

Audio Indexing for an Interactive Italian Literature Management System

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Abstract

A generic audio-based multimedia indexing and retrieval framework is presented. This work is mainly finalized to the development of various digital archives and technologies focused on the creation of a Content Management System (CMS) for Italian Literature specialized on searching, reading and listening. The main general objectives, among others more specific, are: the promotion of reading and listening Italian literature, the spreading of Italian oral narrative art and the design of new interactive communication tools and interfaces.

Index Terms: audio indexing, Content Management System (CMS)

1. Introduction

Indexing of Web-based multimedia content is today an important challenge. The amount of streamed digital video and audio managed continues to grow exponentially. Moreover, inexpensive storage makes it possible to store multimedia documents in digital formats and higher-bandwidth networks allow an easy transmission of multimedia documents through the public Internet.

In this work, a generic audio-based multimedia indexing and retrieval framework is introduced. This work is mainly finalized to the development of various digital archives and technologies focused on the creation of a Content Management System (CMS) for Italian Literature specialized on searching, reading and listening. The main general objectives, among others more specific ones, are: the promotion of reading and listening Italian literature, the spreading of Italian oral narrative art and the design of new interactive communication tools and interfaces.

In particular we focused on the following points:

- the definition of the functions and the characteristics of the procedures for automatic segmenting and indexing audio archives of Italian literary texts read by professional speakers;
- the definition of the characteristics of a Content Management System (CMS) with specific server facilities for interactive navigation, information search, and audio documents listening;
- the implementation of the final prototype with the main functionalities and some examples of contents, for a first appraisal of the system.

2. Methodology

At the present state of the project an off-line procedure based on an Italian ASR system [1] was used to automatically align texts and their corresponding recorded waveforms. MySQL was used to automatically create a data-base with words,

sentences and paragraphs and their corresponding aligned time infos. Finally a JOOMLA/APACHE based PHP web site, as illustrated in Figure 1, was created with various search capabilities to facilitate navigation.

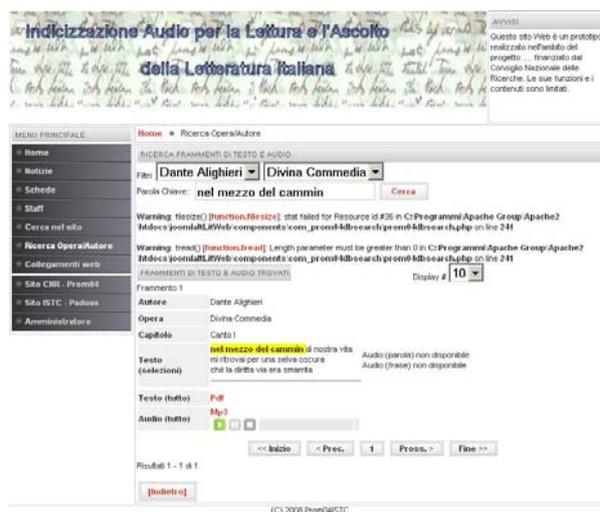


Figure 1. Italian Literature web site search interface.

3. Final Prototype

As for the final Prototype the “Divina Commedia” by Dante Alighieri and “Il Colombre” a novel by “Dino Buzzati” were used to demonstrate the usability and search capability of the WEB site. A part from various info about authors and their work the user can search typing words or full sentences and the system automatically retrieve texts and their corresponding aligned mp3 waveforms. The user can listen to single words or sentence or even paragraph containing that words.

4. Conclusions and Future Works

As for now, the prototype is based on an off-line procedure for aligning and searching purposes just to demonstrate the feasibility of the project. An on-line ASR system will be developed in the future and included in the final prototype in order to easily manage more Italian authors and works.

5. References

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- [2] Drioli, C. “Progetto PROM2004 - Indicizzazione Audio per la Lettura e l'Ascolto della Letteratura Italiana”, Progetto Giovani CNR, 2005, internal Report.