

# Robust Intelligent Intrusion Detection System

Students: Zachariah S Nelson

Mentor: *Dr. Yanzhao Wu*

Instructor/Faculty: *Dr. Masoud Sadjadi*, Florida International University

## PROBLEM

The problem we are facing today is the number of zero-day attacks which is continually growing. We set out to improve a merged file of two Intrusion Detection Systems that will allow us to detect and prevent attacks on a system more accurately.

## PROJECT OVERVIEW

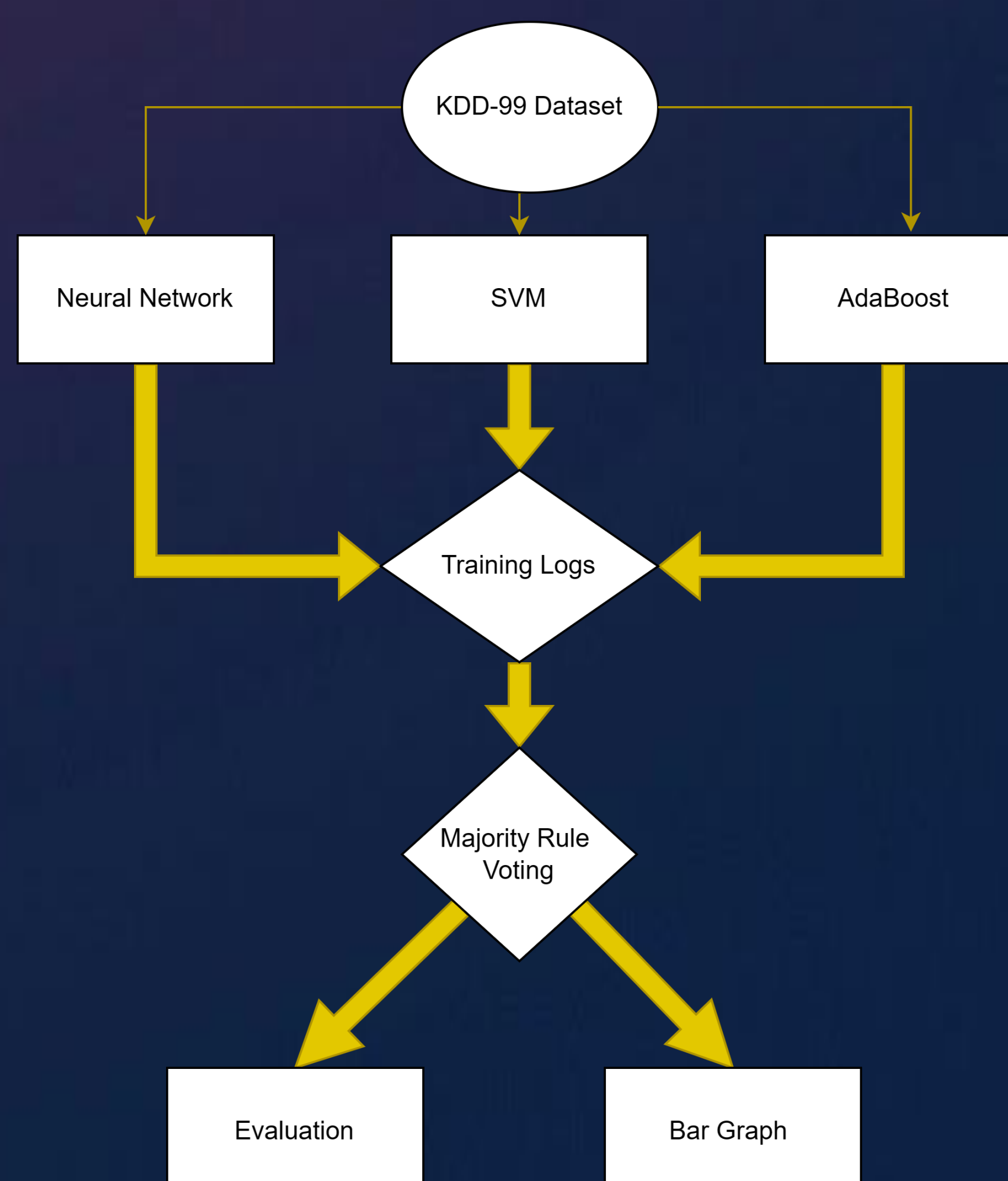
We set out to create an IDS model that merges different opensource models together in hopes of improving its accuracy of detection over that of the individual models.

