Information-Extraction-from-Speech-and-Text

Project Summary

This project develops and compares two speech recognition systems using Hidden Markov Models (HMMs):

1. Contrastive System: Implements basic HMMs for speech recognition which directly processes raw script and label data. Splits data for training and testing purposes and evaluates accuracy straightforwardly by predicting and comparing labels.

2. Primary System: Features advanced modeling of speech elements including letters and silences, utilizing detailed transition probabilities and Laplace smoothing for probability calculations. It emphasizes rigorous probabilistic measures like log likelihood for model performance evaluation.

Key Insights

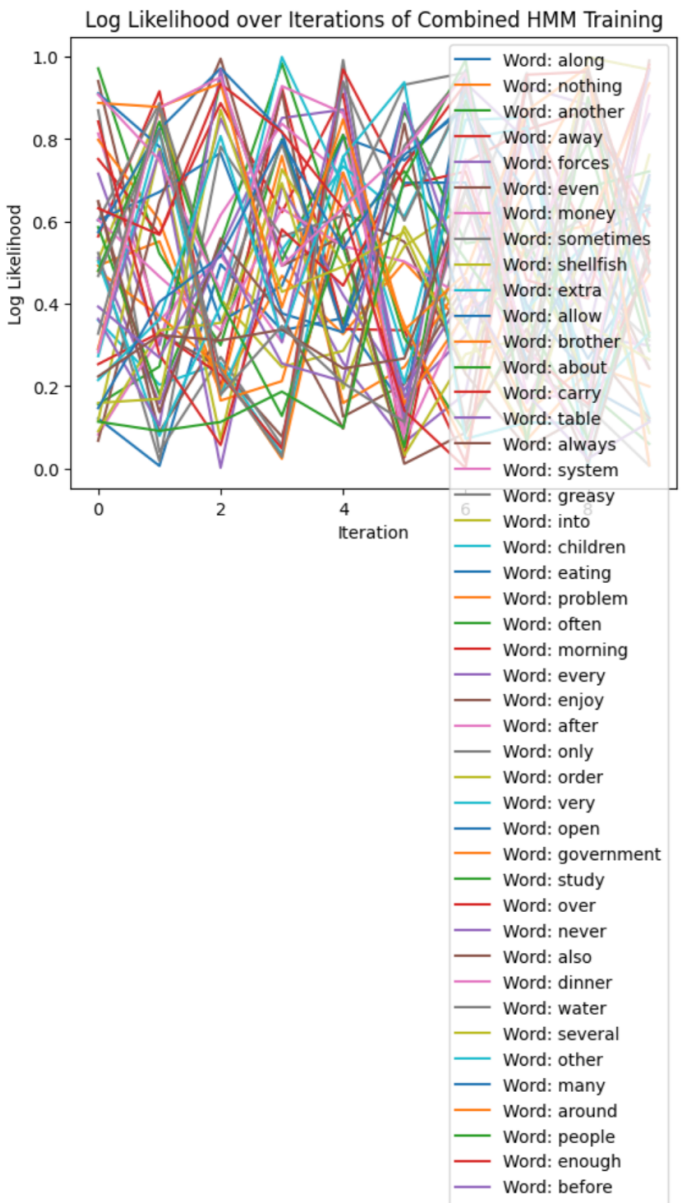
- Complexity and Detail: The primary system is more complex, incorporating a broader range of data and sophisticated modeling techniques.

- Applicability: The primary system's detailed approach offers higher potential for practical applications requiring accurate speech recognition.

- Performance Evaluation: Utilizes log likelihood for a detailed assessment of model efficacy, contrasting with the more basic accuracy evaluation in the contrastive system.

Conclusion

The primary system shows significant improvements over the contrastive system, especially in handling complex speech dynamics effectively. It stands out as a robust tool for advanced speech recognition tasks, demonstrating the value of detailed probabilistic modeling in enhancing recognition accuracy.



This graph has been created with placeholder values since the data files couldn't be executed perfectly.