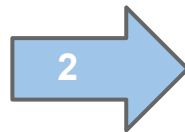# A Mobile Scanner-OCR System
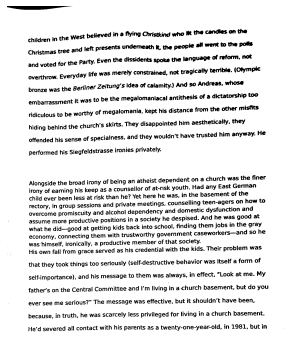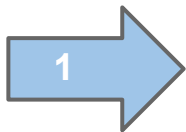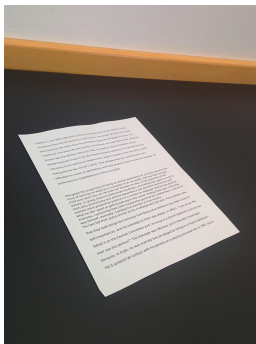
A stepping stone towards receipt-to-spreadsheet

(Clement Ntwari Nshuti - cntwarin@stanford.edu)

Approach

Desktop OCR system work very well when provided with high quality scanned document images. This inspired the following two steps approach
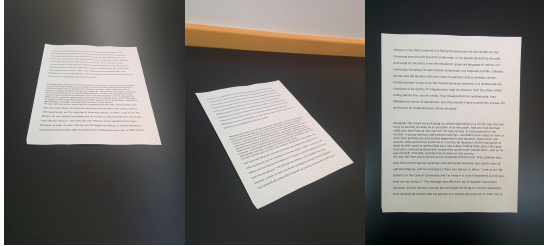
1. Build a "robust" mobile scanning pipeline
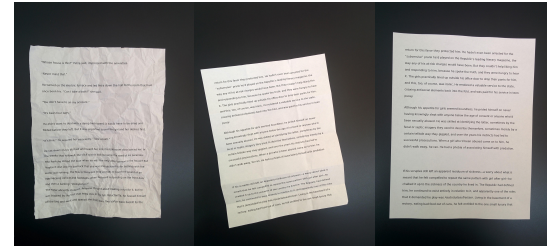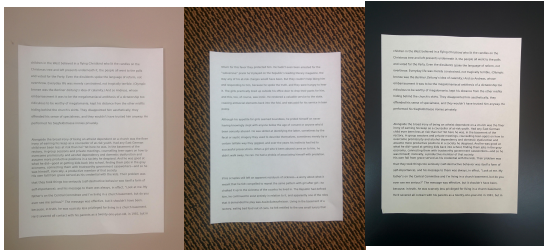2. Feed the result to an OCR system

Challenges

Camera orientation

Document quality

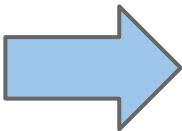Background color

Evaluation Procedure

Dataset
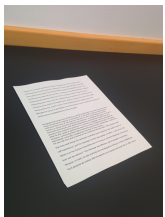
11 pages of a short story [1]. 3 camera angles (front,side,top). 3 background types (bright,dark,noisy). 3 document qualities (regular, folded, crinkled).
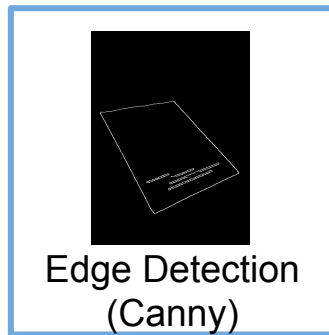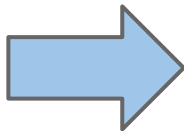
Metric

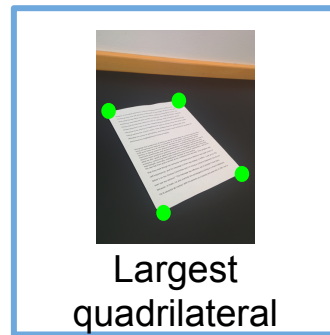Average cosine distance between output of OCR on mobile scanned image and original text.
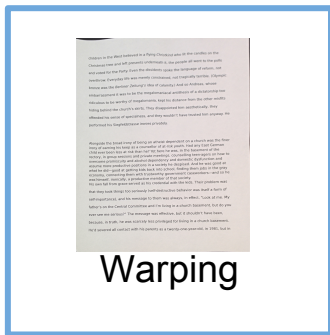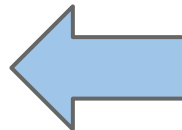
Mobile Scanner Algorithm
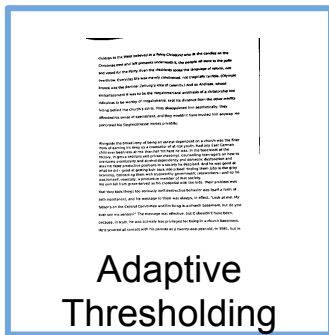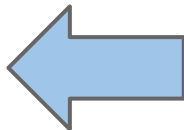
Gaussian Blur and Sharpening

