression".

In this module, we describe the high-level regression task and then specialize these concepts to the simple linear regression case. You will learn how to formulate a simple regression model and fit the model to data using both a closed-form solution as well as an iterative optimization algorithm called gradient descent. Based on this fitted function, you will interpret the estimated model parameters and form predictions. You will also analyze the sensitivity of your fit to outlying observations.

You will examine all of these concepts in the context of a case study of predicting house prices from the square feet of the house.