IMDB Review Sentiment Analysis by BERT
Executive Summary
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Overview	Sentiment analysis assigns category to text and is a crucial aspect of Natural Language Processing (NLP). For instance, sentiment analysis has applications in social media, customer service and market research.

Method	BERT is a state-of-the-art model from Google. Project repurposed pre-trained BERT model for sentiment analysis on movie reviews to classify them into three classes: positive, negative and mixed. Hugging Face Transformers and Pytorch are used as project means.

Conclusion

📌 This project successfully demonstrates the power and flexibility of BERT for sentiment analysis on IMDb movie reviews.

📌 By fine-tuning a pre-trained BERT model, the model achieved high accuracy in classifying reviews into positive and negative categories.

📌 To extend this further, I implemented a custom approach to classify reviews into three categories—positive, negative, and mixed—by leveraging the output logits from BERT and applying threshold-based logic.

Classification Metrics Table

Class	Precision	Recall	F1-Score
Negative	0.93	0.91	0.92
Positive	0.91	0.92	0.91
Accuracy			0.92
Macro Avg.	0.92	0.92	0.92
Micro Avg.	0.92	0.92	0.92

Confusion Matrix

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Review: The movie was great. But the ending was disappointing.
Overall Sentiment: Mixed
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Review: I loved the acting. But I hated the plot.
Overall Sentiment: Mixed
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Review: The plot was dull, and the acting was bad.
Overall Sentiment: Negative
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Review: An excellent movie with great performances.
Overall Sentiment: Positive
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Review: This movie was fantastic! I loved it. However, the ending was quite confusing.
Overall Sentiment: Mixed
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Review: I did not enjoy this film. It was boring and poorly executed.
Overall Sentiment: Negative
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Review: An average experience, nothing special. But not completely bad.
Overall Sentiment: Positive
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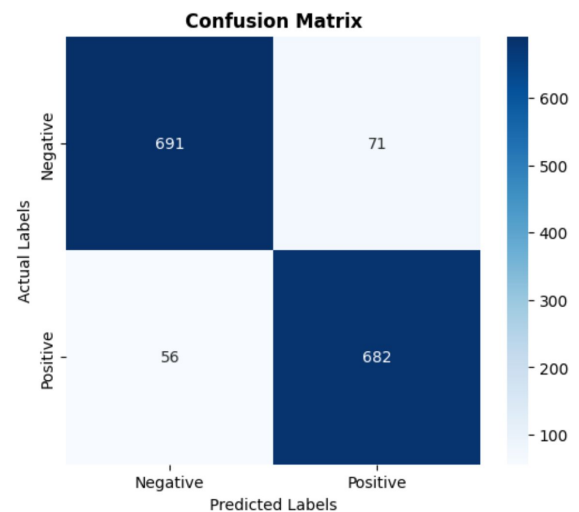
The final model accurately classifies reviews into 3 groups.