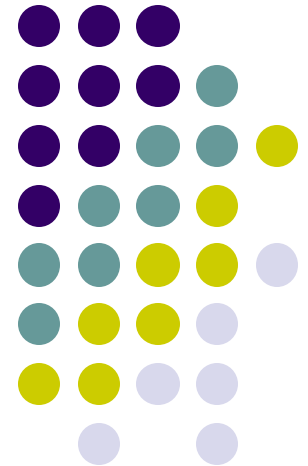


Ubiquitous and Mobile Computing

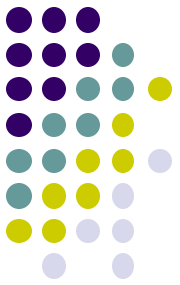
CS 528: Stud-e-Book App

*Amisha Jindal, Baoxin Liu, Bhoomi Patel,
Florina Asani, Sanika Patki, Srinarayan Srikanthan*

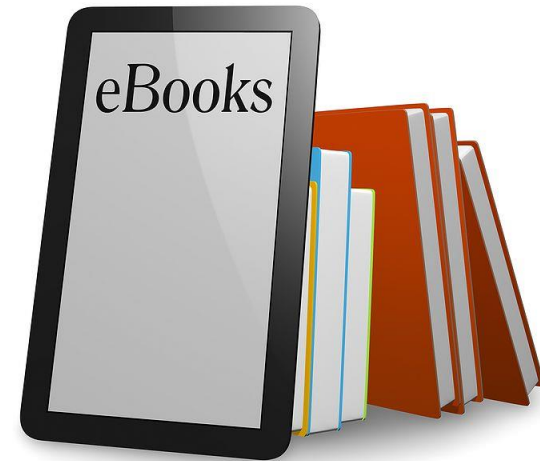
*Computer Science Dept.
Worcester Polytechnic Institute (WPI)*



Introduction

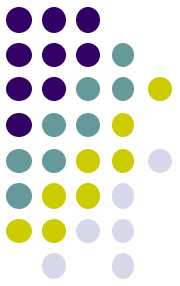


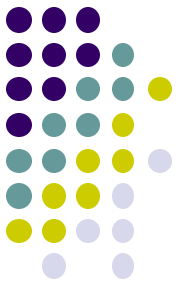
- Cool study book app which encourages students to read and study.
- Provides recommendations for study books.
- Makes reading and studying much more fun by offering flexibility.
- Offers touch free page swipes



Motivation

- Enjoy flexibility - Make learning fun!
- Students need not carry hardcopies of study books
- No need to download an e-book on machine
- Refer similar books and study subject in depth
- Keep all your study books in one app



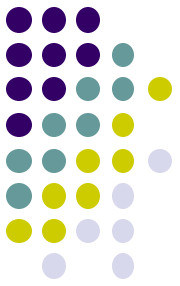


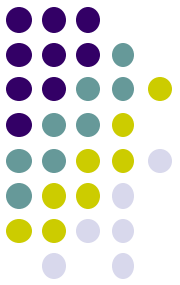
Difficulty Points

- Mobile Components and UI (8 points)
 - Android Screens
 - Camera
- Ubiquitous Components (18 points)
 - Gesture detection – Proximity Sensor
 - Gesture detection – Gyroscope Sensor
 - Speech recognition: Speech-to-text
- Machine learning Component (20 points)
 - Recommendation System
 - Image to Text OCR – ML Kit

