Whiteboard Image Extraction and Archival Tool

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Within the work environments, one of the most effective tools of collaboration is a physical whiteboard which allows multiple individuals to express a wide variety of ideas. In addition, the information content is often automatically categorized with the different colored markers available. The archival of such information is often done with individual mobile phone cameras. While such cameras usually contain sufficient resolution to accurately capture the whiteboard contents, they often also contain unnecessary detail and also results in unnecessary large files. This project proposes a mobile app that would conveniently extract the content of a whiteboard with a mobile phone camera with minimal user interaction and store them as lightweight binary images.

Features of Project:
- Identify the whiteboard regions from the non-whiteboard if the latter is present. In example image 1, the non-whiteboard regions should be identified and discarded for the purposes of archiving whiteboard content.
- Create binary images based on the identified whiteboard markings for each of the color used. In example image 2, the red, black and green markings should each have their own binary representation.
- The app should also attempt to identify regions where the it is probable that the markings of one color was originally present but later drawn over by another color.
- The app should be resilient to uneven lighting or reflections such as example image 3.
- The automatically piece together several photos with overlapping regions of the same whiteboard.
- Deskew images such that they can be taken off angle and still be archived as if taken straight on; this will require the whiteboard edges to be present in the image.

Stretch Goals:
- ‘video mode’: allow where the app uses a sequences of incomplete images to automatically detect when all the content of the whiteboard have been successfully captured.
- Vectorize the images by detecting regions of straight lines and store in appropriate format.

The target platform for this project is an iOS device.

References:
This project is not expected to require any specialized techniques beyond what’s presented in class notes but the following topics may be of relevance.