1. The first step was to research the original models used to determine if we would continue to use them or try new models.
2. Evaluate the results of multiple opensource models to determine individual results.
3. Combine like models together to determine whether the merged models will improve the accuracy of detection.

## Tools Used

- Pycharm 2023.1.3
- Github
- Dataset: KDD-99
- Scikit Learn

## SYSTEM DESIGN



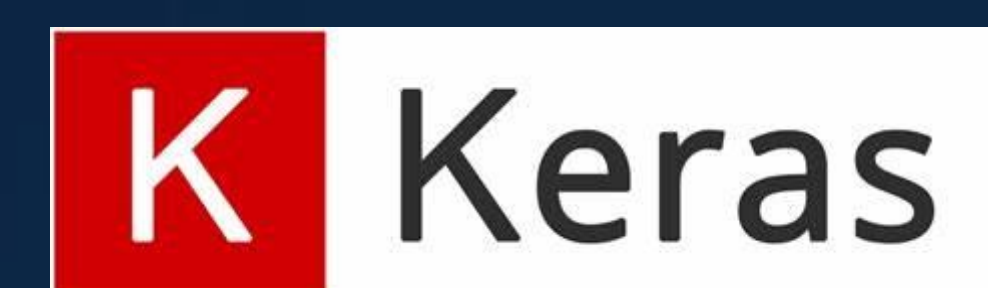
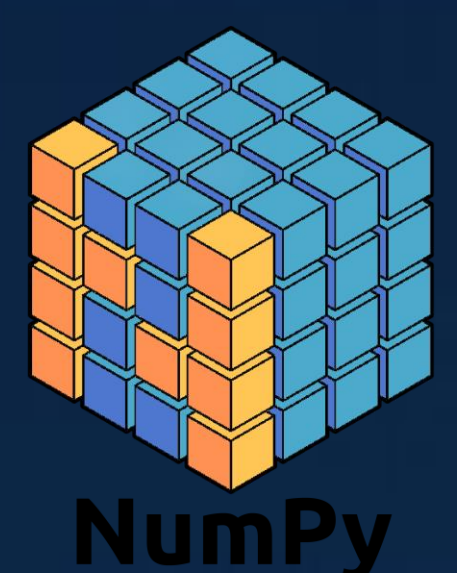
## Individual Contribution

My individual contribution was to help the team identify individual models that had similar outputs as well as merge the IDS models that we all agreed on. I modified Python code to present all outputs for individual models as well as the merged majority rule output. I also had the code put the data into a bar graph to show the actual representation on how it is affected.

