Title: “Location reviews using cloud-based landmark recognition”

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Project Overview

We propose an Android application which uses landmark detection to identify restaurants and retail stores on the street and retrieve reviews for them automatically. As a further step, we will collect images from the user’s camera phone as they are looking around on the street to improve our database of landmark images. For a new region, the app would use GPS coordinates combined with Google Maps and Yelp APIs to locate nearby restaurants/other locations and allow the user to select from a list which storefront they are pointing the camera at. At that point, we could start retrieving these images to do automatic optical landmark detection in the future.

Implementation

We plan to base our image processing algorithm off the work done in *City-Scale Landmark Identification on Mobile Devices* by Chen et al. Our main contributions to this algorithm would be (1) the method of dataset acquisition and (2) handling training images taken at different times of day. For (1), whenever the client wants to identify a landmark, it will send an image from its camera as well as GPS data to our cloud-based recognition service. That service will process the image from the phone and try to find a match in its database. Successfully matched images will be stored in the database, and the match will be returned to the phone. In this way, we can improve recognition accuracy simply by users using our system. If no match is found, the cloud based service will return a list of choices that the user can select from, based on GPS data. The user’s response is then used to update the corresponding data set.

For (2), we store the timestamp each image was taken in the training set and try to use this data to improve classification. We expect to at least be able to use this to split each landmark training set into “day” and “night” training sets. Ideally, we could do some sort of image processing on the two to allow both day and night training sets to improve accuracy during any time of day. After recognizing a location, we will look up data on the location from various sources (e.g., Yelp, Google, Zagat, etc.) and overlay the information the screen.

Indication whether you will use a DROID camera phone: Yes

References

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