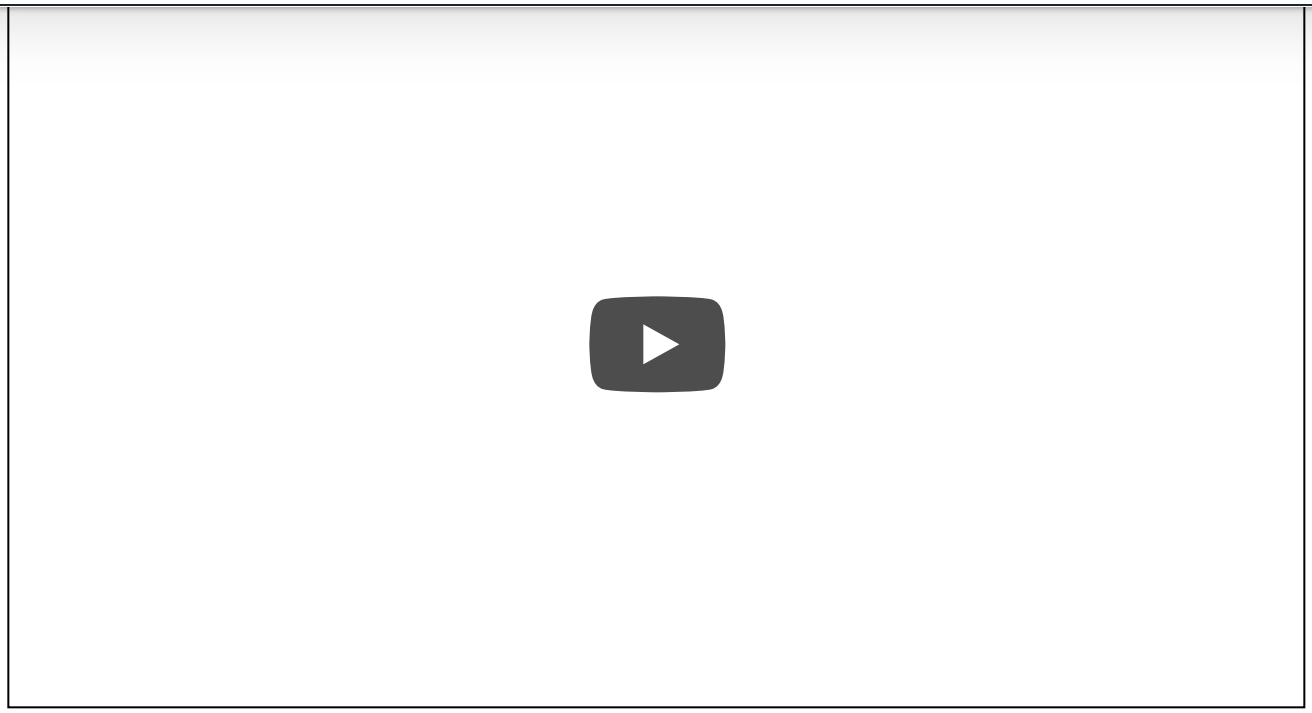

Implementing the hidden layer

Prerequisites

Below, we are going to walk through the math of neural networks in a multilayer perceptron. With multiple perceptrons, we are going to move to using vectors and matrices. To brush up, be sure to view the following:

1. Khan Academy's **introduction to vectors**.
2. Khan Academy's **introduction to matrices**.

Derivation

Before, we were dealing with only one output node which made the code straightforward. However now that we have multiple input units and multiple hidden units, the weights between them will require two indices: w_{ij} where i denotes input units and j are the hidden units.

For example, the following image shows our network, with its input units labeled x_1, x_2, and x_3, and its hidden nodes labeled h_1 and h_2: