

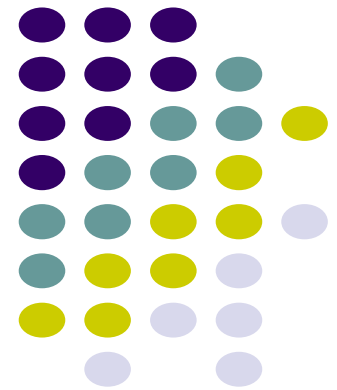
Ubiquitous and Mobile Computing CS 528 Final Presentation

Optical Character Recognition App Design

---- *Qiuzhe Ma, Qianyun Yang*

Computer Science Dept.

Worcester Polytechnic Institute (WPI)



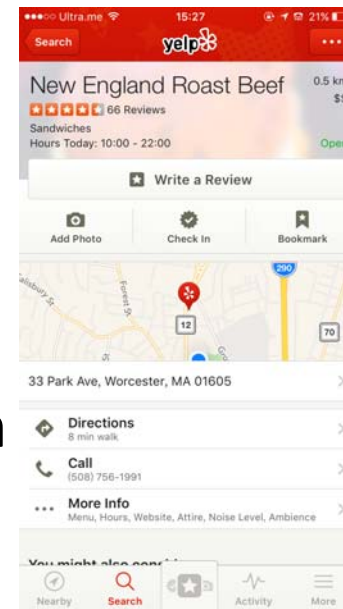
Motivation

- Convert Image into text
- Avoid text input, improve work efficiency
- Change the way we get and save information
- PC terminal software – not portable



Manual input the address

Photo from friends



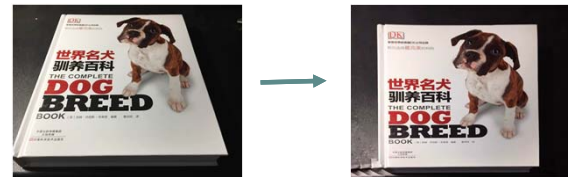
TEXT

Text generated by app

Vision

- Three recognize interfaces: **Translate** instantly, **Grab paragraph** ✓
Scan **business card** and save to Contacts

- **Capture** photo or **choose** photo from SD card ✓
- **Choose language** recognized (English or Chinese) ✓
- User can **rotate** or **keystone** image



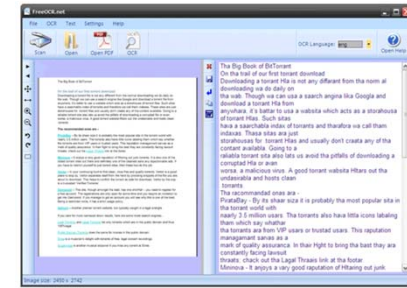
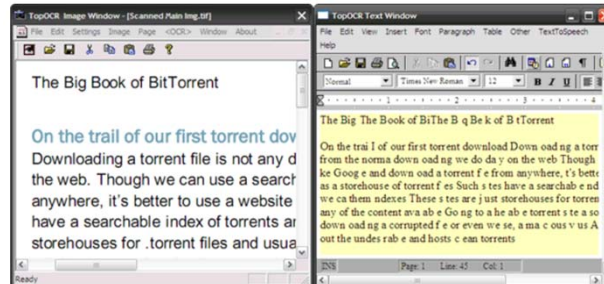
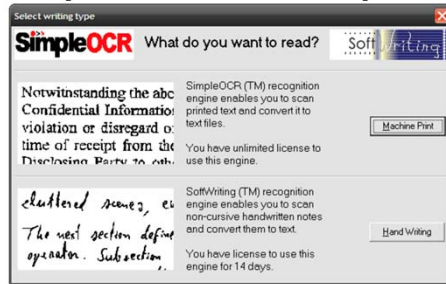
- User can **erase** part of photo **not related** to the text need to be recognized
- App can check and **mark word error** with red lines ✓
- User can **edit** recognized **text** ✓
- User can take multiple photos and **connect text**
- **Share** text by different applications, **search** text on browser ✓



