

Ubiquitous and Mobile Computing

CS 528: *Final Project Presentation*

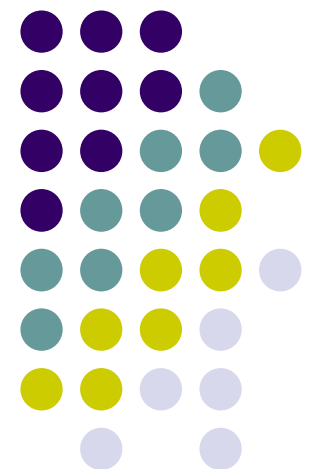
Kewen Gu

Yuheng Huo

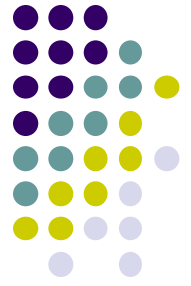
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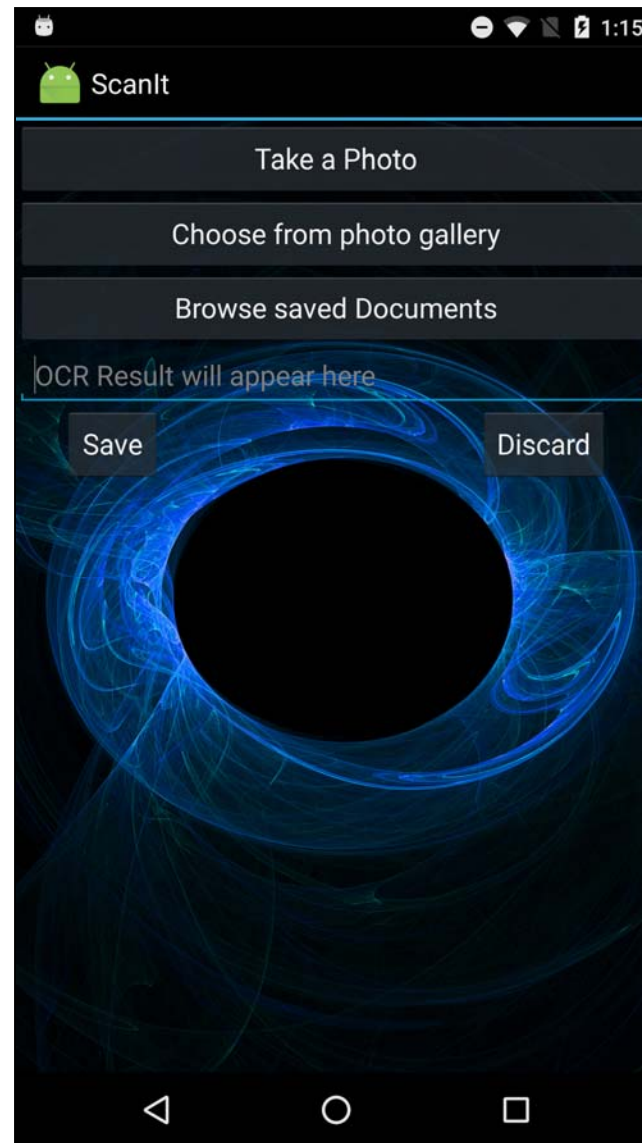
Introduction

