EE 368 Final Project Proposal

Title: Logo Detection and Classification in Video
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Project Description:
Logo detection is a well-studied application in the field of image processing. Once focused on identification in documents [1], the focus has more recently shifted to video [2-5]. The marketing world invests a lot of capital in advertising, and is therefore very interested in the frequency and time their logos appear in sports videos, movies, and commercials.

Logo detection requires a combination of machine learning and image processing techniques. I would first need to collect video to develop the logo detection method. For this, I could use the Android or my digital camera and collect video of clearly visible logos from various orientation. The method would consist of first detecting the logo location within the frame, and then identifying which logo it is. Previous work on logo detection has found SIFT features to be an effective for both. The SIFT features on the training data can then be used as a signature for the logo.

Once the database of logos and their corresponding SIFT features has been built, the system can be run a testing set, likely the AugmentedTV database or any publicly available video clips that contain logos. Different studies have used a range of methods for building the database from the SIFT features and then querying the database for a match. I would likely use a tree-based method, but this aspect would need to be explored further.

Previous methods have had trouble with poor image resolution images and frames with multiple logos present, so these two applications would be interesting to test thoroughly. A possible extension of this project is to implement a logo detection application for the Android. To help with efficiency and allow for an easier transition if this extension is pursued, the project will be implemented in C using OpenCV.

References:
[1] Logo Recognition Using Geometric Invariants
[3] A Learning-Based Logo Recognition Algorithm Using SIFT and Efficient Correspondence
[4] Spatial Pyramid Mining for Logo Detection in Natural Settings

Android Usage: At this time I do not plan on implementing the project on the DROID. However, if the initial project goals are accomplished easier than anticipated, this would be a natural expansion.