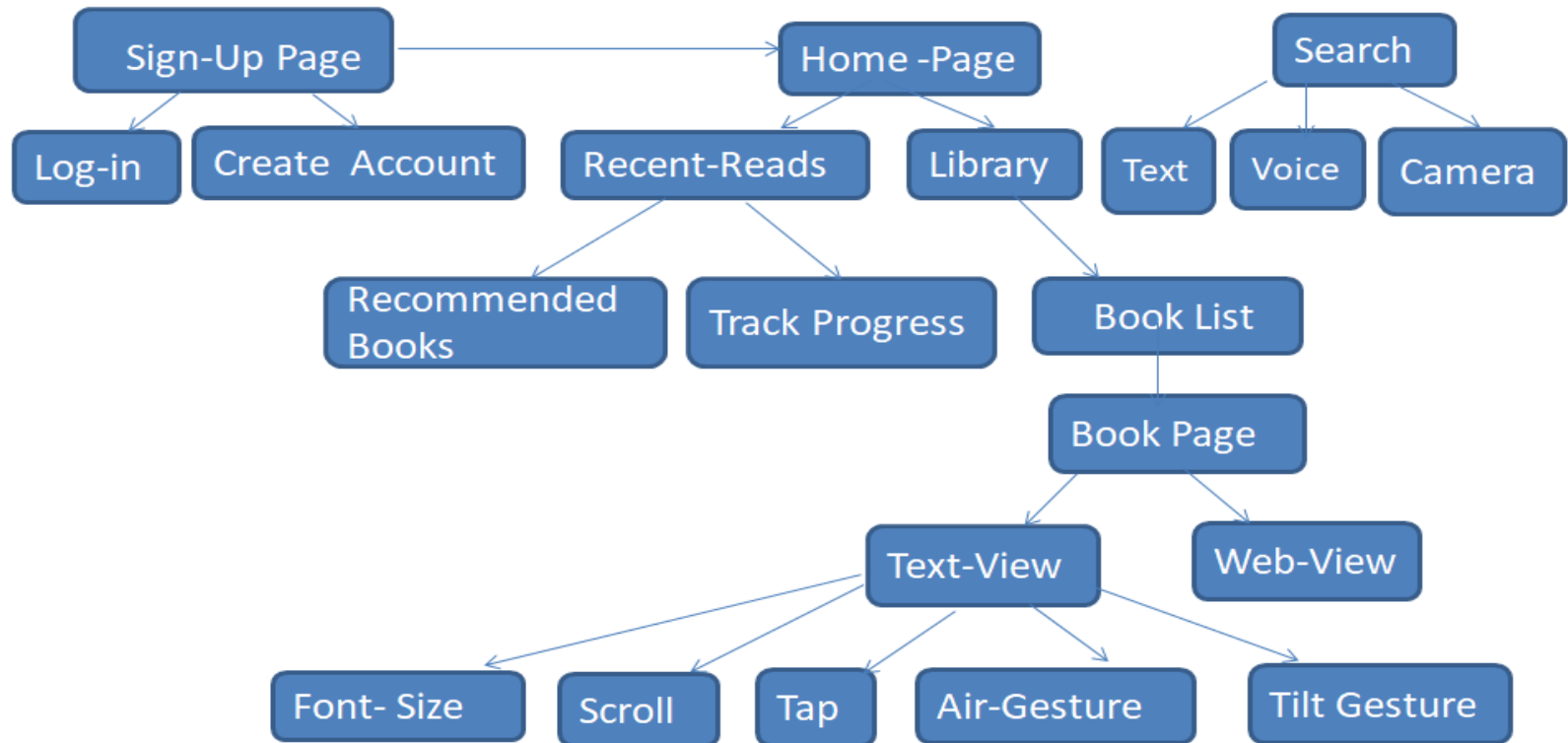


Related Work

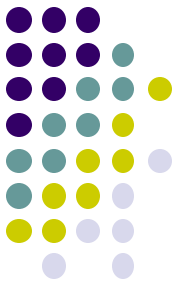




Methodology – Workflow



Implementation – Android and 3rd party modules



ePUB



