Panel

Multimedia Education — Can we find Unity in Diversity?

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OVERVIEW

The field of multimedia is composed of a variety of research areas. This diversity makes multimedia such a special and interesting research field. However, the different vocabularies, methods, and cultures of the involved communities also introduce barriers that make it difficult to teach the field as a unified subject. The panel invites experts to discuss if and how we can teach the diversity in multimedia as a single subject and how we as researchers and educators can help to foster this goal. The following text provides background information to the topic and introduces the organizer's hypotheses to be discussed at the panel.

Categories & Subject Descriptors: K.3.0
[Computer and Education]: General

General Terms: Human Factors, Theory, Documentation

ORGANIZERS' STATEMENT

In the days of YouTube, MP3-players, and devices like the Apple iPhone we tend to forget that, a couple o years ago, it was a challenge for home PCs to even play back short video snippets from a CD-ROM. At that time, the multimedia research community discussed problems like synchronized recording and play back of audio and video. Later, Internet transmission and storage of multimedia content became a great issue and pushed the work on practical compression algorithms. Today, many of these problems can be regarded practically solved and new challenges such as the semantic analysis of multimedia content keep the research community busy.

Even though multimedia is ubiquitous in our daily lives it seems to be rarely accepted as its sown field of research and even less as a teaching discipline. When we look at how the results achieved and the current research work are being transferred to today's generation of students, we see that this rarely happens in a unified approach. The knowledge needed to create an Internet video conference system, for example, is distributed among different fields such as signal processing, networking, information theory, software engineering, HCI, and others.

Multimedia as a field seems to be divided according to different types of data. Therefore, many research groups for example work

on either speech processing, computer vision, or video analysis. Related disciplines such as HCI and software engineering are often even disregarded as part of multimedia. The situation becomes even worse with the different disciplines having different vocabularies, methods, and community cultures. As a result, teaching is organized into the same categories of data and different faculty members often represent each of them individually. This makes it very difficult for students to get an understanding of the field across these boundaries.

A short look on the history of the different communities that now contribute to multimedia reveals the cause for the present situation. The foundations of multimedia processing are rooted both in the signal processing community, which is part of electrical engineering, as well as the field of statistics which is part of mathematics. Many terms and methods that are still used have been inherited by these two areas. Machine learning later influenced multimedia and introduced language originally created in statistics and also in biology. The application of machine learning together with the foundations of signal processing to different kinds of data then created the different fields of natural language, audio, speech, image, and video processing, which by themselves created new vocabularies, methods, and community cultures. A very important reason for this split is the amount of data that has to be processed: Natural language, audio, and speech processing are the oldest areas because computers where already able to process text and audio in the 60s and 70s. Image analysis is a slightly newer field, and video analysis is the latest because it deals with the largest amounts of data. With different maturities of the research areas, different generations of people have started to concentrate on different types of data and hence the divide.

We think it is very important to overcome this divide when teaching because there is no actual reason for it other than a historic evolution. Though the diversity of multimedia almost guarantees a vivid source of ideas from different directions for research, the barriers imposed by this diversity make it very hard for students to enter the field. In addition, it complicates our standing as a community among other areas of computer science and engineering.

In order to break the barriers, the fields should not appear separated when taught, and the only way to do this is to start to teach Multimedia as a single subject with a common set of well-understood terms and core topics. If we fail to establish multimedia as such a unified, single subject the heterogeneity will harm progress dramatically. We need to think of a unified curriculum that tries to merge the different areas multimedia is

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composed of and create a common vocabulary and a set of methods that define multimedia as a uniform discipline. This is a challenging task, of course, that raises many questions, including:

- What is the critical mass that belongs into a multimedia curriculum?

- What can we do to change education, i.e. how can an institution like ACM SIGMM help to foster a unified and accepted curriculum?

- How can we be specialists and yet be broad, in other words: How can we find unity in diversity?

This panel will bring together several renowned experts from universities, research institutions, and industry that will discuss together with the audience. We invite everybody to participate and be inspired!