**Generation of Slides from Hand-Drawn Sketches**
Muneeb Ahmed, Jeff Wheeler
Department of Electrical Engineering, Stanford University

**Motivation and Implementation**
As engineers, we often find ourselves spending a non-trivial amount of time converting sketched diagrams and figures into digital format. To minimize the time spent, we aimed to convert hand-drawn shapes to slides. We also created an Android application that would capture the image and send it to the server. Upon receipt of the captured image, the server will process the image and the app will show a preview of the shape recognition. Upon approval, the server will forward the slides with digitalized shapes to the email address that the user provided.

The shape detection algorithm works by detecting corners using the Harris corner detector. The corners are then removed which allows for line detection. The lines are then combined into shapes. Since the images are being captured using a hand-held device, we need to take into account perspective distortion. Hence upon detection of the shapes, we apply homography to rectify the image. We then convert slightly slanted lines into perfect horizontal/vertical lines due to unavoidable imperfections in human hand-drawn shapes.

**Related Work**
A lot of research has been done in conversion of hand-drawn sketches to computer drawings. However, most of it is domain-specific (i.e. recognition of images for military drawings). However due to the variability in drawing trends and variability in interpretation, a robust domain-independent algorithm is lacking.

**Methodology**
- Image Capture
- Binarization
- Corner Removal
- Shape Detection
- Angle Correction
- Homography

**Android App Flow**

**Experimental Results**