



# Summary and Conclusion

Medical Informatics Europe 2005  
28.08.2005

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## Topics

- Introduction and Motivation
  - Why do we need content based image retrieval
  - Annotation vs. Content
  - Query formulation
- Content-Based Image Retrieval
  - What exactly is content-based image retrieval
  - Goals, domains, applications
  - State of the Art
- Image Processing
  - Digital representation of images
  - Simple Image Processing Operations, e.g. filters



## Topics (cont.)

- Visual Features for Image Retrieval
  - Two different views to image retrieval:
    - Coming from text retrieval
    - Coming from image classification
  - Low-level features, model-based approaches
  - Color, Texture, Shape, ....
  - Distance measures
- Application domains
  - Teaching
  - Research
  - Diagnostic aid
  - Examples



## Topics (cont.)

- System Aspects
  - Search and Processing
  - Distributed Architectures
  - Components
  - Integration into existing software
- User Interaction
  - Usability
  - Relevance feedback
  - Log-file analysis



## Topics (cont.)

- Evaluation
  - Evaluation of Systems necessary
  - Some efforts are underway, but this is still a problem
  - TRECVID, Benchathlon, imageCLEF
  - Performance measures, e.g. Precision, Recall, MAP
- Viper/GIFT/medGIFT
  - Techniques from text-retrieval
  - MRML
  - Open source



## Topics (cont.)

- IRMA
  - IRMA database
  - Mono-hierarchical, multi-axial code
  - Categorization is an important step for retrieval
  - Structured analysis of image content
  - Several different applications



## Conclusions

- Content-based image retrieval is an important research field.
- All systems available at the moment are of interest in research mainly.
- Integration into existing software solutions and workflow is a problem.



**Thank you for your attention**