Title:

An Extensible and Generic Framework With Application to Video Analysis

Abstract:

Since 2007, the research initiative sachsMedia, situated at the chair Media Informatics at Chemnitz University of Technology, works in cooperation with companies operating in the media sector with the research objective to develop solutions and strategies for several tasks and problems resulting from the current turmoil in media technology. We are focusing on prevailing problems of local or regional television operators such as improving platforms for joint production and archiving processes or switching from analog to digital TV services.

This presentation gives insights into the outcomes of this project in the field of metadata extraction by video analysis while introducing a holistic, unified and generic research framework that is capable of providing arbitrary application dependent multi-threaded custom processing chains for workflows in the area of image processing. This comprises methods such as shot boundary detection and shot compositions to structurally divide the video into disjoint parts and to reduce data by the creation of representative keyframes at scene level. Techniques from machine learning and statistical pattern recognition are utilized for content-based analysis to reliably detect and recognize faces and other objects. To enhance and speed up the development of algorithms, a graphical user interface connects to the framework to allow for model-driven and semi-automated (ground truth) annotation as well as training, visualization and evaluation purposes.

The heavy use of plug-in concepts and design patterns throughout the framework sustainably guarantees maintainability and extensibility being flexible enough to adapt to new demands and fields of application not being necessarily restricted to the field of computer vision.

Keywords: Annotation, Image and video processing, Object recognition, Sustainability, Workflow