



# ImageCLEF 2007



## Text and/or Content-Based Cross Language Image Retrieval

### First Announcement and Call for Participation

#### Photographic retrieval task

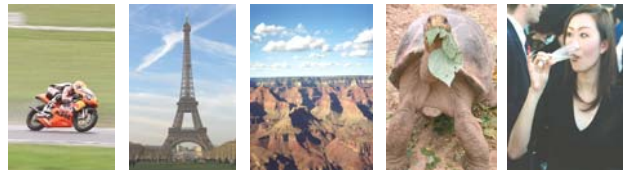
**Goal:** given a multilingual statement describing a user information need, find as many relevant images as possible from an image collection. This task simulates text-based retrieval from photographs with multilingual captions. Queries for content-based image retrieval will be offered, too.

**Image analysis:** not required, but can augment text-based retrieval methods and results of an example visual retrieval system will be made available. Visual-only queries will also be provided.

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**Queries:** 50 information needs, each described by a short text in a range of languages including English, Italian, Spanish, French, German, Chinese, Japanese and Russian, and sample images. Several topics will be offered to emphasise both semantic and visual queries.

**Collection:** 20,000 colour photographs with semi-structured captions in English, German and Spanish.



**Challenges:** multilingual queries, short caption texts, semi-structured captions in English/German/Spanish, combining visual and text-based retrieval methods.

**Aims:** to compare query translation methods, query expansion, text and content-based methods, retrieval models, indexing methods, and annotation types.

#### Object retrieval task

**Goal:** given an image containing an object, find images from the database which contain the same object. Given a keyword, find images containing the object described.

**Image Analysis:** required, as the emphasis is on recognizing the objects directly in the images. Use may also be made of the text annotations, but it is not guaranteed that all objects in an image are listed in the corresponding text annotation.

**Collection:** the same image collection as for the photographic retrieval task. A set of training images for object recognition, including many examples of each object to be recognized, will be provided.

**Challenges:** object recognition in an image retrieval framework, searching in a database of realistic vacation photos not necessarily acquired under the same conditions as the training set.

#### Task Organisers

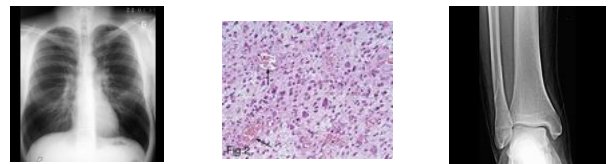
**William Hersh** Oregon Health and Science University, USA  
**Jayashree Kalpathy-Cramer** Oregon Health and Science U  
**Michael Grubinger** Victoria University, Melbourne, Australia  
**Thomas Lehmann** RWTH Aachen University, Germany  
**Thomas Deselaers** RWTH Aachen University, Germany  
**Allan Hanbury** Vienna University of Technology, Austria

#### Medical retrieval task

**Goal:** given an information need described by medical images and a short text, find other images from the dataset that fulfill this need. The task simulates medical practitioners searching cases similar to one on which they are working; this can be important for evidence-based medicine as well as for teaching.

**Image analysis:** not required for all tasks, results of an example visual retrieval system will be made available.

**Queries:** 30 information needs described by a short text and image(s) (visual, mixed and semantic queries).



**Collection:** ~80,000 medical images from five collections are combined to create a large, heterogeneous resource (English/French/German).

**Challenges:** combining text and visual methods for retrieval, domain-specific medical terminology and notes of varying quality in mixed target languages.

**Aims:** to compare methods of visual and text-based retrieval and their complementary influence, to investigate exploitation of heterogeneous annotations, to compare translation methods, retrieval models, and query expansion techniques.

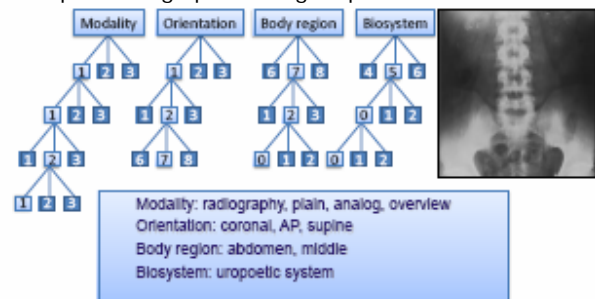
#### Automatic image annotation

**Goal:** to investigate how full-automatic systems can label images according to a mono-hierarchical multi-axial code. Regarding the hierarchy, automatic annotation should rather be incomplete than wrong.

