Basic Description

In this project we plan to develop an application on droid mobile phone which can highlight any input word in the picture of a text document given in the view finder. The user will enter a search parameter, ideally a word, and use the camera of the phone to scan the desired printed document for the search parameter. This application is similar to using CTRL+F (Search and Find) function on a printed document. In this project we would like to constraint both the image background and foreground to be single color respectively. However, the application will accept varying text sizes and fonts. The images should be taken straight head on.

Implementation

**Generating algorithm on MATLAB:** The user has to enter a search word to begin the process. Then our proposed application will acquire unfocused test image from camera phone, and determine the size, font and spacing information from this image. Using this formatting information the application will try to reformat the search word to match the printed document. After reformatting the search word the application will convert it to a graphic image representation using Open CV. Basically, this process converts a sequence of ASCII characters to a matrix of pixels. The application will use cross correlation to search for the word in the image. Once it locates the search parameter in the image it will use augmented reality to highlight the word. In this stage of development we will constraint the input to have uniform lighting conditions with no perspective distortion or rotation.

**Pushing Algorithm on to DROID phone:** If algorithm developed on MATLAB works, we will push the algorithm on to the droid phone. If we are successful, we will extend the algorithm to account for rotation and translation. And also if time permits we plan to extend the algorithm to work with perspective distortion, rotation, and varying lighting conditions.

References


- Yuh-Lin Chang, Wenjun Zeng, Ibrahim Kamel, Rafael Alonso, "Integrated Image and Speech Analysis

• Keyword guided word spotting in historical documents International Journal on Document Analysis and Recognition Volume 9, Numbers 2-4, 167-177, DOI: 10.1007/s10032-007-0042-4