

Large Language Model Text Classification

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Abstract

This report outlines an experiment of text classification on a Consumer Complaints dataset using the BERT (Bidirectional Encoder Representations from Transformers) model. The aim was to categorize consumer complaints into predefined classes based on the product type. The experiment involved preprocessing the textual data, training a BERT model, and evaluating its performance on a hold-out test set.

Methodology

Data Preprocessing

The dataset utilized for this task is the "Consumer Complaints" dataset which contains consumer complaints narrative and associated product categories. The text data was preprocessed to lower case, removal of punctuations, and stop words were discarded. Tokenization was performed using BERT's tokenizer.

Evaluation and Interpretation:

The dataset was split into training (80%) and validation (20%) sets. We evaluated the model's performance on the validation set using metrics such as accuracy, precision, recall, and F1 score.

Discussion:

The experiment demonstrates the feasibility of employing BERT for text classification tasks on consumer complaint data. However, there were challenges such as computational resource limitations and the necessity for adequate preprocessing to handle noisy data.

Conclusion

The experiment provided valuable insights into the application of BERT for text classification on consumer complaints. Future work could explore other advanced models, and a more extensive preprocessing and feature engineering to improve the model's performance. The experiment yielded an accuracy of 58.00%, precision of 44.26%, recall of 58.00%, and an F1 Score of 49.15%, indicating a moderate level of performance but showcasing room for further optimizations.

References

Chang, Y., Wang, X., Wang, J., Wu, Y., Zhu, K., Chen, H., ... & Xie, X. (2023). A survey on evaluation of large language models. *arXiv preprint arXiv:2307.03109*.