

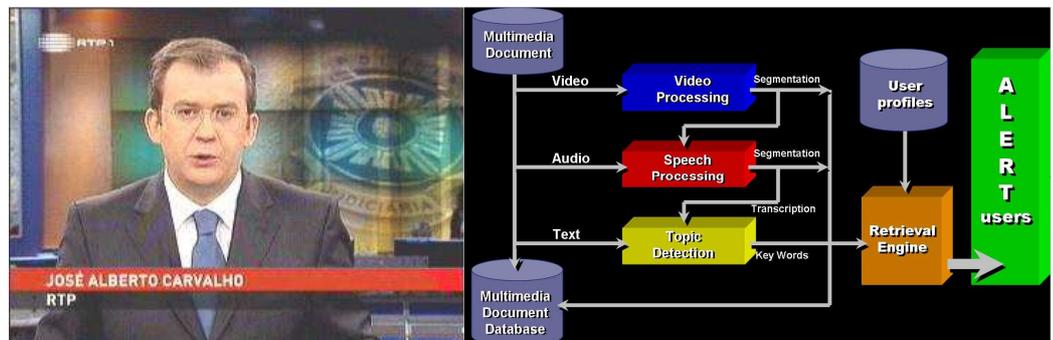


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L²F – Spoken Language Systems Laboratory

Semantic Processing of Multimedia contents



Nowadays there is a significant need to deal with large amounts of multimedia information. The use of advanced techniques for their segmentation, transcription and indexation makes it possible to access their contents.

In one of the services derived from this project, we give users the possibility of searching through the 8 o'clock broadcast news of RTP (*Telejornal*) for selected topics. Moreover, users may define which thematic areas they are interested, and receive at the end of the automatic processing of the whole broadcast news, an email alerting them to the news on their chosen topics.

Goal. Use of audio, speech and language processing techniques for segmentation, transcription and indexation of multimedia data.

Summary. This activity represents a large framework for research and development in the area of semantic processing of multimedia information. It combines different audio, speech and language processing techniques in pipeline architecture in order to segment the multimedia data into homogeneous chunks, recognize them and classify them into topics. This process leads the way to a set of advanced applications such as selective dissemination of information, speech mining, and audio browsing.

Description. The complex pipeline process starts by an audio categorization and segmentation stage that divides the audio stream into coherent blocks, in terms of absence/presence of speech, acoustic background conditions and speaker characteristics. The blocks classified as containing speech are then fed through a large vocabulary continuous speech recognition system (*AUDIMUS.MEDIA*) that provides the corresponding transcription. This textual transcription and associated metadata derived from the segmentation stage is the input to an automatic topic indexation stage which classifies each block according to its topic and clusters contiguous blocks with the same topic. The overall process is a pipeline combination of different processing techniques that share a common XML structure description. At the end of the process, the multimedia document is available to be loaded into a database together with the associated XML information.

More information is available by email to info@l2f.inesc-id.pt or directly from the website <http://www.l2f.inesc-id.pt/>.



L²F: Semantic Processing of Multimedia contents

Tasks

The project is structured into the following tasks:

1. Multimedia Database: identification, acquisition, definition and storage
2. Acoustic data description and segmentation
3. Automatic speech recognition
4. Automatic update of vocabulary and language modeling
5. Analysis of spontaneous speech
6. Rich transcription
7. Data block segmentation based on contents
8. Data characterization based on transcription and indexation
9. Data summarization
10. Application interface and services

Team

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Applications

This project is being used as a research and development platform for different applications:

- Characterization of Broadcast News programs for selective dissemination of multimedia information
- Automatic sub-titling of Broadcast News programs
- Classroom lecture transcription
- Meeting transcription
- Court session transcription
- News distribution service for mobile devices

Available Demo

In order to demonstrate the results and the potentialities of this project, a demo of a selective dissemination of information system associated to the 8 o'clock news program of RTP (*Telejornal*) was made available.

Daily the news program is automatically collected directly from the cable network, loaded into a database, acoustically described and segmented, transcribed, segmented into news stories, and each story indexed in a set of topics. At the end of the process, the description data is also loaded into the database. This loading triggers a search process on the user profiles for the ones matching the same topics, and an alert message is sent to the selected users.

A service interface makes it possible for any registered user to define which thematic areas they are interested in. After the automatic processing of the daily news broadcast, users with matched topics receive an email with the news summary and an indication of the website in which they can have access through streaming to the news story about the selected topics.

The service is available from <http://ssnt.l2f.inesc-id.pt/>.

More Information

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