# 18-551 , Spring 2012, Project Proposal Draft

## <Title>

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## The Problem

The problem we are addressing is that of text recognition and translation using computer vision, specifically mobile embedded vision, and the internet. As mobile devices gain increasingly power processors and high-speed network access, data input becomes the bottleneck. A typical user on a smartphone virtual keyboard as an input rate of 15 bits/s. The camera, found in virtually every mobile device, is the highest-bandwidth input device, and hence it is here that image extraction and recognition become crucial. The application we are addressing is image processing, specifically text recognition.

## The Solution

To improve the solution, our team proposes to develop an android application that will recognize text and translate it if necessary using the Google Translate API. We will implement the text recognition using thresholding and connected component analysis, to isolate the text. Finally we will apply segmentation, and image scissoring in order to isolate the text images in the correct order. Subsequently, we can use an OCR engine to get an ACSII representation of the text.

## What we’ll do

We will attempt to develop the above described android application in the following stages:

1. Isolate text using thresholding and connected component analysis
2. Apply segmentation, image scissoring to isolate text images
3. Implement OCR Engine and train to get ACSII representation from images
4. Develop android application that reads images and identifies text correctly
5. Establish Google Translate API plugin (for translation)
6. Develop android application that reads live video feeds and identifies text correctly
7. Develop android application that reads live video feeds and translates text live, given a known language specification (ie Spanish -> English)

The final demo, depending on our progress will be a demonstration of its ability to read text. The data into and out of the android will be using the standard interfaces given. At the moment no extra hardware is required. However, depending on our progress, we might require a better camera to read the images (or an IR camera). In addition, the Google Translate API is no longer free, and a usage fee must be paid.