Project Individual Reflection

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Working on the project to develop a stance detection system has been a significant learning experience, both technically and in understanding the broader implications of AI in tackling real-world problems like fake news. The project presented challenges that helped me grow in my ability to apply advanced AI models and integrate them into a practical, scalable system.

One of the most valuable outcomes of this project was the enhancement of my technical skills. I worked with various AI models, such as SVM, XGBoost, and BERT. Each of these models presented unique challenges and required different approaches to fine-tuning and optimization. Especially working with BERT, offered insight into contextual text processing, which is crucial for understanding the relationship between headlines and article content. Hyper-parameter tuning and optimising learning rates also allows me to better understand how different settings affect model performance. Another key lesson I took from this project is the importance of data preprocessing and feature engineering. Ensuring the quality of the input data significantly impacted the performance of the models. I applied techniques such as tokenization, lemmatization, and stopword removal to reduce noise, and used methods like TF-IDF and Word2Vec to extract meaningful features. Addressing the issue of class imbalance through oversampling and undersampling further demonstrated the important role of properly balanced data in achieving better model accuracy.

Through evaluating the models, I gained the experience in analysing performance metrics like accuracy, precision, and F1-score. The two-level scoring system I implemented allowed me to assess the nuances of fake news detection, particularly when distinguishing between related and unrelated content. This detailed evaluation process not only helped me identify the best-performing models but also reinforced the importance of rigorous testing and validation in real-world AI applications. The most important parts of the project was integrating the various components: preprocessing, feature extraction, model training, and evaluation into a cohesive system. This real-world application of AI reinforced the importance of scalable, modular design. Each system component, from input modules to the final output, needed to work seamlessly to ensure accurate, real-time performance. Seeing the system come together to deliver reliable stance classification was extremely satisfying.

Overall, this project has deepened my understanding of AI, particularly in the context of combating misinformation. The technical skills I developed, from feature engineering to model training and system design, have greatly enhanced my ability. I now have a clearer understanding of how AI can address pressing societal challenges, and I am confident that solutions like this will play a critical role in promoting accurate information and reducing the

spread of fake news. I look forward to continuing to explore AI’s potential in solving complex, real-world problems.