Document Indexation and Multimedia Retrieval

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Class #1 Summary

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Brainstorming

- What do you know about Document Indexation and Multimedia Retrieval?

Brainstorming

Data
Information
Knowledge
Database
Multimedia
Searching
Browsing
Indexing

Evaluation
Query set
Test Set
Ground Truth
Precision/Recall
Average Normalized Rank
ROC / AUC

Examples
Google Images
Bing Images
Musipedia
Shazam
TinEye

Similarity
Euclidean distance
Manhattan distance
Minkowski distance
Mahalanobis distance
Mean Square Error
Peak Signal-to-Noise Ratio

Annotation
object detection
object recognition
object segmentation
metadata
Exif
ID3

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Brainstorming

Visual cues
color
shape
texture
regions
motion

Feature points
Harris
Hessian affine
Edge-Based Regions Detector
Intensity Extreme-Based Regions Detector
Maximally Stable Extremal Regions
Salient Region Detector

Challenges
rotation
scaling
lightning
occlusions
clutter
3D objects

Local descriptors
Scale Invariant Feature Transform
Speeded-Up Robust Features
Histogram of Gradients

Global descriptors
Vector of Locally Aggregated Descriptors
Generalized Search Tree
Bag of Words

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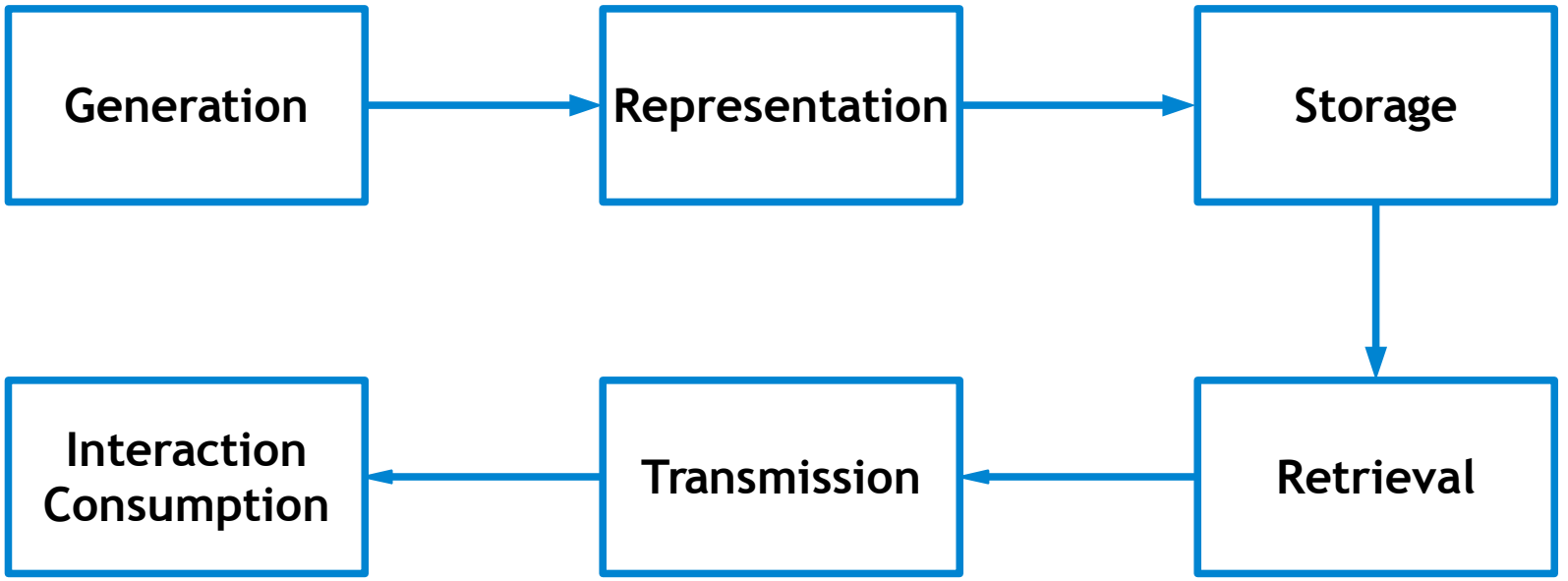
Multimedia

Content of different types, mainly

- Text
- Image
- Sound
- Video

Can be combined
Need large storing capacities

The Story of Content



What do we index

- **Data** is a syntactic entity
  - It has no meaning
- **Information** is data with meaning
  - It can be interpreted
- Knowledge is information incorporated in agents (humans or machines)

→ We index **Information**

Why do we index

	No compression	Lossless compression	Lossy compression
Text (average length book)	125 kB	42 kB	
Picture (6 Mpixels)	18 MB	12 MB	1 MB
Music album	750 MB	406 MB	75 MB
100 min movie (720x576)	180 GB		700 MB

Why do we index

- Youtube (2013):
  - 4 billion hours of video watched/month
  - 72 hours of video uploade/min
- Flick'r (2010):
  - 50 million pictures uploaded every month
- Instagram (2014)
  - 16 billion pictures
- Etc.