EE368: Digital Image Processing

Spring 2013-14, Project Proposal

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April 30, 2014

Title: 'Monulens'

Motivation

As a tourist, how many times did you feel bothered about having to stand in queues to get access to digital assistants, which were old, used headphones that did not offer rich and interactive information about a landmark/monument? Well, you do not need to look any further, we hereby present Monulens.

Solution

We propose to create an Android application which works in the following way. When a user points his/her phone at a landmark, we capture the image and send it to a server. At the server, an algorithm is run to identify the landmark. Information about the landmark is then retrieved and displayed to the user. A sketch of the proposed system has been illustrated in Fig 1.

Intermediate Steps

- Communicate the captured image to server
- Detect keypoints and extract features
- Train classifiers for popular landmarks
- Use the trained classifiers to identify the landmark in the current image
- Retrieve information about the landmark and communicate to Android

Technical Challenges

The biggest challenge we envisage is the requirement for an illumination and a viewpoint invariant matching technique. We also require the response from the server to be fairly quick. As a means of ensuring this, one of the possibilities includes using geo-location information to reduce the search space in our database. We will draw on methods from [1], [2], [3].

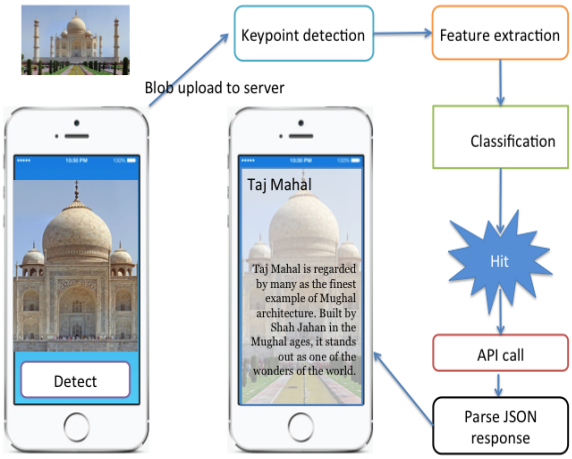

Figure 1: **A sketch of the proposed system**

References

1 Yan-Tao Zheng, et al. "Tour the world: building a web-scale landmark recognition engine," Computer Vision and Pattern Recognition, 2009. CVPR 2009. IEEE Conference on. IEEE, 2009

2 Florent Perronnin and Christopher Dance, "Fisher kernels on visual vocabularies for image categorization," Computer Vision and Pattern Recognition, 2007. CVPR'07. IEEE Conference on. IEEE, 2007.

3 David J. Crandall, et al. "Mapping the world's photos," Proceedings of the 18th international conference on World wide web. ACM, 2009.