Real Time Word to Picture Translation for Chinese Restaurant Menus

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Introduction:

A common problem that patrons encounter when reading restaurant menus is they would like to see a visual representation of the entree. This is especially the case at an ethnic restaurant where there is no standard translation from the entree name in its native language to English. Translating the entree name or even the ingredient list character by character often does not result in a better understanding. We propose a project that will recognize Chinese menu entree names, and return a corresponding image of the entree. We will be using the Android platform for this project.

Goals/Implementation:

There are three main steps in this project. The first step is to use the camera on the cell phone to detect and acquire the string of Chinese characters that make up the entree name. The second step is to use the Tesseract library to recognize the characters. Lastly, we will match the name of the entree to a database of entree names, and display the corresponding image of the entree on the screen.

Character detection:
A) User will aim the camera at the menu, and fit a detection box over the entree name.
B) Motion detection algorithm will find out when the user has finalized on the entree name to translate based on the lack of motion.

Character recognition:
A) The picture frame from the previous stage will be sent to the Tesseract OCR library. We plan on using a tight bound to decide whether to accept or reject the output character.
B) If the error probability is high, apply feedback by preprocessing the image or turn on camera flash to improve performance.

Name match:
A) We will create a database that contains a list of common entree names and its corresponding image. There should be sufficient memory in the Android phone to store the pictures.
B) Using a shortest distance algorithm, find the best match between the output of the OCR lib, and the database of characters. If a match exists, display the image.
References:


Websites:
https://code.google.com/p/tesseract-ocr/
https://github.com/rmtheis/tess-two