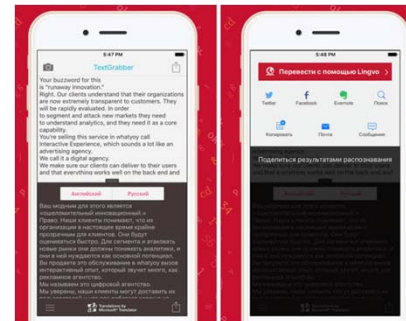


Related Work

- Tesseract OCR Engine: recognize character, adaptive classifier
- SimpleOCR, TopOCR, FreeOCR: PC terminal software



- TextGrabber: existed OCR app not free
- Camera & Capture Photo function



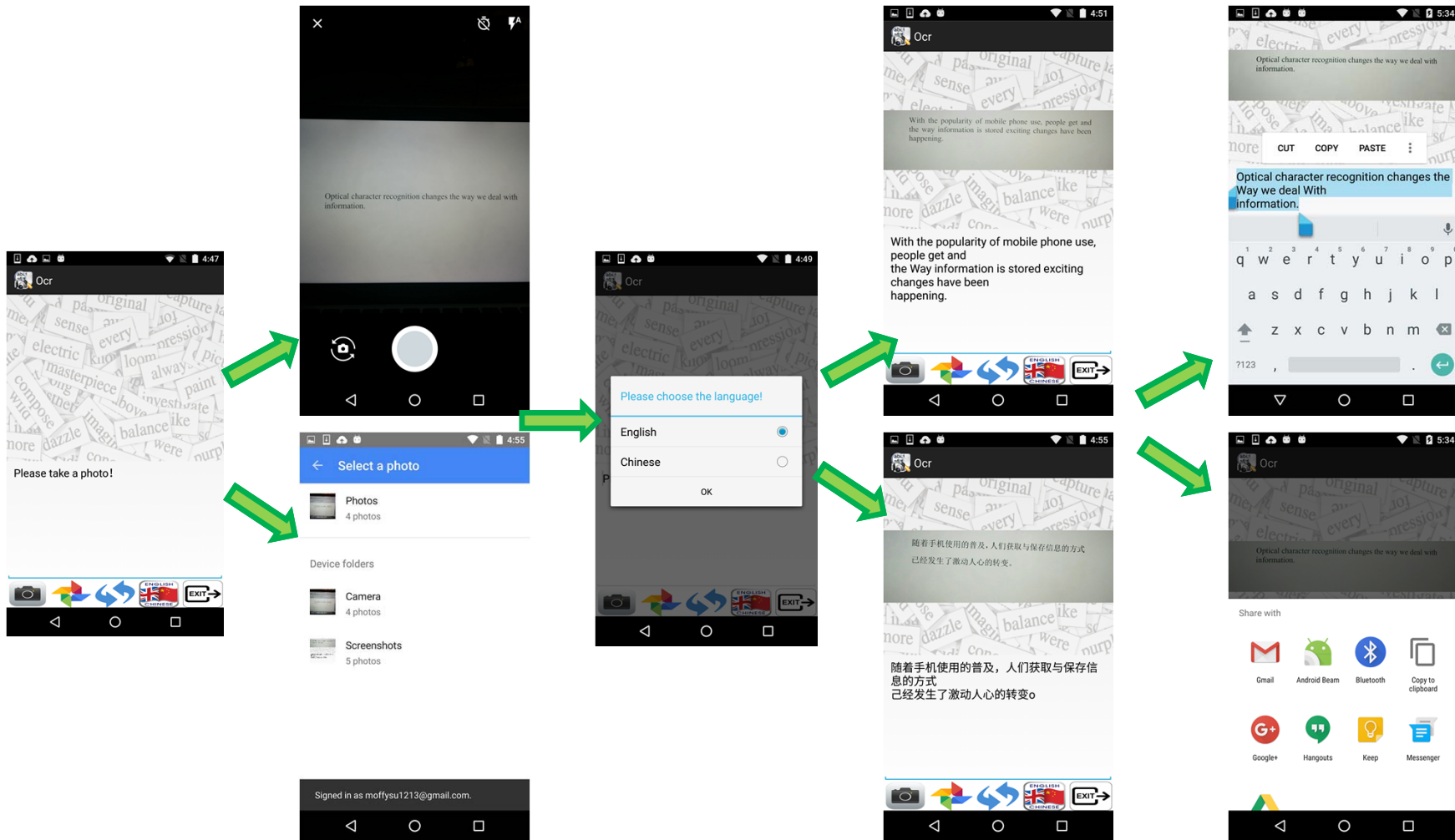
Methodology

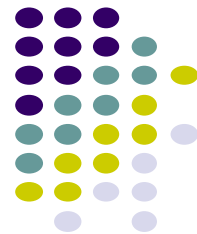