**Image analysis:** This is a purely visual task and textual analysis is not required.

**Collection:** 11,000 medical x-rays with complete IRMA-code (<http://irma-project.org>) and 1,000 unlabeled images provided for training and testing, respectively.

**Aims:** automatic categorization can be used for multi-lingual document retrieval and parameterization of subsequent image processing steps.



#### Track Co-ordinators

**Paul Clough** University of Sheffield, UK  
**Henning Müller** Uni. of Geneva and Hospitals, Switzerland



## Why cross language image retrieval?

Retrieval from an image collection offers distinct characteristics and challenges with respect to one in which the document to be retrieved is natural language text. For example, the way in which a query is formulated, the methods used for retrieval (e.g. based on low-level features derived from an image, or based on associated textual information such as a caption), the types of query, how relevance is assessed, the involvement of the user during the search process, and fundamental cognitive differences between the interpretation of visual versus textual media. Within CLEF, the problem is further complicated by user queries being expressed in a language different to that of the document collection or by multilingual collections. This requires crossing the language barrier by translating the collection, the queries, or both into the same language. As multimedia collections grow and more organisations become responsible for managing large image repositories, this cross-language image retrieval track of ImageCLEF aims to address some of these problems.

## Our aims

We envisage that ImageCLEF will appeal to both commercial and academic research communities including: CLIR, image retrieval, machine learning, and user interaction. The main aims of the ImageCLEF campaign are:

- (1) to promote and initiate international research for cross-language image retrieval,
- (2) to further our understanding of the relationships between multilingual texts and images for IR,
- (3) to explore various ways of using machine learning techniques to optimize visual and multilingual retrieval,
- (4) to create useful resources for CLIR and image retrieval to scientific communities in the whole.

## Achievements so far

ImageCLEF began as a pilot experiment in 2003 with only a bilingual ad hoc task. A test collection was built using a collection of historic photographs and 50 example queries. Four participants entered ImageCLEF exhibiting a range of text-based retrieval methods. In 2004, medical and interactive retrieval tasks were added to ImageCLEF. A strong participation of 18 research and commercial groups demonstrated the need for such an evaluation event. In 2005, a medical annotation task was added and participation rose again. In total, 24 groups submitted results for evaluation. A large variety of techniques from query expansion, language detection and combinations of visual and textual attributes for retrieval were used. Results show that the best performances were obtained when combining visual and textual cues for retrieval. In 2006, an object classification task was added and again registrations increased, with 49 groups registering and 30 submitting results. The complementary nature of visual and textual methods was shown as was the difficulty of combining the two in a stable way.

## ImageCLEF 2007

At ImageCLEF 2007 we will be running a photographic retrieval task, a medical retrieval task, an interactive CL image retrieval task, an automatic image annotation task for medical images and an new object retrieval task. Participants can enter as many tasks as they wish and are free to use any methods they want, although we would like to encourage interest from participants combining both cross-language and image-based techniques as well as machine learning. Please note that **image analysis is not required for all tasks** and that a default visual image retrieval system will be made available for participants as well as results from a basic text retrieval system. We will also be running the 3rd MUSCLE-sponsored Workshop on Image and Video Retrieval Evaluation. An **interactive image retrieval task** will be run as part of the iCLEF track (<http://nlp.uned.es/iCLEF/>).

## Registration

You can register for ImageCLEF 2006 by contacting **Carol Peters** ([carol.peters@isti.cnr.it](mailto:carol.peters@isti.cnr.it)), the main coordinator for CLEF. For more specific information about any aspect of ImageCLEF or the tasks, please contact **Paul Clough** ([p.d.clough@sheffield.ac.uk](mailto:p.d.clough@sheffield.ac.uk)) or **Henning Müller** ([henning.mueller@sim.hcuge.ch](mailto:henning.mueller@sim.hcuge.ch)).

The ImageCLEF website (<http://ir.shef.ac.uk/imageclef/>)

will be the main source of information about the tasks and where the data, guidelines, resources and further information will be published. We also have an ImageCLEF mailing list ([imageclef@sheffield.ac.uk](mailto:imageclef@sheffield.ac.uk)) through which we update participants with track information. Contact Paul Clough to be added to this list. More information about CLEF can be found at: <http://www.clef-campaign.org/>

## Schedule for CLEF 2007

Registration opens	15 January 2007
Data release	from February 2007
Topics release	from 15 March 2007
Submission of runs deadline	15 May 2007
Release of results	from 15 July 2007
Workshop papers deadline	15 August 2007
MUSCLE workshop	18 September 2007
CLEF Workshop, Budapest, Hungary	19-21 Sept. 2007