EVALUATION FOR STUDENT PRESENTATION VIDEOS

Challenges

- Picture/Video/Lighting quality varies
- Classroom environment not intended for professional audio/video recording
- Audio quality varies
- Microphone used, but presenters have varying characteristics (volume, distance to microphone, etc.)
- Speech quality varies
- Presenters have variety of speech characteristics (accent, clarity, etc.)
- Speaker/language modeling burdensome

Approach

- User Interface
  - Streaming Video (pure Java implementation, supports all platforms)
  - Text Search through filtered text and raw transcripts
  - Filtered transcript text in yellow boxes; more salient phrases highlighted in red
  - Keyframes and Speaker index
  - User controls: Variable segmentation (number of thumbnails), Zoom, Keyphrase Context (temporal grouping of similar terms)

- Automatic Transcription
  - Digitized collections of raw video difficult
  - Accuracy: deviation from correct answer in seconds
  - Duration: time (sec) required to complete task
  - Completion: percentage of correctly completed tasks

- Visual Segmentation
  - Scene cuts (e.g., slide changes, abrupt pixel intensity change between consecutive frames)
  - Scene motion (e.g., camera pan, zoom, gradual histogram change between distant frames)

- Speaker Segmentation
  - Speaker Indices with varying displays:
    - Large Head/Shoulder & Profile
    - Small Head
    - Large Head/Shoulder & Profile
    - Small Head/Profile
  - Measures: Fall 2005, Spring 2006, Fall 2006

- Keyphrase Context
  - Temporal grouping of similar terms
  - Speaker Indices with great approval:
    - Audio quality varies
    - Microphone used, but presenters have varying characteristics (volume, distance to microphone, etc.)
  - Speaker/language modeling burdensome

User Interface

Multimedia Browser VAST MM (Video Audio Structure Text)

User Study

User Interface changes are driven by user studies performed once a semester

Targeted tasks:
- Find specific content in video
- Find student in video from example picture
- Summarize presentation using keyphrases

Overall continual improvement in video retrieval tasks over time and with adjustments to interface

Video indices with great approval:
- Segmentation-adjustable keyframes
- Facial Speaker Index
- Key phrase summaries