



Introduction

We normally think of audio and video as two separate mediums. At first glance, this makes sense, since these two modalities are associated with two senses with very different characteristics (auditory vs. visual). However, there is a large body of work that deals with how to move data representations from one modality. There can be many applications, for example helping blind users “see” by converting video to sound (*sonification*), or deaf people “hear” by converting sounds to video (*visualization*).

Task

For the final project, you will be working in groups of 3 or 4 to create a system that does either sonification (convert video to sound) or visualization (convert sound to video). The specifics will be left open for you to work out – however, your grade will be based on the level of sophistication and creativity of your sonifier/visualizer. For example, what kind of information is preserved during the conversion process? How would it help a blind person to “see” or a deaf person to “hear”? If you wish, you may restrict your sonifier/visualizer to a particular type of sound or video – for example, “music” or “nature videos”. However, your system must work for multiple audio or video data sets (i.e., it should not “hardcoded” to work only for a specific audio or video file).

An audio visualizer, such as one found in iTunes, for example, converts audio to visuals. However, it is not very sophisticated, as it only conveys basic information about volume and (possibly) frequencies. A somewhat more sophisticated example would be one such as Woon Seung Yeo’s Raster Scanning (<http://ccrma.stanford.edu/~woony/works/raster/>).

Schedule

Week 0 (Jan 8): Project Brainstorming, Proposal

- *In-class*: Audio and video characteristics brainstorming; project ideas brainstorming.
- *Deliverable* (Jan 13): Project Proposal website.

Week 1 (Jan 15): Proposal refinement, Design

- *In-class*: Feedback on your proposal, system design, experiments.
- *Deliverable* (Jan 22): Some basic working components.

Week 2 (Jan 22): Prototype

- *In-class*: Prototype implementation.
- *Deliverable* (Jan 29): A first working version of your system.

Week 3 (Jan 29): Implementation

- *In-class*: Refinement of the prototype.
- *Deliverable* (Feb 5): The finished system.

Week 4 (Feb 5): Presentation

- *In-class*: 15 minute presentation and demonstration.
- *Deliverable* (Feb 7): Finished project website, self-evaluations.

Grading

Your grade will be broken down as follows:

- Project Proposal: 5%
- First Prototype: 10%
- Second Prototype: 10%
- Technical Implementation: 20%
- Creativity: 20%
- Website: 15%
- Presentation: 15%
- Self-evaluation: 5%

Project Proposal: Based on your revised project proposal on Week 1.

First Prototype: Based on your first prototype on Week 2.

Second Prototype: Based on your second prototype on Week 3.

Technical implementation: How much depth/detail did you go into in your implementation? If you have a particularly elegant/innovative/well-designed/robust implementation, you will get points here.

Creativity: How unique is your idea? Are you simply reproducing an existing system? Did you introduce any novel ideas?

Website: Clarity and completeness of your website.

Presentation: Project presentation on Feb 5.

Self-evaluation: At the end of the semester, you will be asked to complete a self-evaluation summarizing your contribution to the project. You will also be asked to comment on your peers. This information is intended to help us evaluate our teaching methods, and unless there are gross inconsistencies within the self-evaluations of a single group, will not impact your final grade.

Late submissions will not be accepted (you will be given a zero for that portion of the grade).

Please note that your project comprises of 40% of your final grade.

Week 0: Proposal

During this first week, you will spend most of your time brainstorming ideas for your final project, then choose one and write it up on a webpage.

Brainstorming I: What are some properties that are unique to audio? To video? To both?

Brainstorming II: Think of ideas on how we could map specific properties of audio to video or vice-versa.

Proposal: Summarize the results of your brainstorming onto a website. Then, provide a section that outlines your project proposal in more detail. You should include the names of your group members, and also come up with a name for your project.

Submission

Submit the url of your webpage to eric@cs.rwth-aachen.de by **Saturday, January 13, 2007 at 23:59**. The subject of your email should be **"M3 Assignment 9"**; be sure to use this exact subject line as it will be used to filter assignment submissions for grading.