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E14

The first model we are planning to use is a Neural Network Model, we are planning on having 6 input nodes in the input layer being the TDOA and FDOA's from 3 entries grouped by their timestamp. We may combine the 6 points somehow, maybe taking the average of the TDOA and FDOA possibly making it 2 inputs instead. We are planning on having 1 hidden layer with 6 nodes per layer. We are also planning on playing around a bit with these hidden layers to see what works best. Our output layer will be one node, being true or false if a maneuver has happened. We will have randomized weights and bias's between -.5 and .5. We want the learning rate to start around .01, we will progressively move it further down if needed.

For handling the data we want to test if data normalization needs to happen. By default, we will use the SKlearn standard scalar, which removes the mean and scales to unit variance. We are planning on training with maneuver files where reset equals false, and for testing, we still have not decided if we want to use cross-validation or a different training test split.

Notes

Describe the first ML model/algorithm that you will test as a means of solving the Kratos TDOA/FDOA data set.

- Neural Network
 - Input layer - is 6
 - Hidden layers (atleast 1)
 - Nodes per layer (atleast 6) - we will test around with these
 - Output layer 1

Specify the algorithm, its configuration (inputs and outputs included),

- Inputs are TDOA, FDOA

- Group by timestamp (so a total of 6 inputs)
- Outputs - true or false

parameters that will be modified and approximate values for those,

- Weights
- Bias
- Learning Rate

plans for train/cv/test splits, statistical iterations and general handling of the dataset.

- Start time match with truth tables
- Train on 3 truth files