

1. Repo Quality

The repository is mostly well-structured: folders are organized logically, with separate Jupyter notebooks for different experiments, and the final report and presentation are provided. The README offers a basic project description and outlines the main stages clearly.

However, there are areas for improvement:

- The README is too brief — it lacks setup instructions, library dependencies, or environment details.
- The code, outputs, and data are not clearly separated, which makes navigation less convenient.

Suggested improvements: Add a proper `requirements.txt` or `environment.yml`, expand the README, and separate outputs from code for better clarity.

2. Reproducibility

The project was successfully run locally. The code is reproducible and works as expected if the user has some experience with Jupyter and HuggingFace. The results presented in the report — such as the separation between AI-generated and human-written texts using both embeddings and magnitude functions — match the experimental outputs.

Results:

- BERT embeddings alone: ROC AUC ≈ 0.996
- Magnitude function alone: ROC AUC ≈ 0.91
- Combined features: ROC AUC ≈ 0.9965

Opinion on results:

Although the idea of using magnitude functions is interesting, the actual performance improvement is very small — nearly within the margin of error. While this doesn't strongly support magnitude as a primary signal, it does suggest it could be useful as a secondary feature.

3. Coherency of Conclusions

The conclusions drawn in the report are logically consistent with the experiments. The authors argue that geometric/topological features provide additional information compared to standard embeddings, and the results confirm this to a limited extent. The paper also acknowledges the limitations — including computational costs and lack of interpretability — which gives it a balanced perspective.

This project demonstrates a creative and technically well-grounded approach. The implementation is sound, results are reproducible, and the writing is coherent. While the performance gain from the proposed method is small, it opens a promising direction for further research in combining geometry and NLP for AI-generated text detection.