Multimedia Information Retrieval (MIR)

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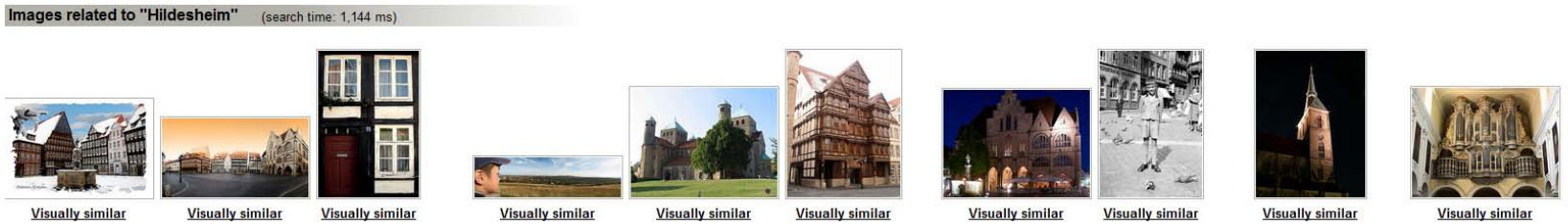
MIR

- Explosive growth of digital media
  - text, video, images, speech, music, combinations
  - Huge demand for search, access, sharing
- Content-based MIR
  - searching for images, video, and audio based on the visual and audio content

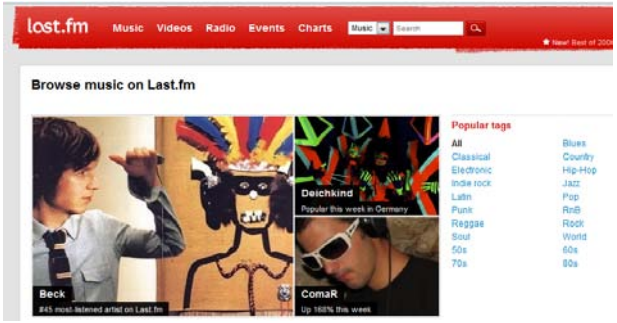
Focus of this seminar

- Content-based Image Retrieval



- Content-based Video Retrieval

- Content-based Audio Retrieval



Problems we will study

- **Bridge the Semantic Gap**
  - high level concept (sites, objects, events) and low-level visual/audio features (color, texture, shape and structure, layout; motion; audio - pitch**,** energy, etc.).

100000 pixels
Brown and blue color
Lights

Hildesheim's
Markplatz at night

- **How to Best Combine Human Intelligence and Machine Intelligence.**
  - Keep human in the loop, e.g. Relevance Feedback
- **New Query Paradigms**
  - Query by keywords, similarity, sketching an object, sketching a trajectory, painting a rough image, etc.
- **Multimedia Data Mining**
  - Searching for interesting/unusual patterns and correlations in multimedia has many important applications, including Web Search Engines and dealing with intelligence data.

Methodologies we will learn

- Machine learning, statistical modeling
- Data mining, pattern analysis
- Database, information retrieval
- and some background on…
  - Signal and image processing
  - Graphics, vision, human-computer interaction,
  - Data fusion, social sciences, and domain knowledge for applications

Trends we will follow

- Web Image Search and Mining
- Image Annotation
- Affective Video Retrieval
- Information Fusion in MIR
- Integration of Context and Content for Multimedia Management
- Multimodal Emotion Recognition