IST 707 — Applied Machine Learning

HW8: Deep Learning with Neural Network Algorithms

Having focused the bulk of the class on the more traditional data mining algorithms, this HW will focus a newer class of called Neural Network algorithms.

While there are many different variations on ways that (N)eural (N)et's work, for this HW we are going to focus on the NN variation we reviewed in the NN lecture, Multilayer Perceptrons.

Your Assignment

1. Load the drug data from Blackboard, make sure that the Drug attribute is set to target role.
2. Use the "Constant" module to predict the drugs and test the model. This is your baseline. Record the F1-score using 5-fold cross validation
3. Use the "Tree" module to do the same and test the model. Record the F1-score.
4. Then, use the "Neural Network" module to do the same and test the model (via 5-fold cross validation) under the following conditions:
    a. 25 neurons in hidden layers
    b. 50 neurons in hidden layers
    c. 100 neurons in hidden layers
    d. 200 neurons in hidden layers
5. Record the F1 value for the NN under each condition.
6. Answer the following questions:
    a. Which configuration/model is most accurate?
    b. Which model is the fastest?
    c. Describe which configuration is the best balancing accuracy vs. speed.