IDIAP COMMUNICATION

GOOGLE PORTRAIT

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1 Introduction

Media collections (personal collections for instance) tends to quickly increase in size, mainly because it is easy to collect more and more digital content using the internet, digital cameras or mobile phones equipped with cameras. Management and search of those multimedia collections remains a challenge for users.

We propose to retrieve and browse images from the Internet containing only one particular object of interest: the human face. For this purpose, we developed a Mash-up for Google Image to filter images containing faces and to present portraits as a result instead of the complete image. This filter, called **Google Portrait**, uses a multi-view face detection system developed at IDIAP over the last years.

2 Google Portrait

2.1 System Overview

We present in Fig. 1 the overview of Google Portait. Image search starts with a text query. The Google Image engine is used to retrieve images matching the query. Each image URL is extracted from the Google Image result page. Images are processed in parallel. This processing includes download and face finding. Face finding uses a multi-view face detection system developed at IDIAP over the last years. It is based on a pyramid-cascade of robust-to-illumination weak classifiers [1].

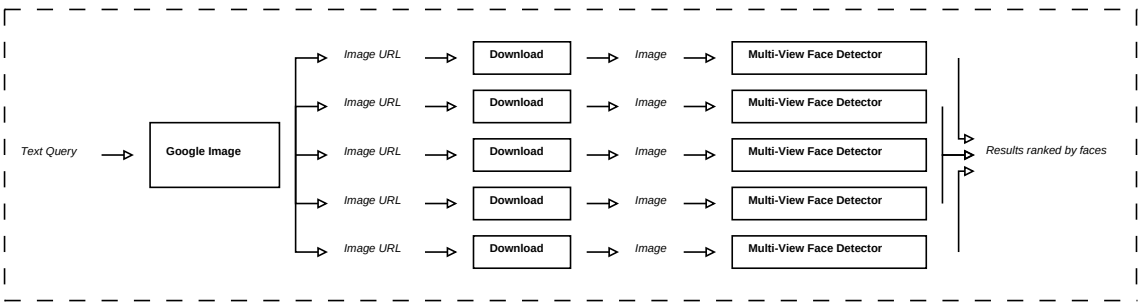

Figure 1: Overview of Google Portrait

Images with detected faces are presented on a new result page listing face portraits together with a confidence and direct links to the image URL and to the source page (Fig. 2).

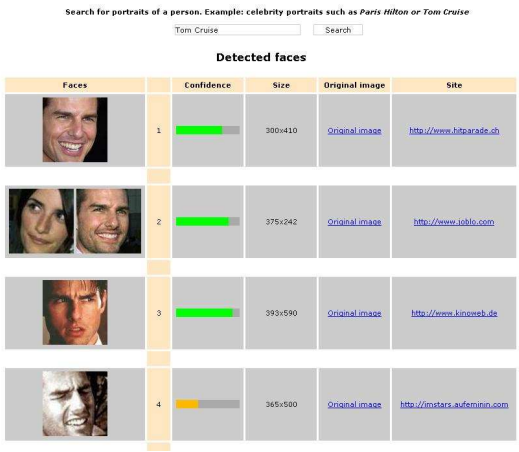

Figure 2: An example of the result of Google Portrait.

The result page is a table with 5 columns and with as many rows than images with detected faces. The first column contains image close ups (“Portraits”), the second column contains a confidence on the likelihood of the portrait to be a face, the third column contains the size of the original image and the last columns contain links on the the original image and on its website.

2.2 Face Tagging

Google Portrait includes a module for manual annotation. Indeed, portraits (detected faces) are very likely to correspond to the query, but there is no guarantee as Google Portrait uses a face detection system not a face recognition system. It is then possible to edit a result (Fig. 3) and to change the tag of the portrait (name of the person). Tags are saved in a database which can then be populated based on collaborative working.

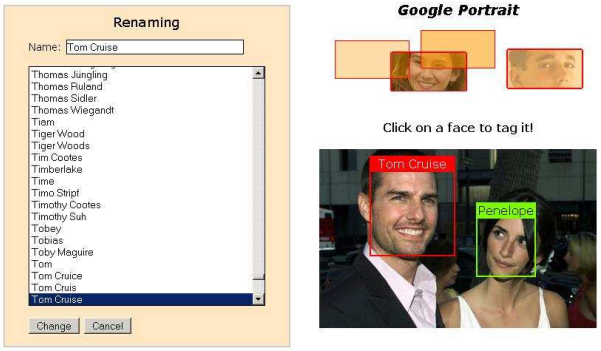

Figure 3: The face tagging interface of Google Portrait

2.3 Discussion

Google Portrait has been released on November 27, 2006 and started to appear on various Blogs in February 2007. In May 2007, several Blogs announced that Google Image was providing an ”unofficial” face finding search mode. Google Image face finding is now directly available in Advanced image search at least since June 24, 2007. Nearly at the same time, probably in July, Microsoft added also face detection to Microsoft’s Live Search.

Performance evaluation is a tricky part for online face detectors. Measures such as accuracy and false alarms can be performed only if the original APIs are available. This is usually not the case for new proprietary software. The comparison in terms of speed is biased since both Google and Microsoft (Those companies have incomparable computing facilities) online face detectors give results on already batch-processed images. Conversely, GooglePortrait is performing live face detection on images downloaded on-the-fly from the internet.

3 Future Work

As an extension, we would like to research, develop and evaluate new paradigms for personal media collection management (browsing, retrieval and the organisation of photos). More specifically, the goal will be to leverage low level and high level image processing algorithms (scene classification, object recognition and face detection/recognition) to organise personal photo collections in new browsing and management software applications.

4 Acknowledgements

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References

[1] Sauquet, T., Rodriguez, Y., Marcel, S.: Multiview Face Detection. IDIAP-RR 49, IDIAP (2005)