Edge Detection (Canny)
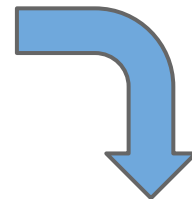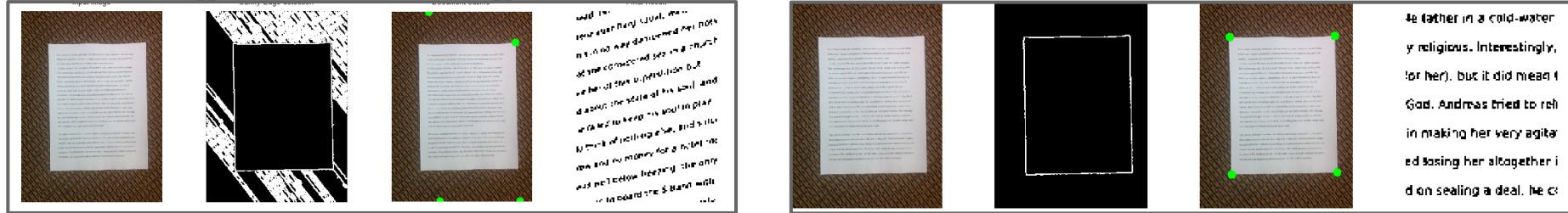
Largest quadrilateral

Warping

Adaptive Thresholding

Mobile Scanner Robustness

Two parameters determine robustness.

Size of gaussian blur. Impacts robustness against noisy background for edge detection

Sharpening. Necessary when background is bright.
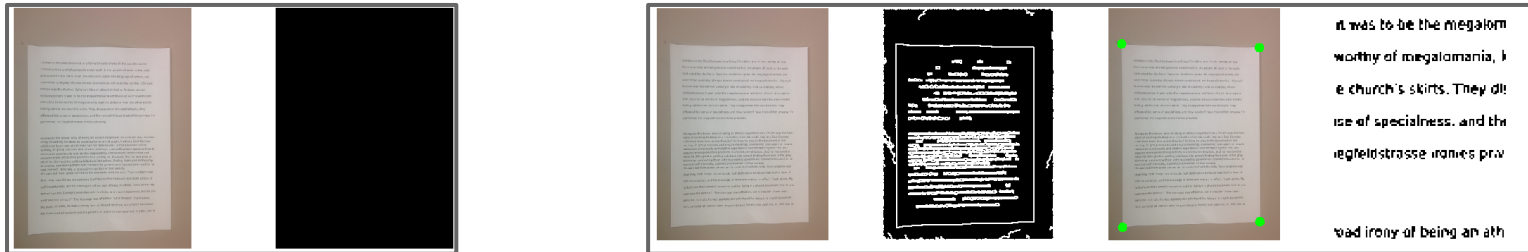
OCR Quality

Two parameters determine the quality of the OCR result

Window size in adaptive thresholding

Threshold in adaptive thresholding (when average brightness is below the threshold. the whole region is assumed to be white).

Results

Conclusion & Future
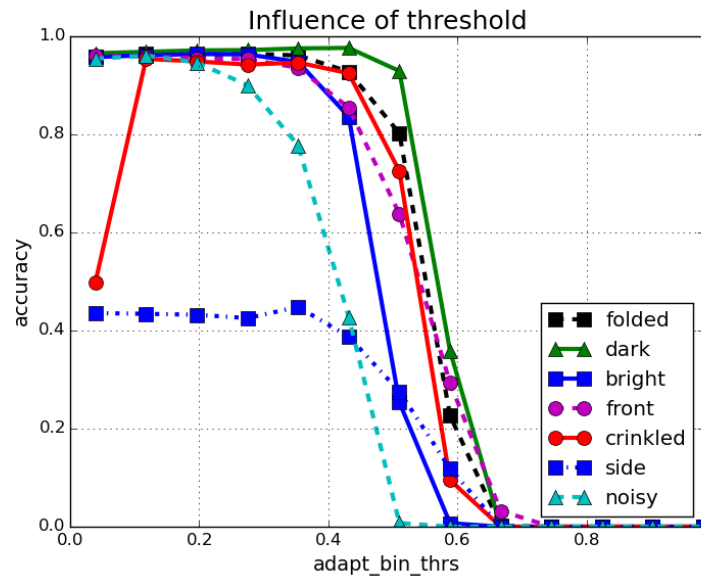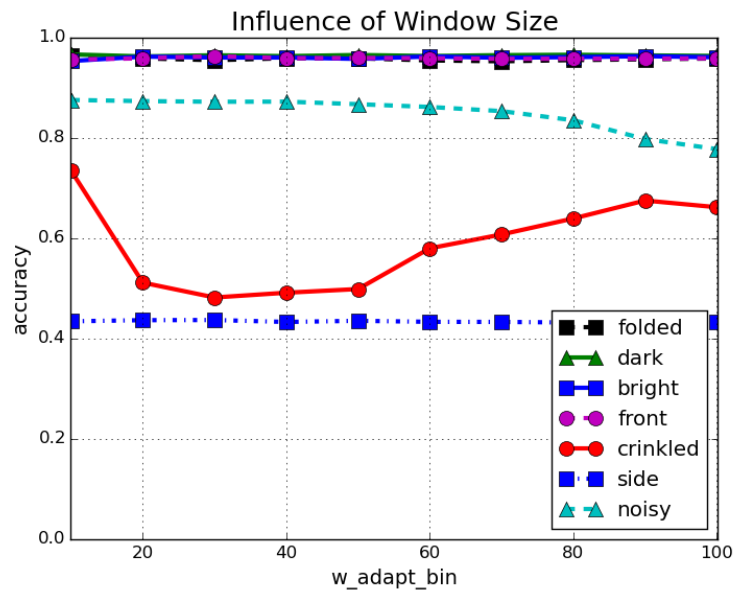
System is robust against background types
Pictures should be taken from above for better quality
System is robust against document quality

Future work:
1. Implement specific text processing algorithm to convert receipt into a spreadsheet
2. Migrate code to mobile phone.