Multimedia Information Retrieval (MIR)

Alexandros Nanopoulos
(nanopoulos@ismll.de)
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.).

• **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