COMP300027 Machine Learning
Assignment 2: Peer Reviews

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Report 1:

This project used a baseline 0R model and a KNN model and tested the KNN models performance with varying k values and number of selected features. Good analysis on the features with missing values to determine if the features were worth considering. You were able to find if there were any meaningful correlations between the ‘Language’ features and rating labels, as well as with the ‘Publisher’ feature. I thought it was good to test different feature amounts, and it provided good insight into the performance of the KNN model. Would have been nice to see more discussion on why the model performed the best when features were reduced to 1. Nice error analysis, would have liked to see more depth in the hyperparameter tuning, why were the hyperparameters in section 4.2 chosen? And how would this have affected the performance of the model? I also like your reasoning for what vectorisation methods you chose for each textual feature. Discussion could have been more comprehensive with drawbacks to your baseline performance and why the KNN model performed worse. I liked the observation of why the ‘PublishDay’ feature was not distinct between rating labels, and how this may have limited the performance of your model. What could you have done to combat this? I’m curious as to what other 6 features SBS had chosen. Error analysis could have benefitted from a confusion matrix to identify any reasonings behind any trends or biases of the model. Overall great work!!

Report 2:

This project used a baseline random and 0R model and explored the performance of decision trees, random forest and SVM models, and compared model performance with feature selection and application of Synthetic Minority Over-sampling Technique (SMOTE). I found your report to be very well structured and concise. I liked the clear description of your method. Good analysis of your initial modelling. Good choice of and reasoning behind evaluation metrics! I liked how you also mentioned the limitations of using accuracy in datasets with imbalanced classes. I would have liked to see more depth in your hyperparameter tuning. What were the results? What values for each parameter were inputted into the grid search? What was the effect of different tuning? Results were clearly shown using tables, good! I liked the correlation you found between your model’s underperformance and the number of instances of classes. The need for more data from under-represented classes and meaningful features were reinforced by your results, discussion and error analysis. I would have liked to see the confusion matrices that you created, and any supporting visualisations in the discussion section. All choices were followed by valid reasonings, good! Nice conclusion and consideration for future research and improvements. Overall, great work!!