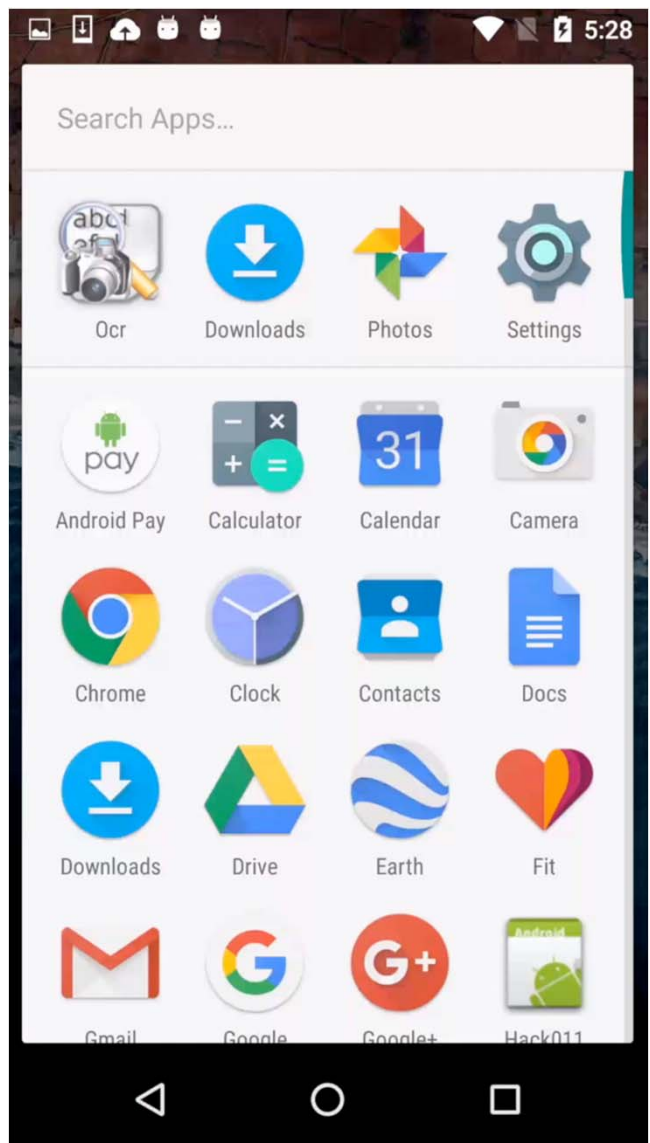


Character recognition takes several steps to convert an image to words:

- Load the image file and improve its quality (noise reduction, Binarization, etc.)
- Character segmentation and Feature extraction
- Resolve errors(broken and blurred)
- Recognize the characters and save the file

Methodology (Screenshot)

