

VideoSum: A Video Storing, Processing and Summarization Platform Vasileios Chasanis¹, Costas Voglis¹, Antonios Ioannidis¹, Aris Lanaridis², Eleni Vathi², Georgios Siolas², Aristidis Likas¹ and Andreas Stafylopatis²

¹Department of Computer Science and Engineering, University of Ioannina ²Intelligent Systems Laboratory, School of Electrical and Computer Engineering, National Technical University of Athens

Introduction

- ► We present **VideoSum**, a video storing, processing and summarization tool. VideoSum can process edited and unedited video originating from different categories such as movies, news, documentaries, series, reportage, shows and home videos.
- VideoSum provides the following functionalities:
- **Editing** audiovisual data and creating summaries that reduce the data volume and processing time accordingly.

Summary Representations

- The major contribution of VideoSum application is the ability to produce several types of video summary and offers the following representations:
- **Lines**: Keyframes per shot at any level (shot/scene/chapter).
- **Filmstrip**: All the video keyframes in a filmstrip.
- **Video**: The user can watch simultaneously the initial video and the summary created from the application.
- **Similar shots**: In case of unedited video, groups of similar shots are represented from a single shot.

Text-based search in digital libraries.

> Automatic and efficient **indexing** of audiovisual data.



Figure: Main Window of VideoSum Application.

System Architecture

The main features/contributions of this system are:

- **Video Segmentation**: Segmentation can be applied in three levels ranging from the finest shot level, the intermediate scene level and the coarse chapter level.
- **Video Summarization**: Efficient summarization algorithms can provide

- **Faces**: Only the keyframes that contain face are available to the user.
- **Camera Movements**: All camera movements detected in the video, followed by their characterization as pan/tilt/zoom.

Summary Outputs

Export summary in any of the following types:

- ► Video of Static Frames
- Video of Segments
- ► Html file
- ► Xml file
- Montage Frames
- Keyframe Images
- News Video Summary (Only anchorman)







different summarizations of the video content in any level.

- **Video Representation**: Different visual representations of the video's summary are available to the user.
- **Video Storage**: Storage of different summary types, such as video, images, xml and html.

Basic Functions

The system is **fully automated**, processing several actions with respect to the video type. System parameters can be adjusted to fit the user's preferences. The basic actions of the system are:

- Shot Boundary Detection
- Unwanted Shots/Frames Removal
- Shot Representation/Summarization
- Detection of Sequences of Similar Shots
- Scene/Chapter segmentation
- ► News Detection
- Camera Movements detection



Figure: Summary Outputs - Xml & Html.

Annotation & Search	
 Insert annotation at any level. Search keywords and view results in all levels. 	 Video Shot Keyframe

Implementation

The VideoSum application is based on **OpenCV library** for internal representation of video frames and on **QT library** for designing the user interface.

Figure: Summary Representations - Lines & Filmstrip.



Figure: Summary Representations - Montage.

Acknowledgments

The work described in this paper is co-financed by the European Regional Development Fund (ERDF) (2007-2013) of the European Union and National Funds (Operational Programme "Competitiveness and Entrepreneurship" (OPCE II), ROP ATTICA), under the Action "SYNERGASIA (COOPERATION) 2009".

