

### **Assignment 3 Report**

This assignment involved a comprehensive trial-and-error approach to determine the most effective regression model for the given dataset. Initially, multiple regression models were tested, including Support Vector Machines (SVM), Random Forest, and Neural Networks (NN).

Both the Support Vector Machine and Random Forest models did not do well. Both models performed very well when trained but gave significantly worse performance on the out-of-sample testing data and showed signs of overfitting. In both cases, the decline in performance from the training set to the test set showed that these models were over-specialized on the training set and undermined the ability of the models to predict the unseen data.

Conversely, the Neural Network model performed more encouragingly. It achieved improved predictive accuracy with the out-of-time test data, reflecting an enhanced capacity for generalization beyond the training data set. With greater complexity and the need for careful parameter optimization, the Neural Network consistently provided improved performance and was the most successful model out of those considered in this assignment.