Artificial Neural Network Introduction and Demonstration

Neural Networks

* Why should we be interested?
  + Allows for the computer to program itself through learning
  + If our goal is to have a robot learn to behave, neural networks are a great candidate to get the job done
  + These models are state of the art in many domains

The Basics

* The goal of neural networks:
  + Given some input, give an output that minimizes cost function
* Architecture
  + Input layer
  + Hidden layer
  + Output layer
* Backpropagation
  + This is how they learn

Types of Learning

* Supervised learning
  + Classification
* Unsupervised learning
  + Sparse feature learning (e.g., sparse filtering)

Deep Neural Networks

* Convolutional neural networks

Coding

* MATLAB
* Python
  + Scipy
  + PyBrain
  + Scikit-Learn
  + Theano
    - Deepy
* Torch7

Resources

* Coursera: Machine Learning