Types of Multimedia

- Multimedia: Beyond text communication
  - Stored in a variety of formats

- Audio
  - Today’s most popular formats:

- Image
  - Today’s most popular formats:

- Animation
  - Today’s most popular formats:

- Video
  - Today’s most popular formats:

Searching for Audio

- Tagged audio files
  - News organizations (e.g., NPR, BBC, …)
  - iTunes etc services

- Raw audio
  - Signal processing
  - To Speech recognition processing
  - To Text (inaccurate)
  - Perform text search

- Tune recognition
  - Signal processing
  - Pattern matching
  - E.g., midomi.com, shazam.com/

Searching for Video

- Tagged by humans
  - News organizations
  - YouTube.com
  - TED.com

- MIT’s Lecture Browser
  - Lectures have additional challenges
    - Glass at MIT Spoken Lecture Processing Project
    - http://web Parsons.mit.edu/lectures/
  - Extract audio track
  - Convert into text
  - Analyze text to reveal structure
  - Segment based on structure
Searching for Images

- Use surrounding text
  - Filenames, html, nearby text
- Computer Vision techniques
  - Still a tough problem
- Tagged by humans
  - Great results, but…
  - Expensive! Slow!
- Idea: Exchange adrenaline for human labor!
  - The ESP game (now part of gwsp.com) [von Ahn, Dabbish: Labelling Images with a Computer Game]
  - The Peekaboom game (newer version called squigl) [von Ahn, Liu, Blum: A game for locating objects in images]

If humans are still the best taggers...

- Captcha:
  - Program that can tell whether its user is a human or a computer
  - Can generate and grade test that
    - Most humans can pass
    - Current computer programs will fail
  - New: ReCAPTCHA