

PROGRAMME AND ABSTRACTS



ImageCLEF/Quaero Workshop on Multimedia Information Retrieval Evaluation

The 2008 pre-ImageCLEF workshop was made possible through the generous sponsoring of the Quaero project.

The ImageCLEF/Quaero Workshop on Multimedia Information Retrieval Evaluation workshop is held in Aarhus, Denmark on September 16, and invited contributions from the following fields:

- Evaluation of Pattern Recognition Methods
- Image retrieval
- Multimedia information retrieval

Workshop organisers:

- Thomas Deselaers, RWTH Aachen University
- Henning Müller, University of Applied Sciences Sierre and University and Hospitals of Geneva, Switzerland



9:30h Welcome note

Session 1: Projects

Invited Keynote

9:35h Edouard Geoffrois - Evaluation in Quaero

The Quaero research and innovation program aims at significantly accelerating progress on automatic processing of multimedia and multilingual documents for new applications addressing emerging markets. For that purpose, systematic evaluation is a strategic approach of the program and all results will be measured in an objective way. A significant part of the efforts are devoted to the production of representative corpora and to the organization of evaluation campaigns. In addition, coordination with other evaluation campaigns on common or similar tasks is fostered. The Quaero/imageCLEF cooperation is a first illustration of this in the domain of image content processing

10:30h Coffee Break

11:00h Peter Dunker, Juan José Bosch Vicente, Judith Liebetrau - Towards Evaluating the Core Technology Cluster of the German Research Program THESEUS

THESEUS is a research program initiated by the German Federal Ministry of Economy and Technology (BMWi), with the goal of developing a new Internet-based infrastructure in order to better use and utilize the knowledge available on the Internet. THESEUS consists of a core technology cluster (CTC) developing basic technologies, and application scenarios which package the core technologies and concentrate on the development of concrete use case applications. Fraunhofer Institute for Digital Media Technology (IDMT) is the lead of the evaluation task which is responsible for the quality assessment of the core technologies developed by several research partners involved in the CTC of the THESEUS program. Due to the wide spread fields of research of basic technologies in THESEUS, there are several related fields of quality assessment such as text recognition, image and video analysis, privacy and security aspects, watermarking, video and audio quality, iterative system design and quality in use and field testing. In this paper we will give an overview over the different evaluation tasks and approaches, which will be conducted by Fraunhofer IDMT.

Session 2: Techniques

11:30h Balint Daroczy - SZTAKI @ ImageCLEF 2008

We describe the SZTAKI CBIR system that we used for the Visual Concept Detection, Photo Retrieval and WikipediaMM Tasks. The development of the system based on image segmentation and feature generation started slightly more than a year ago. In the talk we will describe choices for

- segment size selection,
- feature weight selection,
- image distance computation,
- text and visual IR score combination

and compare their behavior for the three tasks. We also address scalability issues in particular for the WikipediaMM Task with over 100,000 images.

11:00h Sabrina Tollari, Marcin Detyniecki, Ali Fakeri-Tabrizi, Massih-Reza Amini, Patrick Gallinari - UPMC/LIP6 at ImageCLEFphoto 2008: on the exploitation of visual concepts

In this working note, we focus our efforts on the study of how to automatically extract and exploit visual concepts. First, in the Visual Concept Detection Task (VCDT), we look at the mutual exclusion and implication relations between VCDT concepts in order to improve the automatic image annotation by Forest of Fuzzy Decision Trees (FFDTs). In our experiments, the use of the relations do not improve nor worsen the quality of the annotation. Our best VCDT run is the 4th ones under 53 submitted runs (3rd team under 11 teams). Second, in the Photo Retrieval Task (ImageCLEFphoto), we use the FFDTs learn in VCDT task and WordNet to improve image retrieval. We analyse the influence of extracted visual concept models to the diversity and precision. This study shows that

there is a clear improvement, in terms of precision or cluster recall at 20, when using the visual concepts explicitly appearing in the query.

12:30h Lunch

Session 3: Evaluation Campaigns

14:00h Julio Gonzalo - iCLEF: Interactive Image Retrieval from the Web

14:30h Jussi Karlgren - The CHORUS Coordination Action

CHORUS is a Coordination Action (a specific type of project funded by the European commission under its research programmes, intended to bring together projects with common goals) in the field of search technologies for digital audio-visual content, one of the strategic objectives of the current research frame program. The most important single contribution of the CHORUS work plan will be to provide a survey of the field and a roadmap with a gap analysis for the realisation of viable audio-visual search engines by European partners. This is done by several means. CHORUS organises Think Tanks with industrial participation, focussed workshops to treat specific questions, and more general conferences for academic discussions. CHORUS is now in its final phase, and current planning includes a workshop on socio-economic issues, a workshop on usage factors, and a final conference to mark the publication of the end report. This talk will present the starting points of the coming workshop on usage factors and invite the audience to provide feedback for inclusion in the end report.