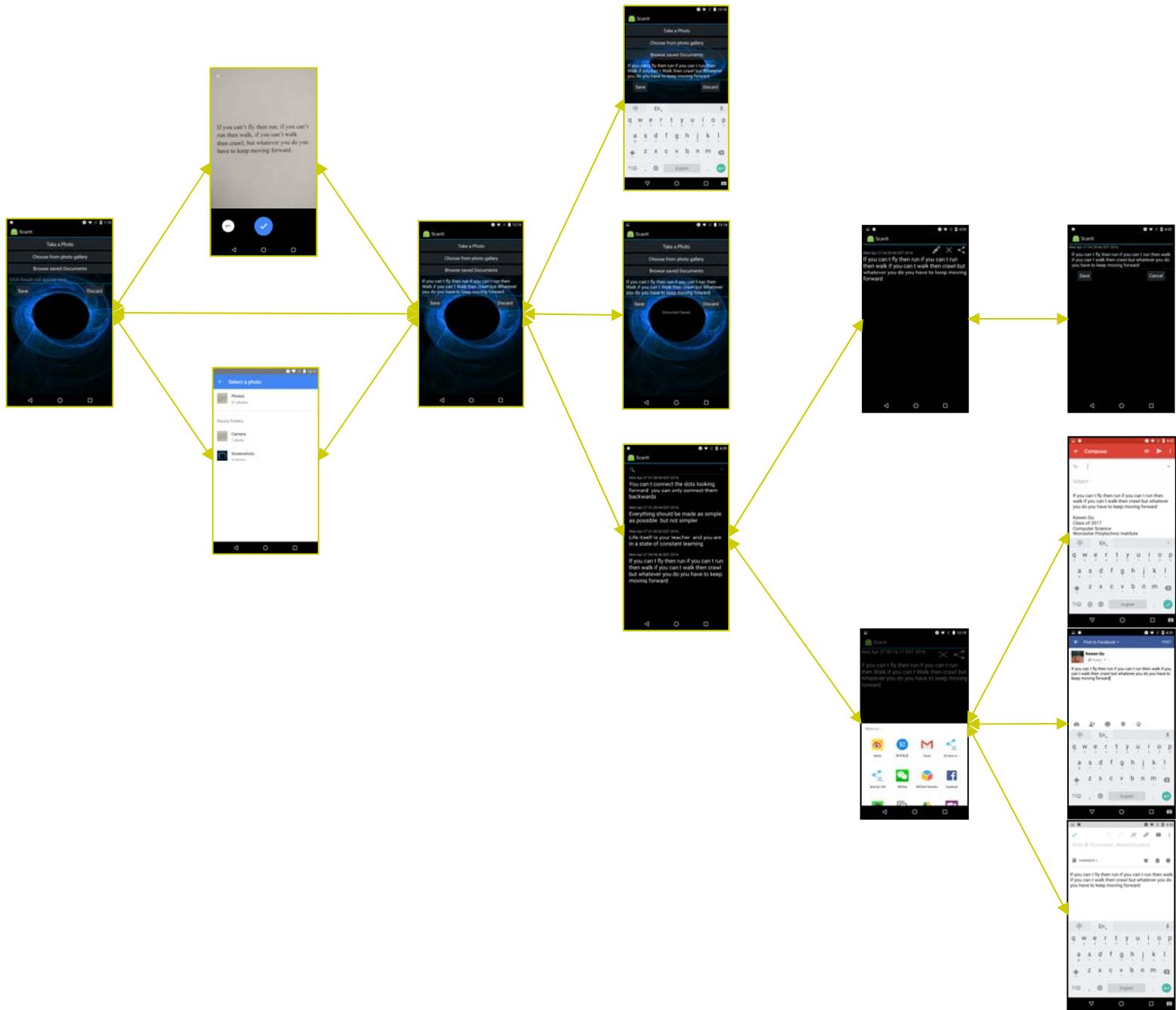
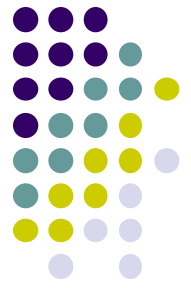


- We designed and implemented a light-weighted utility app that can read text from images/photos
- Texts are organized, and stored in local database
- The stored texts can be uploaded to cloud storage, such as Google Drive, and Drop Box
- Stored Text can also be sent via email, or sent to your Evernote account
- Stored Text can also be shared through social network such as Facebook, Weibo, and Twitter

