



Large scale visual search for particular objects and places

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Abstract

Large scale visual search and image matching are getting mature. Examples of emerging applications include mobile visual search for places or cover art (bing.com, Google goggles, koaba.com), as well as matching photo collections for 3D reconstruction (photosynth.net).

However, it is a challenging task as the imaged appearance of an object can vary dramatically due to changes in camera viewpoint, scene illumination and partial occlusion. In addition, large amounts of visual data need to be stored, indexed and efficiently searched.

This lecture will cover (i) the basics of image matching, (ii) overview of efficient visual indexing as well as (iii) discussion of some recent research results. First, we review basic two image matching including detection and description of local invariant features, as well as estimation of basic geometric transformations.

Next, we discuss large scale image matching and indexing including approximate nearest neighbor search using forests of randomized kd-trees, and the bag-of-visual-words image representation. Finally, we overview some recent research results on very large scale visual search and applications to place recognition.

Results will be shown on collections of Internet images from Flickr and street-view, as well as feature-length movies.

Syllabus: Recognition and Matching in Large-scale Image Datasets