Authorship Verification using Impostor Projections and Siamese Networks

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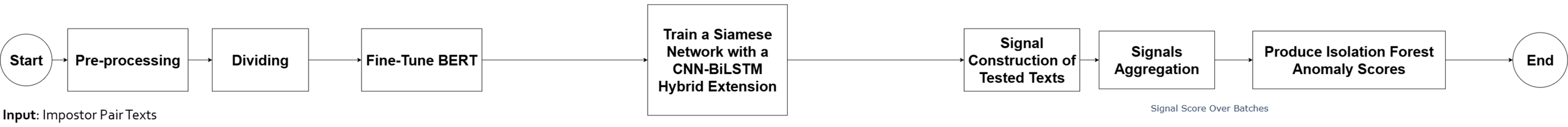
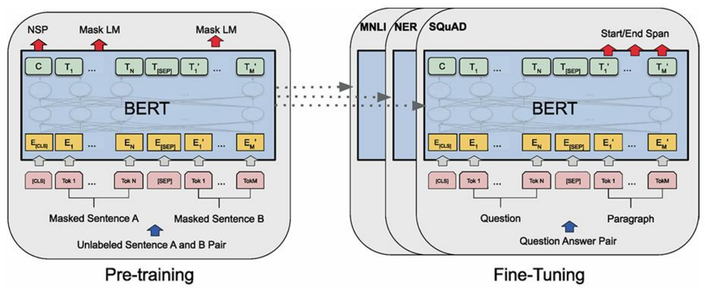
The Problem

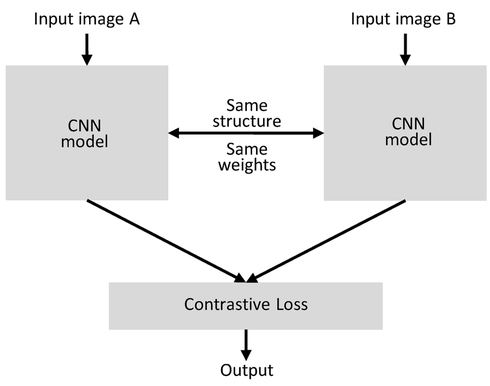
Authorship verification is a significant challenge in fields such as forensics, academia, and historical research. Traditional approaches often struggle with issues like stylistic mimicry, fragmented texts, and domain shifts. This project introduces a scalable solution based on the Deep Impostors framework, enhanced by a Siamese BERT architecture integrated with CNN-BiLSTM networks, designed to capture distinctive linguistic patterns and stylistic signatures. The approach leverages advanced techniques such as Dynamic Time Warping (DTW) and anomaly detection. The proposed method is demonstrated through a case study focused on classifying texts within the Shakespeare Apocrypha. A key feature of the method is a signal texts representation.

