

Independent Study: Neural Networks

In this independent study, we will consider topics from the textbook “Neural Network Design”, by Hagan, Demuth and Beale, 1996. We will choose from:

1. Neuron Model and Network Architectures.
2. Examples using the Hamming Network.
3. The Perceptron Learning Rule.
4. Some items from Linear Algebra (Gram-Schmidt, Projections and geometry in n-space)
5. Supervised Hebbian Learning
6. Training and Measuring Error.
7. Widrow-Hoff Learning.
8. Backpropagation of Error
9. Associative Learning
10. Competitive Learning
11. Grossberg’s Network
12. ART: Adaptive Resonance Theory
13. Hopfield Networks

We will do some programming in Matlab, and will finish up with a project/report on either an overview of neural networks or a numerical project using neural networks.