Chapter 26
Image Retrieval in a Commercial Setting

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Abstract  This chapter provides an overview of image retrieval in a commercial setting. It details the types of resources available to commercial systems in conducting image retrieval research, and the challenges in using such resources. In particular the chapter discusses user generated content, click data, and how to evaluate commercial image search systems. It ends with a discussion of the role of benchmark efforts such as ImageCLEF in this type of research.

26.1 Introduction

Image search is becoming increasingly important in commercial search systems with the growth of mobile devices, and an increasing emphasis on visual information. Whether in a Web interface designed for a desktop computer, or a small–screen mobile phone interface, the real–estate is limited for images. Images may be incorporated into an aggregated page as in http://au.alpha.yahoo.com (shown in Figure 26.1), or it may be used to enhance Web search results, as in Figure 26.2. For use in Web applications, image retrieval systems must have high precision, so that the two or three images shown are topically appropriate. Since queries to search engines are typically two or three terms, they are often quite vague, and there may be several interpretations of their meaning. For instance a user searching for images of jaguars should be presented with images of animals and cars because we cannot know from the query alone which sense of the term ‘jaguar’ was intended. Furthermore, even if the user queries unambiguously with ‘jaguar animals’ the images themselves should be visually distinct. This is especially important with the
The growing popularity of mobile devices and aggregated search interfaces, where the user is presented with a small number of images.

One limitation of research in image search is that systems rely on a large number of examples in order to generalize sufficiently, but only small amounts of data are available to most researchers. Thanks to Web 2.0 applications, and websites such as Flickr1, we have vast amounts of data at our disposal — as much as can be crawled in a reasonable amount of time using public APIs (Application Programming Interfaces). This solves the problem of the quantity of data available to us. The data available from these websites is quite rich. It comes with metadata in the form of details about where and when the image was created, textual metadata such as tags, titles, and descriptions attached by the user, and the social context of a user’s group memberships, friend relationships, as well as the link structure between documents containing the images.

Access to Web data is not a panacea for image retrieval research, because while we have virtually unlimited quantities of images from the Web, the quality of the data is variable. Images from photo–sharing web sites such as Flickr do not rep-

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1 http://www.flickr.com/ visited May 2010