

Evaluation criteria

This paper incorporates certain evaluation metrics to validate the efficiency of the proposed model. The metrics MAE and RMSE are used to analyse and compare the performance of ML methods. The Mean Absolute Error (MAE) measures the average magnitude of the errors in a sampling of predictions with absolute differences between prediction and actual observation where all individual differences have equal weight. It is formulated in (4). In turn, the Root Mean Squared Error (RMSE) measures the average magnitude of the error, which is the square root of the average of squared differences between prediction and actual observation. The equation is (5).

$$MAE = \frac{1}{n} \sum_{j=1}^n |y_j - \hat{y}_j| \quad (4)$$

$$RMSE = \sqrt{\sum_{i=1}^n \frac{(y_i - \hat{y}_i)^2}{n}} \quad (5)$$

Since the errors are squared before they are averaged, the main differences between RMSE and MAE is that RMSE gives a relatively high weight to large errors. This means it would be more useful when large errors are particularly undesirable (Wang & Lu, 2018).

Jaidka et al., 2019 state such consideration is important when minor political parties end up becoming more active on social media platforms than leading parties. In this study, large and small parties are equally active (table 1), so the five models are benchmarked using MAE results.

Precision, Recall, and F-score are used to measure classification performance. Formulas applied are, respectively (6) and (7) (Manning et al., 2002):

$$Precision = \frac{TP}{TP+FP} \quad (6)$$

$$Recall = \frac{TP}{TP+FN} \quad (7)$$

Where: TP = True Positive; TN = True Negative; FP = False Positive; FN = False Negative.

Precision is the division of retrieved instances that are significant. Recall is the fraction of applicable instances that are recovered. In dual classification, recall is known also as sensitivity i.e. the possibility that a relevant document is recovered by the query.

$$F - score = 2 * \frac{Precision*Recall}{Precision+Recall} \quad (8)$$

The F-score balances the use of precision and recall measuring the accuracy of experiments. It is the weighted harmonic mean of the precision and recall (8).