AI-Driven Retrieval and Analysis of Videotaped Council Meeting Archives using Automatic Speech Recognition, Speaker Identification, and Retrieval Augmented Generation

June 23, 2024

Student:
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Lecturer:
Dr. Maarten Marx

UNIVERSITY OF AMSTERDAM
Informatica

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Searching through meetings

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Demo

How we solved the
problem

Methodology

Conclusion

What are the expected advantages to the installation of the gardens surrounding underground trash containers?

Demo

localhost
online

How we solved the problem

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Demo
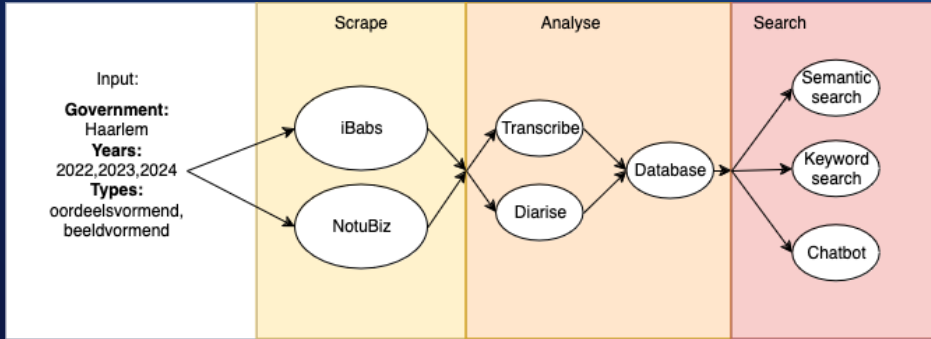
How we solved the problem

Methodology

Conclusion

- Automatic archiving tool
- Automatic analysis of meetings
  - Speech to text
  - Speaker segmentation
- Transcript search engine
- Conversation-style chat bot
- Easy navigable web application

Architecture

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Figure: Schematic architecture of the developed analysis- and search system

Analysis

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Identification, and
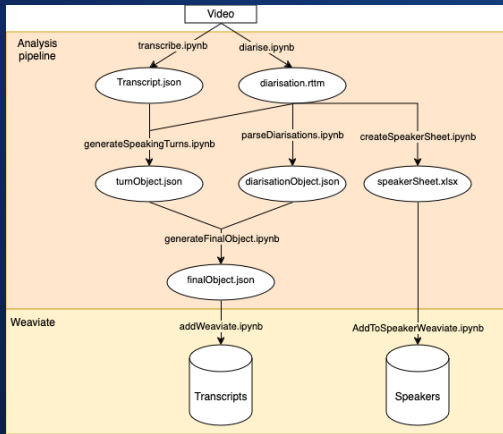Retrieval Augmented
Generation

- Speech to text
  - OpenAI's Whisper
- Speaker recognition
  - pyannote.audio
- Manual speaker naming
- Database

Analysis pipeline

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Demo

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Figure: Schematic architecture of the developed analysis pipeline
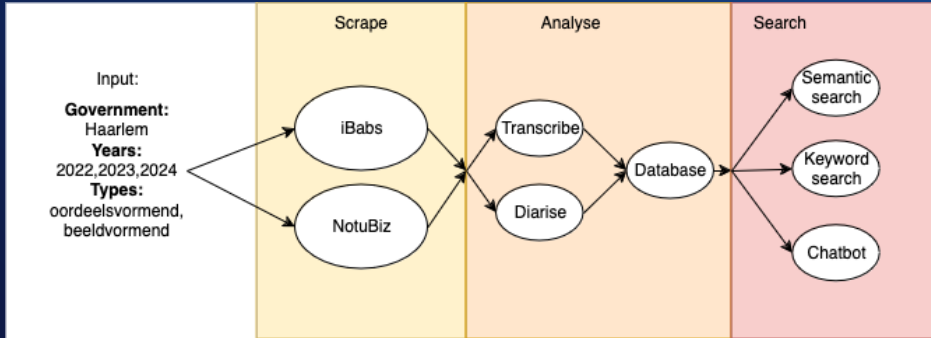
Architecture

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Figure: Schematic architecture of the developed analysis- and search system

Does our solution work?

AI-Driven Retrieval and Analysis of Videotaped Council Meeting Archives using Automatic Speech Recognition, Speaker Identification, and Retrieval Augmented Generation

Demo

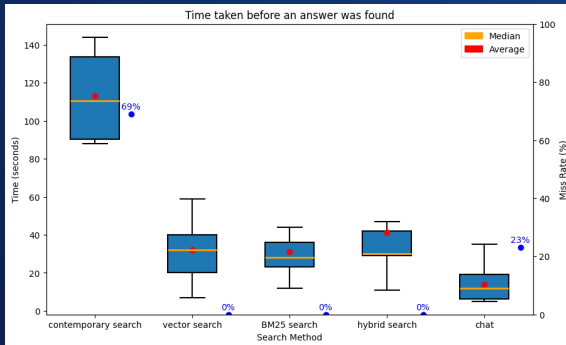How we solved the problem

Methodology

Conclusion

Figure: Average search time for different search methods used by 13 participants. Participants were given three minutes to find the answer to one of five questions.

Conclusion

- Hard to navigate and find information through multi-hour long municipal meetings
  - Automatic iBabs & NotuBiz scrape tools
  - Speaker diarisation & automatic speech recognition
  - Semantic- and keyword search engine
  - Chat bot
  - Online search application

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