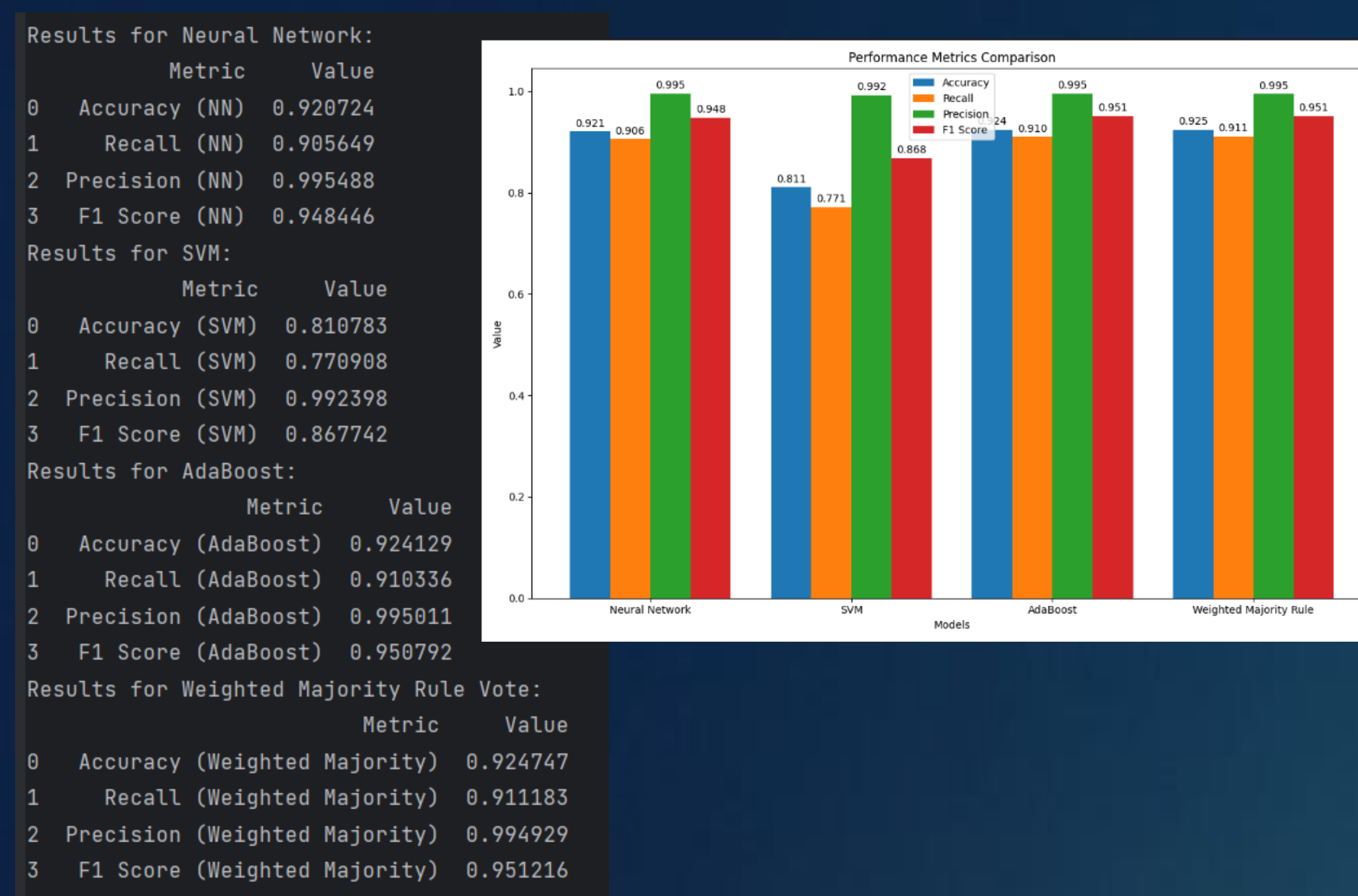
## System Results

After attempting various combinations of Intrusion Detection Systems, it was determined that combining models with an already high accuracy would create a merged majority rule accuracy that decrease from some of the individual models. Once we combined Neural Network(92.2% accuracy), SVM(82.0% accuracy), and AdaBoost(92.4% accuracy) we received improved results of 92.5% and increasing each time it's ran.

## IMPLEMENTATION



## Screenshots



## Summary

The goal of the project was to combine three or more IDS models to create a more desirable Intrusion Detection accuracy. With the combination of Neural Network, SVM, and AdaBoost we were able to create an accuracy greater than that of the individual models.

## ACKNOWLEDGEMENT

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