Design

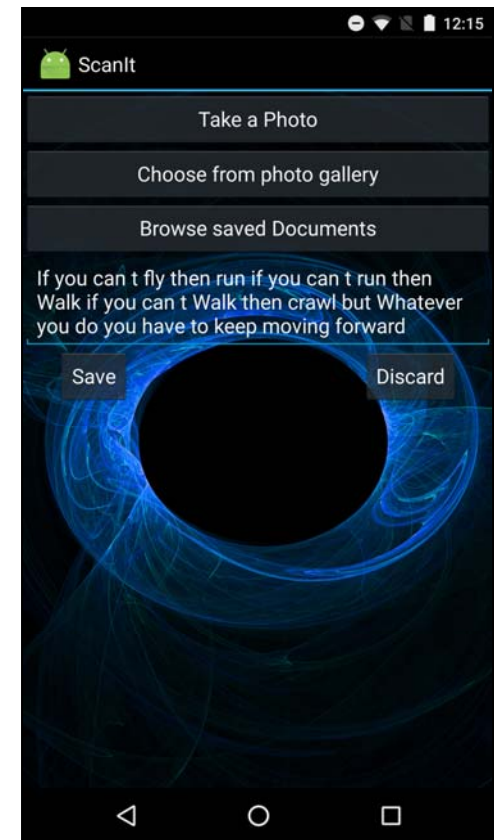
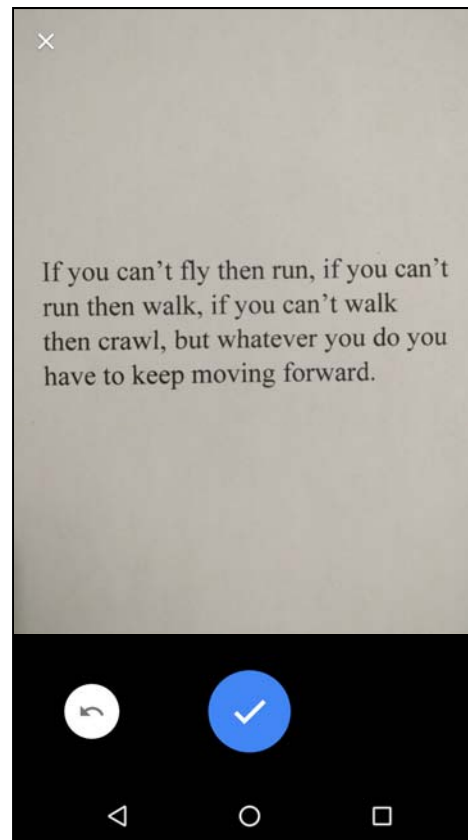
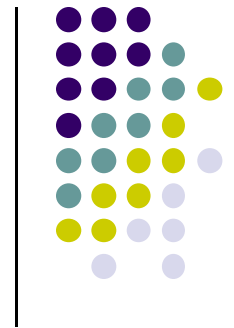
- Three buttons:
 - Three activities
- An editable text field
- Two buttons:
 - Save the text to database
 - Discard the text





Implementation

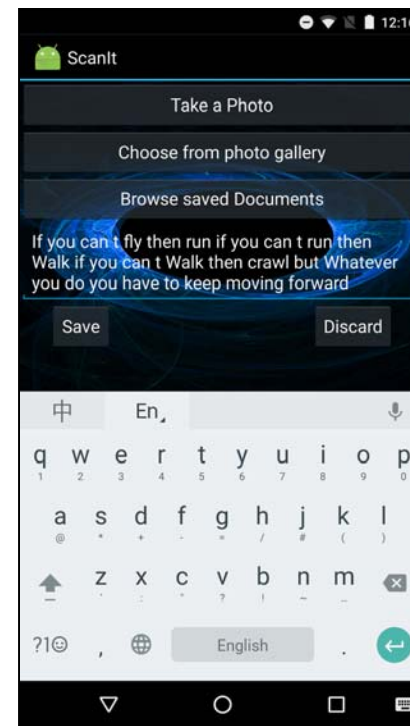
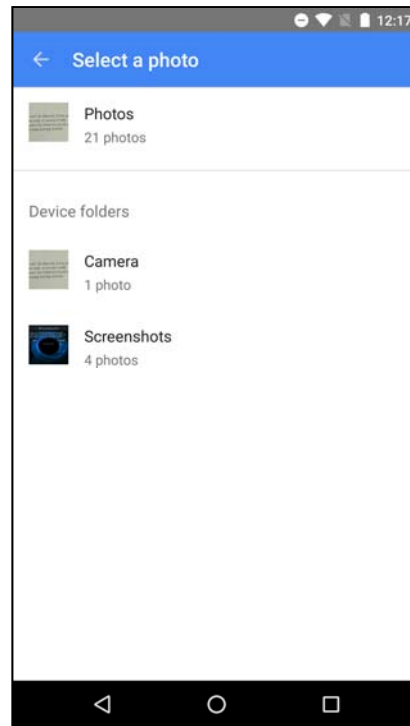
- Three Activities
- Access to camera on the phone, take a photo, and send to Tesseract OCR engine to extract the text in the image, then retrieve the text back.



