Train 1:

Hyperparameters:

Layer size: 7

# Hidden layers: 1

Hidden layer size: 7

Hidden activation function: relu

Output layer size: 1

Output activation function: sigmoid

Optimizer: adam

Loss function: binary\_crossentropy

Batch size: 5

Epochs: 50

Training size: 7000 packets

Testing size: 3000 packets

Each list of input variables corresponds to one packet.

Input variables:

* Num occurrences of source MAC address.
* Num occurrences of destination MAC address.
* Difference between the above 2.
* Num occurrences of source IP address.
* Num occurrences of destination IP address.
* Difference between the above 2.
* Difference between timestamp of current packet, and previous packet

Results:

Training accuracy: 99.76%

Training loss: 0.009

Test Confusion matrix:

[ 2814, 72]

[ 0, 114]

Accuracy: 97.6%

Precision: 61.3%

Sensitivity: 100%

Specificity: 97.5%

Total (want this to be as close to 200% as possible): 197.5%

Train 2:

Same Hyperparameters and input variables as Train 1.

Results:

Training accuracy: 99.8%

Training loss: 0.0057

Test Confusion matrix:

[ 2483, 403]

[ 0, 114]

Accuracy: 86.7%

Precision:

Sensitivity:

Specificity:

Total (want this to be as close to 200% as possible):

Train 3:

Introduced dropout.

Dropout: 0.2

Same hyperparameters and input variables as Train 1.

Results:

Training accuracy: 97.6%

Training loss: 0.0652

Test Confusion matrix:

[ 2873, 13]

[ 0, 114]

Accuracy: 99.6%

Precision: 89.8%

Sensitivity: 100%

Specificity: 99.5%

Total (want this to be as close to 200% as possible): 199.5%