ML Week 0x06a Perception

Controversy

- Led to AI stagnating, though not immediately nor only because of this
- Minsky and Papert book showed impossible to learn XOR
- Often believed (incorrectly) that they claimed same result for multi-layer perceptron
- ANN research resurgence in the 1980's

Algorithm

- Talk about binary classifier
- Talk about bias term meaning
- Talk about weights meaning
- Talk about decision boundary
- Algorithm doesn't terminate if not linearly separable
- Perceptron is the simplest instance of a feedforward neural network
- Initialize weights randomly (or to zero)
- For each input, compute output
- Update weights by adding α if correct

Convergence

- If not linearly separable, don't even get an approximate solution
- If linearly separable, then upper bound on number of times weights updated
- Solution quality not guaranteed
- "Perceptron of optimal stability" now known as SVM