WHAT IS TOP

TOP (Trojan Outcomes Predictor) was my brainchild that I worked on with two other CS Masters students at USC. It is a self-tuning simple DNN framework optimized to predict USC's football outcomes for the 2018-2019 season. I was motivated to make this project because I was fascinated by the potential of a self-tuning neural network and wanted to apply some of the optimization methods I was learning in my AI and ML courses. TOP was suspended when I was hired at The Aerospace Corporation. If I were to ever revisit it I would explore using more sophisticated local search algorithms such as beam search in addition to the genetic inheritance I have now, I would restructure our dataset to exploit temporal features of our data, and use GRU or LSTM networks to exploit that temporality.

FILE STRUCTURE

Datasets/

Collection of some of the csv's we compiled and some web scrapers

Scripts/

GeneticSweepMain.py : Main function. Uses two passes to optimize the hyperparameters during the grid search. The first pass is for extrinsic hyperparameters, and the second pass is for intrinsic hyperparameters

NetworkDefinitions.py : Builds our DNN

PermutationGenerator.py : Generates the permutations for our hyperparameters

PrintFunctions.py : Header file for report generation and local search status print functions

SweeperFunctions.py : File that does the genetic grid search

TestDatasetMain.py : Main function that runs the best network found by calling geneticSweepMain.py on USC's 2017 games

TestDatasetUtils.py : Header file for TestDatasetMain.py, contains helper functions to keep the main file clean