Doctoral Thesis report:

Title: Information retrieval and navigation in audio-visual archives

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The thesis is concerned with the candidate's wide range investigations into information retrieval for audio-visual archives. The significant expansion of archives of digital audio-visual in recent years and their ongoing growth is creating the need for effective tools for searching and navigating these archives. These tools bring together the audio and visual pre-pre-processing including technologies such as speech recognition and computer vision, with information retrieval methods for the identification of relevant content, with the design of suitable interfaces to support interaction with this content. Conducting research in this area thus requires a sound understanding of challenges of these individual technologies and their use in combination, the capabilities of state-of-the-art algorithms and their strengths and limitations, and the overall challenges of providing tools for search and navigation of audio-visual archives.

It is clear from the details in the thesis concerning the reviews of relevant existing work and the candidate's description of her own work, that she has a deep understanding of the requisite technology and their exploitation and integration to produce state-of-the-art solutions to address a number of the challenges at the core of the topic of this thesis.

In particular, she has studied search of complex audio-visual content arising from semi-professional user generated content from both the audio and visual perspectives. The investigations described in the thesis relate to both traditional interactive search based on queries entered by a searcher seeking to locate previously seen video items or more open ad hoc search, and the recently establishing area of automated video hyperlinking, in which users follow links between video items based on links automatically suggested by a navigation tool.

The thesis concludes with a description of the integration of part of the solution into a working prototype system presented at an international conference. This provides a final demonstration of the candidate's ability to create practical solutions to challenging and current real world problems.

The solutions described in the thesis demonstrate both a deep technical understanding of the methods used, but also the ability to integrate them in creative and effective ways. The solutions described are not only well considered with appropriate choice of technologies, but they are implemented and combined to produce state-of-the-art working solutions. In short, the work in the thesis is not just state-of-the-art in terms of the problems addressed and the technologies being used, but the candidate shows the ability to understand and address

challenging technologies problems to develop solutions which are at the leading edge of international research in the areas being investigated.

Overall I have no hesitation in recommending in the award of a PhD degree to Petra Galuščáková who should be congratulated for her mastery of the wide range of technologies required to undertake this work and the excellence of the solutions that she has created.

Professor Gareth J. F. Jones

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