The performance for each model was as follows:

|  |  |
| --- | --- |
|  | RMSE |
| Predicted rating = mean rating |  |
| SVM |  |
| Random Forest |  |
| Neural Network |  |

In order to determine whether the difference in RMSE between models was significant, t-tests were carried out between the predicted values from each model giving the following result:

INSERT T TEST RESULTS

The Random Forest model was the best predictor for yarn rating, giving a RMSE of XX. It is notable that the neural network and SVM gave similar results, whereas the Random Forest model performed significantly better. Plotting the predicted and actual ratings for a single test set (obtained from the cross validation allocations) gives an indication of the strengths of each model.

INSERT FIGURE AND COMMENTS

As each experiment involved the generation of multiple candidate models, the performance of the non-winning candidate models can be plotted to assess each algorithm’s sensitivity to parameter tuning.

INSERT IMAGE (MODEL PERFORMANCE BY PERCENTILE – NOT RANK OF MODEL PERFORMANCE) AND COMMENTS

Within the parameter ranges tested, the SVM produced many models with extremely poor performance, suggesting a narrower parameter range should have been searched. The Random Forest models outperformed the best SVM and Neural Network models even when sub-optimal parameters were used. ADD MORE HERE WHEN PLOTS ARE IN

INSERT DISCUSSION ON IMPORTANT VARIABLES