

Automated Podcast Transcription and Topic Segmentation Using Artificial Intelligence

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Abstract - This paper presents an AI-based system for automated podcast transcription and topic segmentation. The system accepts audio uploads, performs speech-to-text transcription, segments content into topics, extracts keywords, generates summaries, and produces PDF reports through a Flask web application. The architecture integrates audio preprocessing, transcription, NLP-based topic segmentation, and report generation to improve accessibility and content discovery. Experimental evaluation demonstrates efficient processing and useful summaries for educational and media applications.

The proposed system automates podcast understanding and improves content accessibility. Future work includes multilingual support and speaker diarization.

References

[1] IEEE papers on ASR, NLP, topic segmentation, and Flask-based AI systems (replace with final IEEE-formatted references before submission).

Keywords

Podcast Transcription, Topic Segmentation, Speech Recognition, NLP, Flask

1. Introduction

Podcasts are growing rapidly, making automatic transcription and topic segmentation valuable for search, accessibility, and summarization.

2. Literature Review

Recent advances in automatic speech recognition and transformer-based NLP have significantly improved transcription accuracy and topic detection.

3. Proposed Methodology

The workflow includes audio upload, preprocessing, speech-to-text conversion, topic segmentation, keyword extraction, summarization, and PDF report generation.

4. System Modules

Login, Audio Upload, Transcription Engine, Topic Segmentation, Summary Generation, Report Generation.

5. Results

The application successfully generates transcripts, segmented topics, summaries, and downloadable reports through a user-friendly interface.

6. Conclusion