

Supervisor's review of doctoral thesis

Charles University, Faculty of Mathematics and Physics

Study programme: Computer Science

Study branch: Mathematical Linguistics

Student: Mgr. Petra Galuščáková

Title: Information Retrieval and Navigation in Audio-Visual Archives

Supervisor: doc. RNDr. Pavel Pecina, Ph.D.

Department: Institute of Formal and applied Linguistics MFF UK

The presented doctoral thesis by Petra Galuščáková belongs to the area of audio and video retrieval. This research field becomes more and more important with the fast-growing volumes of audio and video data available on-line. In her work, Petra mainly focuses on two sub-areas: In *Passage Retrieval*, Petra develops methods for retrieval of relevant segments from longer recordings which is very appreciated in the situations when the recordings contain multiple diverse topics and users are pointed to the beginnings of the topics they are searching for. In *Video Hyperlinking*, Petra investigates methods for query-by-example video retrieval, where users are provided with a list of video passages similar to a given video segment (e.g. the one they are currently watching). These two areas are accompanied by experiments on *Anchor Selection*.

The thesis is well structured. It includes 6 chapters, several appendices and a list of Petra's own publications related to the thesis. Chapter 1 is an introduction to the thesis containing description of the research field, objectives of the thesis and an overview of the main achievements. In Chapter 2, Petra describes her baseline retrieval system based on textual search. Chapters 3–5 are devoted to Petra's research in the following sub-areas: Passage Retrieval, Video Hyperlinking, and Anchor Selection, respectively. Chapter 6 presents an experimental user interface and retrieval system for Video Retrieval and Navigation called *Shamus*. The work is concluded in the chapter entitled Summary. The text is written in good English. Some parts need more thorough reading to get complete and correct understanding, but overall the text is readable, experiments are well described with a good level of details.

Petra started her research in this field already with her diploma thesis where she focused on evaluation methods for passage retrieval which were then used in her later experiments. Petra's doctoral research was shaped and motivated by a number of various shared tasks and competitions which she participated in during the last five years (organized mainly within the MediaEval workshop series and the TRECVID events). Petra's participation was always very successful and in several tasks she placed first in a high competition of research teams from well known institutions worldwide. Her main contribution to this research field is exploration of various strategies for segmentation of audio-video recordings, combination of a wide range of multimodal features extracted from audio-video recordings and very careful system tuning and adaptation.

Petra's bibliography is quite rich. It contains 13 papers related to the work presented in her

doctoral thesis plus about 12 additional papers on other topics. 14 papers in total are indexed by Scopus, some of them were presented at highly-ranked conferences (ECIR, ICMR).

I fully recommend Petra Galuščáková's thesis to be defended.

doc. RNDr. Pavel Pecina, Ph.D.

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