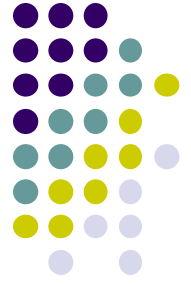


Implementation

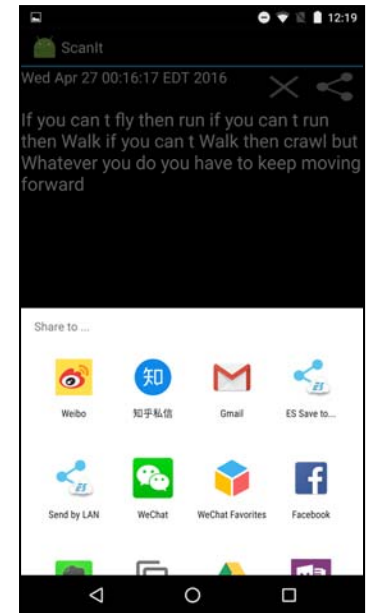
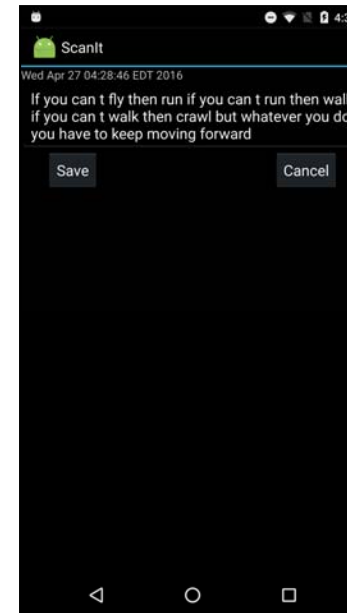
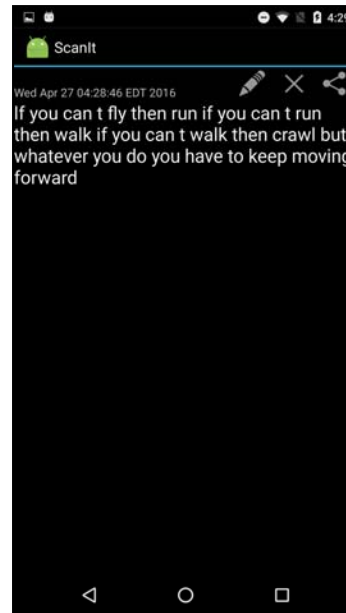
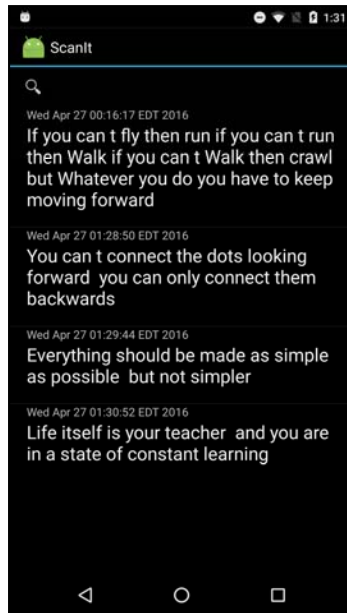
- Access the photo library, choose the photo to recognize, and send the photo to the OCR engine, then obtain the recognized result

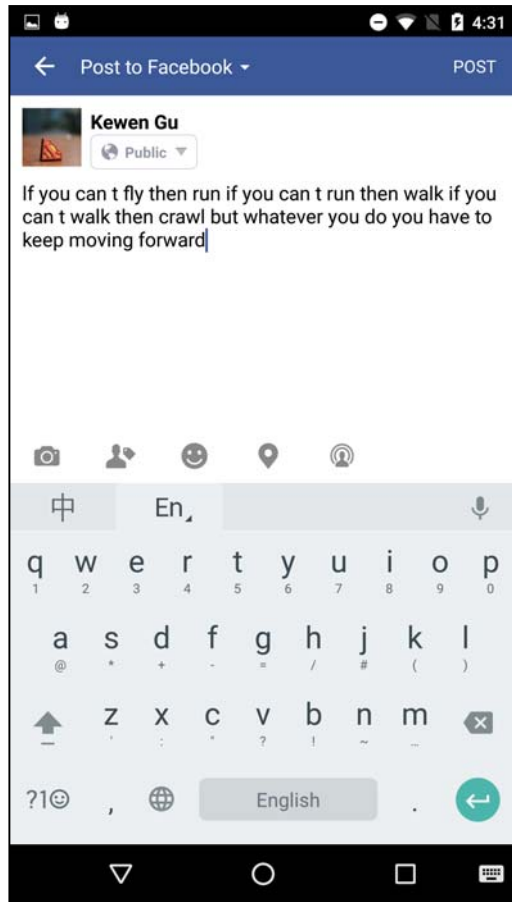
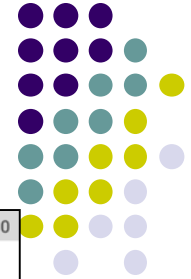