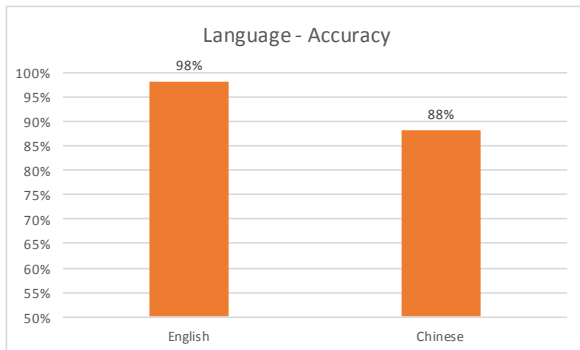
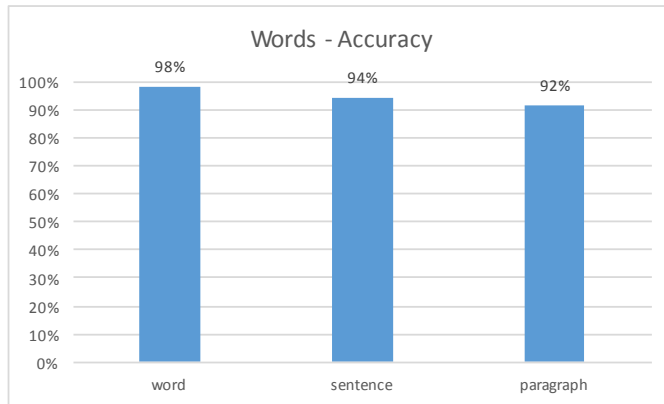




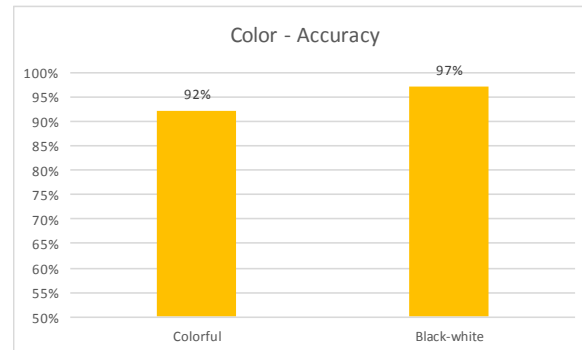
Results & Evaluation

Volunteer: 12

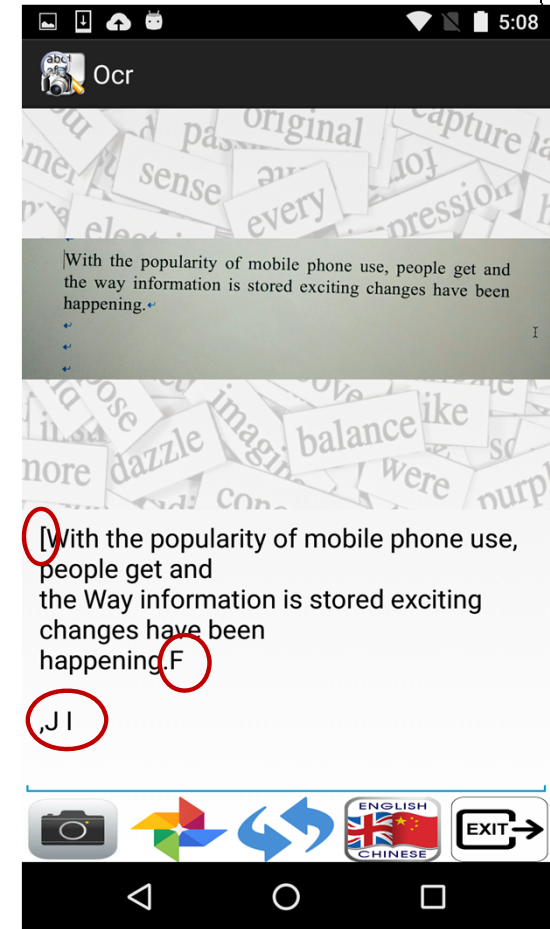
Words: 10/person Sentence:6/person Paragraph:6/person



Accuracy Influenced by Trained Data



Accuracy Influenced by image binarize




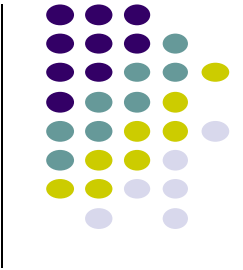


Discussion and Conclusion

1. Design an app to convert image files to editable documents
2. The image files can be the photo taken before or instantly
3. Need to set the language for recognizing Chinese or English

Limitations and Future Work:

1. Some symbols like  can not be removed before recognition(Try to find some algorithm to solve it)
2. The accuracy of recognizing colorful images is lower than black and white images(We need to ensure resolution of the photo when making image binarization)
3. The functions of this app are limited(We can add more functions like sharing or outputting file directly)



Thank You !