15:00h Stefanie Nowak, Peter Dunker - A generic Framework for the Evaluation of content-based Image and Video Analysis Tasks in the Core Technology Cluster of THESEUS

THESEUS is a German research program and focuses on the development of a new Internet-based infrastructure that better utilizes the knowledge available on the Internet. It is divided into the core technology cluster (CTC), responsible for developing the basis technologies, and the use cases that build on them. Besides the research on text recognition, privacy, ontologies or user interfaces, one key research focus of the CTC lies on video and image analysis tasks and its evaluation by an independent work group, the Fraunhofer Institute for Digital Media Technology. In this paper we want to present our evaluation framework that is developed in THESEUS for the evaluation of the video and image analysis results. The key features of the framework are an easy extension to new formats and measures, the storing of previous test results for comparison and measurement of improvement, sophisticated visualizations for interactive reviewing and the generation of descriptive test results. One challenge in developing such a framework lies in the huge diversity of image and video applications that have to be evaluated and the generation of adequate test corpora and relevance judgments. In THESEUS, research in image and video analysis will focus on retrieval, image and video segmentation, face detection, scene classification and annotation, context detection, genre detection, different query paradigms, automatic quality assessment and correction etc. to name only a few scenarios that have to be considered. We defined abstract test cases that cover the evaluation of all developments in the image and video analysis tasks. Test cases are concepts that encapsulate similar multimedia retrieval procedures and are used to generalize the evaluation framework for different evaluation needs at the conceptual level. Altogether we defined three test cases: 1) Retrieval 2) Keyword or Segment Indexing and 3) Multimedia Enhancement. Retrieval describes the scenario where one multimedia document serves as input into the analysis application and a list of similar documents is the output. This list can be further enriched with holistic annotations or segments and segment-based annotations of the single documents. Applications are all low- or high-level based search scenarios. In contrast, the test case Keyword or Segment Indexing covers all scenarios, where one media item is the input into an application and a description of this item serves as output with holistic annotations, segment information or segment-based annotations. This case is applied for the evaluation of face or object detection as well as classification algorithms. Last, Multimedia Enhancement deals with all cases where the input multimedia document is processed and an enhanced version of this document serves as output like in automatic distortion corrections in images or videos. In dependence from the investigated test case, adapted measures can be chosen and different views for the visualization and interpretation of the results are available.

Session 4: ImageCLEF 2008 and beyond

16:00h Henning Müller - Towards a medical retrieval benchmark with clinical relevance

ImageCLEFmed has included a medical retrieval tasks form 2004-2008, now. First goals were to motivate visual retrieval groups and then to foster combination of visual and textual retrieval of medical information. Most of the tasks were based on realistic sources such as log files of search engines or interviews with users. Still, the topics were relatively easy and might in large part not correspond to a very clear clinical need, as a single sort of images and a very precise information need were stated. In 2009, a more clinical task is planned, taking into account the case as a unit and not the image. This means, that the information needs will not be started in the current form but in the form of a several different images and of some clinical data describing the case. Goal of this presentation is to start the discussion, present the possibilities, and receive feedback to best prepare ImageCLEFmed 2009.

17:00h Jana Kludas, Theodora Tsirikika - Characteristics of query topics for the wikipediaMM task at ImageCLEF 2008

The wikipediaMM task at ImageCLEF 2008 is an ad-hoc image retrieval task that aims to compare mono- and cross-media retrieval approaches over a large scale collection of Wikipedia images and on a diverse set of 75 topics that express users' multimedia information needs. We classified the topics into 3 categories: visual, textual, and semantic, anticipating that the topics in each set would be best resolved by CBIR, text-only, or fusion approaches, respectively. This topic classification is evaluated through an analysis of the difficulty of the topics according to the task's official results.

17:30h Jayashree Kalpathy-Cramer, Steven Bedrick, William Hersh - Improving Multimodal Image Retrieval Using Relevance Feedback and Query Expansion

Relevance feedback is an important interactive technique originally developed in the information retrieval domain for text documents. It allows the user to provide input on the relevance of the initial document set, which is then used by the system to retrieve documents that are "similar" to relevant documents. A traditional implementation of the relevance feedback mechanism results in a modified, expanded query, often resulting in improved recall. More recently, relevance feedback has been viewed in the context of classification or distance learning. Here, feedback is used to statistically model the concept of the user's information need. It is now commonly used in content-based image retrieval.

We will briefly discuss the history of relevance feedback techniques in text and image retrieval. We will touch upon some of the challenges in evaluating the effectiveness of relevance feedback based methods. The use of a machine-learning based relevance feedback coupled with a novel user interface using rapid serial visual presentation will be demonstrated on the ImageCLEF medical retrieval database.

19:00h Dinner with all participants (Location: to be announced)