

COMP30027 Peer Reviews

Assignment 2: Book Rating Prediction

Peer Review 1

- **Briefly summarise what the author has done**

The author has built Naïve Bayes, Support Vector Machine, and Logistic Regression models. The author has also implemented XGBoost and stacking ensemble learning with XGBoost, Naïve Bayes and Logistic Regression. The author noticed the imbalance present within the training data and applied different strategies such as SMOTE oversampling and under sampling of data. The author also noted overfitting through investigation of learning curves and attempted to use a boosting approach (XGBoost) to combat this. The author used grid search to optimise hyperparameters. The authors utilised learning curves, confusion matrices and metrics such as accuracy and F1 score to evaluate model performance. Book rating was surprisingly found to be fairly dependent on page number.

- **Indicate what you think that the author has done well, and why**

I think the author has produced a high-quality report and has demonstrated a sound thought process throughout completion of this assignment. A wide range of figures were used well throughout the report to support the points being discussed. There were many references that were well used to motivate certain decisions and provide insights about certain choices. I would say that the author demonstrated a strong understanding of the steps required to build, evaluate, and improve upon models, and additionally provided appropriate explanations for the steps that were taken. Ultimately, with the thorough evaluation and analysis performed throughout this assignment, the author was able to produce reasonable models and judge each on a wide range of metrics to make an informed decision on which model could be the best performing model.

- **Indicate what you think could have been improved, and why**

Further proofreading of the final report was likely required as there were occasional grammar mistakes, however the quality of the report was still exceptional. I would also say that further error analysis could have been conducted and more thorough explanations of why the different models performed in the manner they did could have been provided to demonstrate deeper understanding of the theory taught in the subject and the models themselves.

Peer Review 2

- **Briefly summarise what the author has done**

The author has built three models. The author noted the class imbalance in the training data and decided to use F-score, and AUC for binary models, to evaluate model performance. The author scaled numerical features. The author found that the model which stacked KNN performed the weakest. The author also found that the individual deep neural network had the highest accuracy but noted its tendency to over-predict the major class. The stacked binary regression deep neural network model was ultimately selected as the best model by the author due to its ability to better predict the minority classes compared to the individual deep neural network.

- **Indicate what you think that the author has done well, and why**

I think the author has built some interesting models to complete this assignment and demonstrated a decent understanding of these models. I liked the inspiration that was drawn from other papers and how the author incorporated some of these techniques into their own work to decide which models to use and to assist in understanding model performance. I thought that the metrics used to evaluate the models were appropriate and were justified, and additionally the evaluation process was reasonably thorough. I also think an appropriate variety of figures were used to support the author's points. The author performed a suitable level of error analysis and seems to have identified the main issues that could be hindering model performance such as class imbalance and feature selection.

- **Indicate what you think could have been improved, and why**

I think the author could have potentially tried experimenting with a more diverse set of models to form a more complete comparison of candidate models. I think the author also could have gone into a bit more depth in terms of explaining the training process and whether cross-validation was utilised and if / how hyperparameters were tuned. There were some minor grammar mistakes present in the report which could potentially be resolved with further proof reading and would have made the report a bit more pleasant and easier to read, although the report is still fairly well written.