Implementation

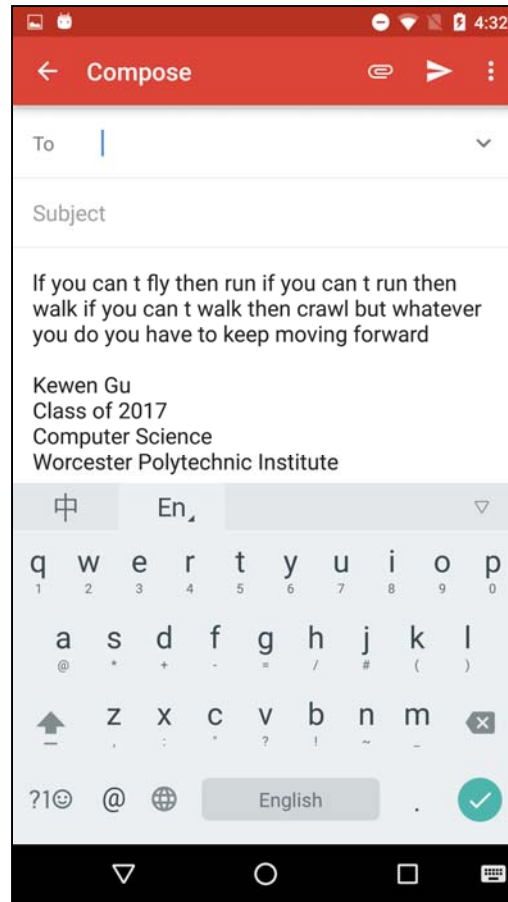


- Access the locally stored text through a list view
- Search through the list of text
- Access the individual list item, to edit, delete or share the text

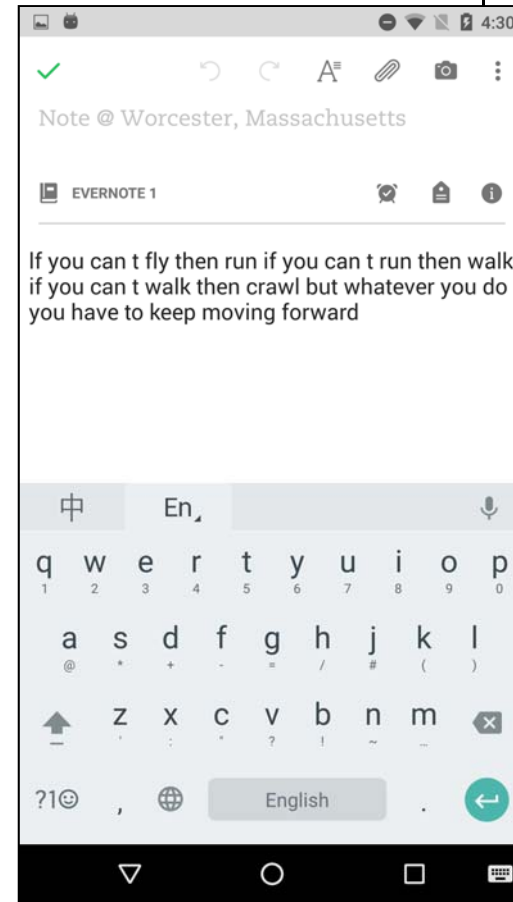




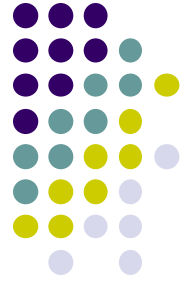
Facebook



Email



Evernote



Results

- This application works well for up to 200 words/image, on Nexus 6p, with 8MP camera, and the process takes several seconds
- It performs fairly accurate on many major font types, e.g. Times New Rome, Georgia, Courier...
- Most of the CPU of this app is consumed by converting images to Bitmaps and performing OCR on image bitmaps. The more the words on the image, the longer it takes to recognize them



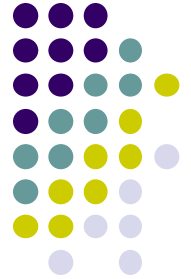
Limitations

- Right now, it's unable to recognize symbols and punctuations
- It's unable to recognize handwriting and rare fonts
- it's accuracy is highly environment dependent, such as weather condition, light intensity...
- If the amount of text on the image is large, it requires high definition camera on board



Future Work

- Support recognition of symbols and punctuations
- Support more font types
 - Tesseract can be trained to recognize unknown fonts
- Support more languages
 - Tesseract supports multi-language recognition
- Refine database, add more properties to database
- Perform more tasks on the list of items, such as sorting, filtering, and categorizing



ANY QUESTIONS?

--Thank you