Title: Retrieval of Lecture Slides by Automatic Slide Matching on an Android Device

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Uses an Android Device: Yes

Description

The motivation for this project comes from the popularity of using slides (generally from presentation software, such as PowerPoint) in public presentations and the increasing proliferation of smartphones at these events. These types of presentations occur in many different scenarios, including the classroom setting and technical conferences. In these settings, there will often be an accessible database of presentations in electronic form. This project aims to allow attendees of these events to take a photo of the projection screen with their Android device and automatically retrieve the corresponding presentation from the database, turned to the corresponding slide.

The main image-processing portion of this project involves identifying the slide in an image and matching it to a database of known slides. The paper [1] proposes performing this task using scale-invariant feature transform (SIFT) and random sample consensus (RANSAC). This method is further elaborated on in [2]. This project proposes using a similar method but, in order to improve speed and robustness, will use speeded up robust features (SURF) instead of SIFT, as suggested in [3]. Based on the results in [3], the *Send Image* paradigm will be used, in which the entire image is sent to the server and the processing power of the server is leveraged to perform the feature detection.

References

[1] N. Cheung, D. Chen, V. Chandrasekhar, S. Tsai, G. Takacs, S. Halawa, B. Girod, "Restoration of out-of-focus lecture video by automatic slide matching," in *ACM International Conference on Multimedia 2010,* Firenze, Italy, 2010.

[2] Q. Fan, K. Barnard, A. Amir, A. Efrat, M. Lin, "Matching slides to presentation videos using SIFT and scene background matching," in *ACM International Workshop on Multimedia Information Retrieval,* New York, NY, 2006, pp. *239–248.*

[3] S. Tsai, D. Chen, J. Singh, B. Girod, "Rate-efficient, real-time CD cover recognition on a camera-phone," in *ACM International Conference on Multimedia 2008,* Vancouver, BC, 2008.