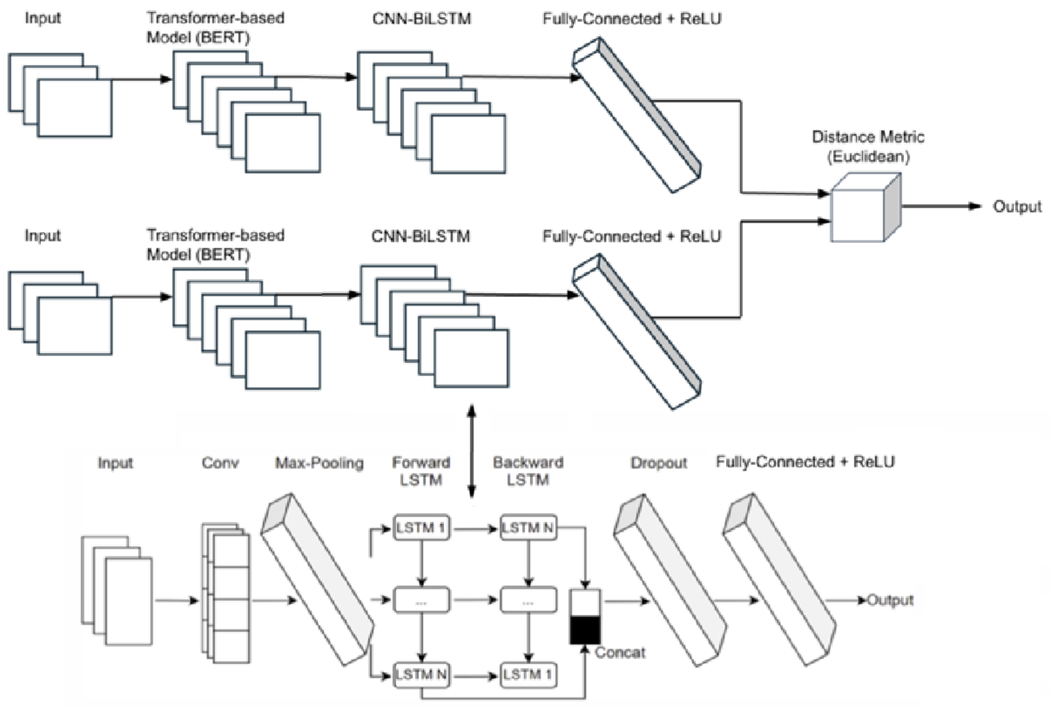
Methodology & Model Overview

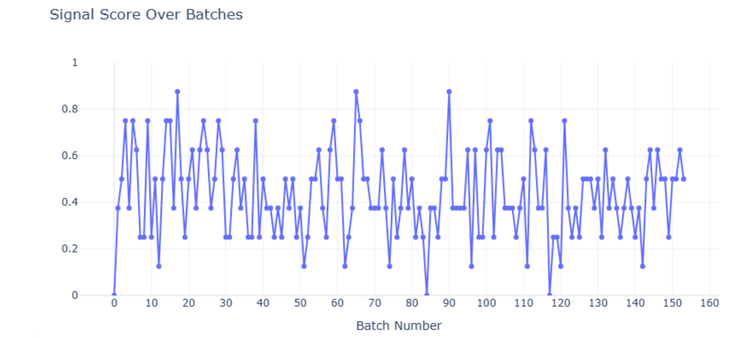


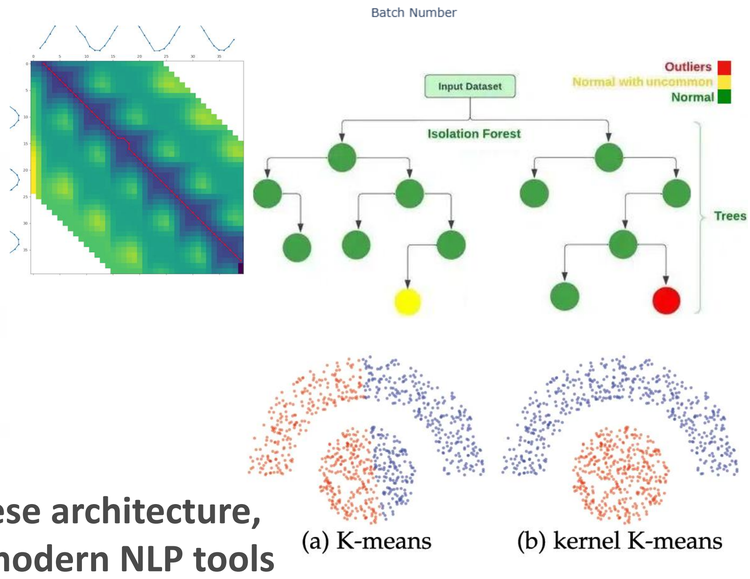
Input: Impostor Pair Texts





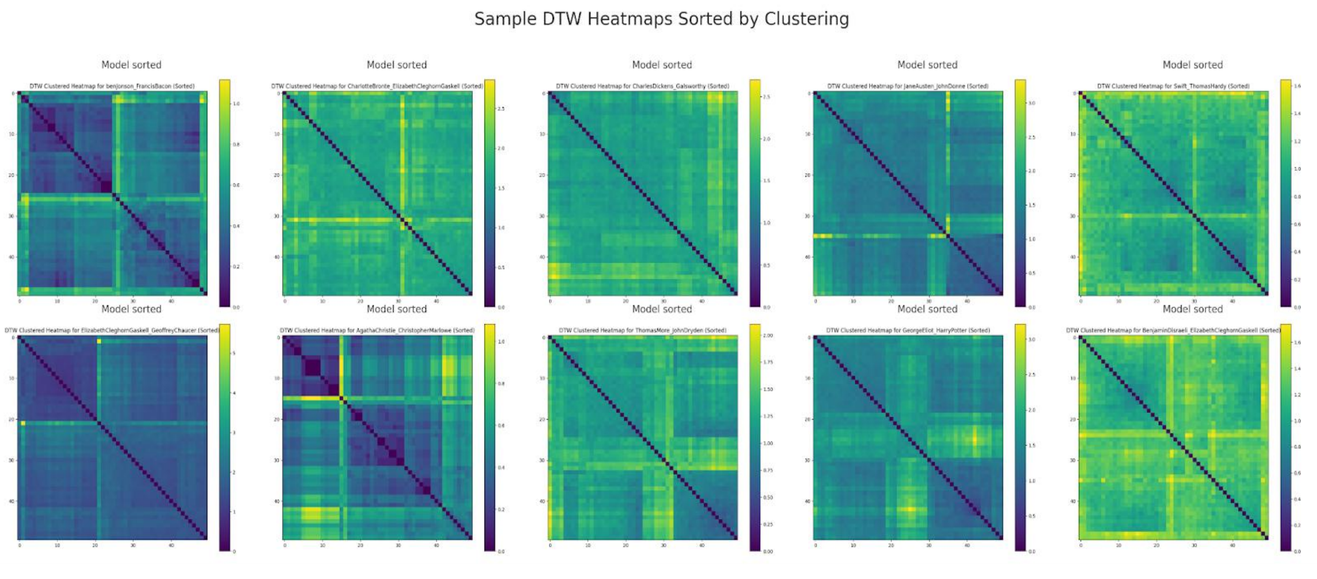


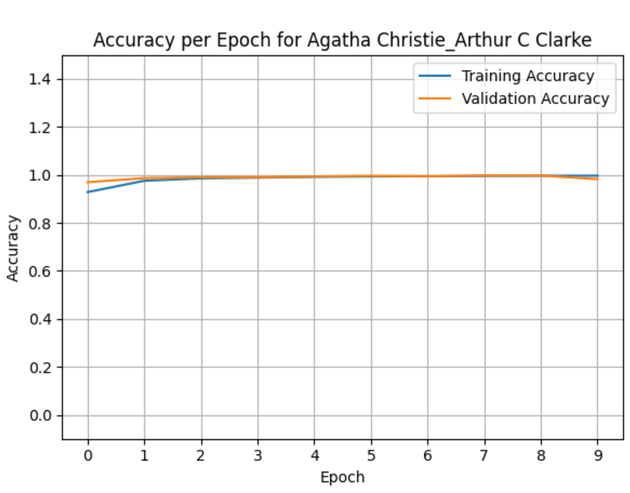


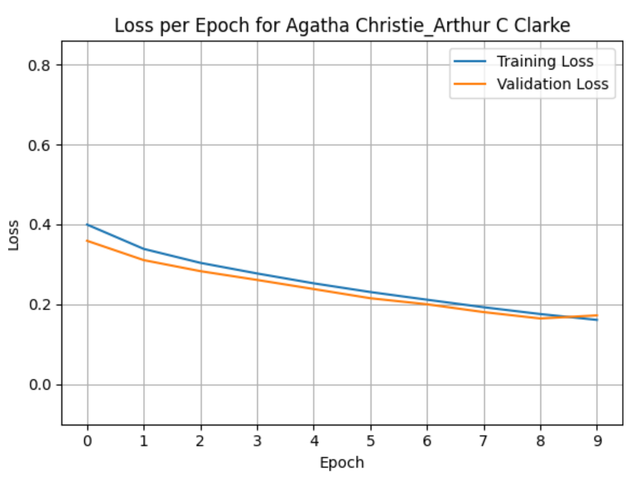


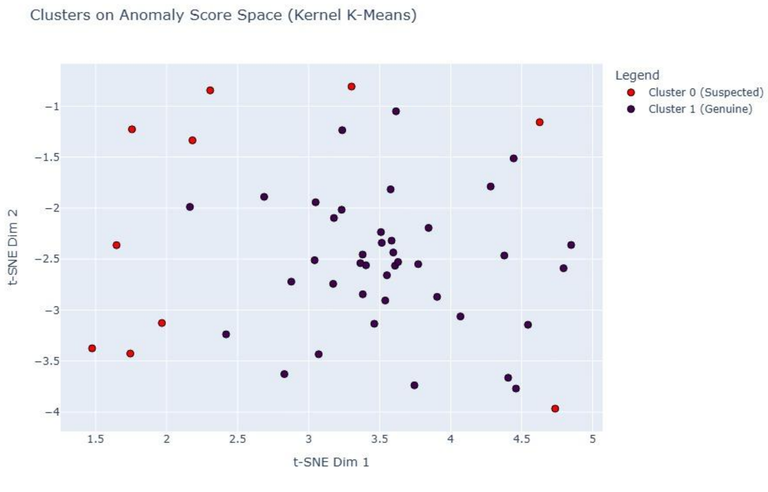
The project exchanges traditional word vectorization and shallow classifiers by BERT embeddings and a Siamese architecture, enabling deeper semantic understanding and direct pairwise comparison of texts; this framework leverages modern NLP tools and utilizes a state-of-the-art inference pipeline: DTW, Isolation Forest, and clustering, to capture subtle authorship cues.

Research Results









Suspected Pseudo-Shakespearian Works

1. A Lover's Complaint
2. Arden of Feversham
3. King Henry VI Part I
4. The Merry Wives of Windsor
5. The Rape of Lucrece
6. The Tragedy of Julius Caesar
7. The Comedy of Errors
8. The Puritaine Widdow
9. The Two Noble Kinsmen
10. Venus and Adonis

Research Conclusions

An application of a modern Siamese BERT methodology makes it possible to extend and validate the previous published research showing promising results, laying the groundwork for further studies. This proof-of-concept shows very promising results and lays the groundwork for further research in robust authorship verification.