**Database/Storage
/Authentication**



Optical Character Recognition



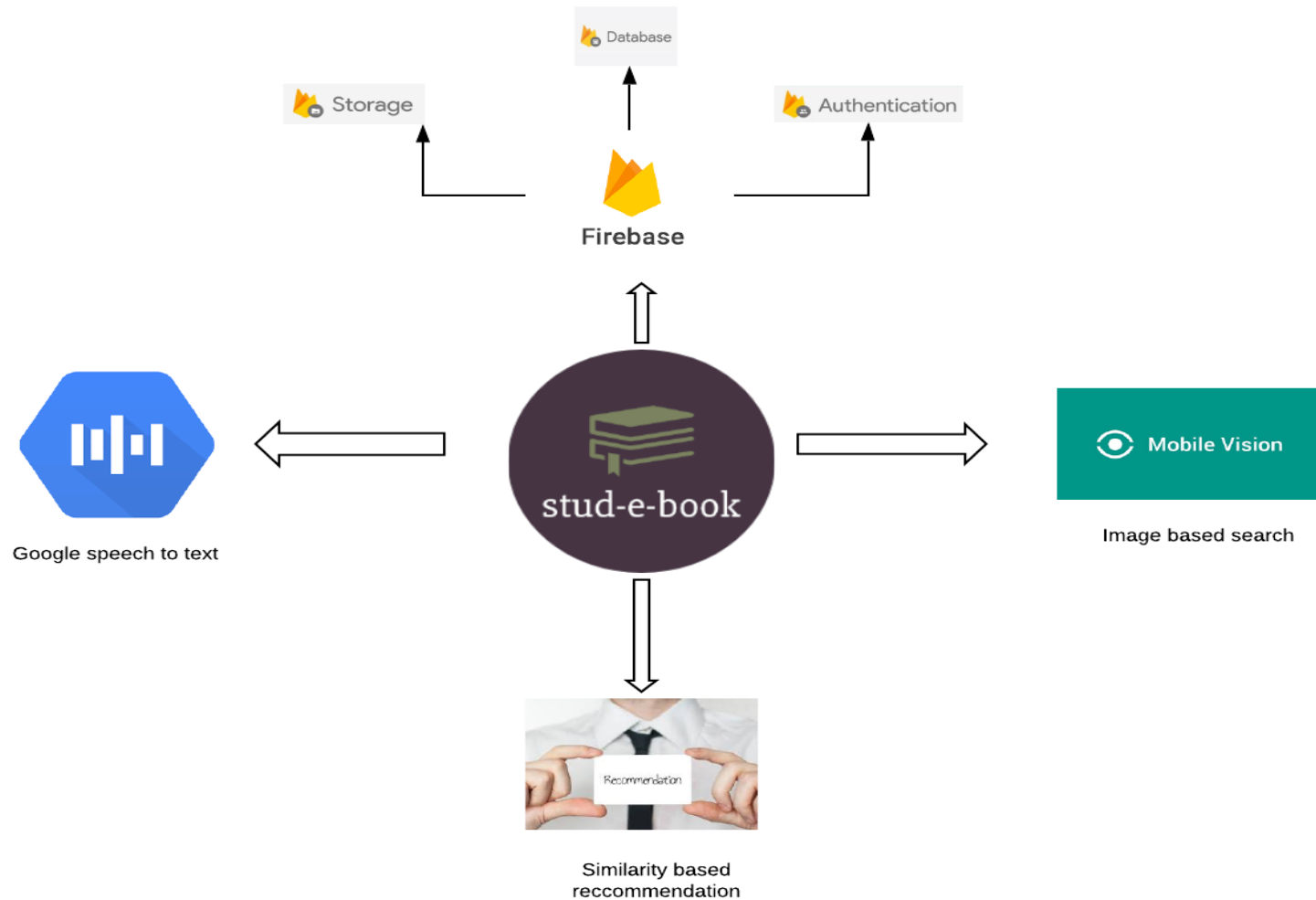
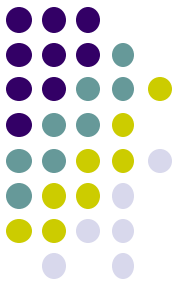
Voice Recognition



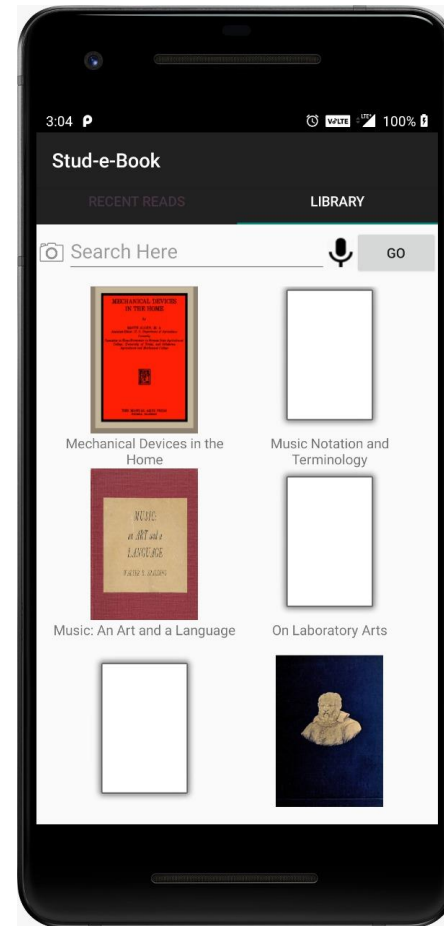
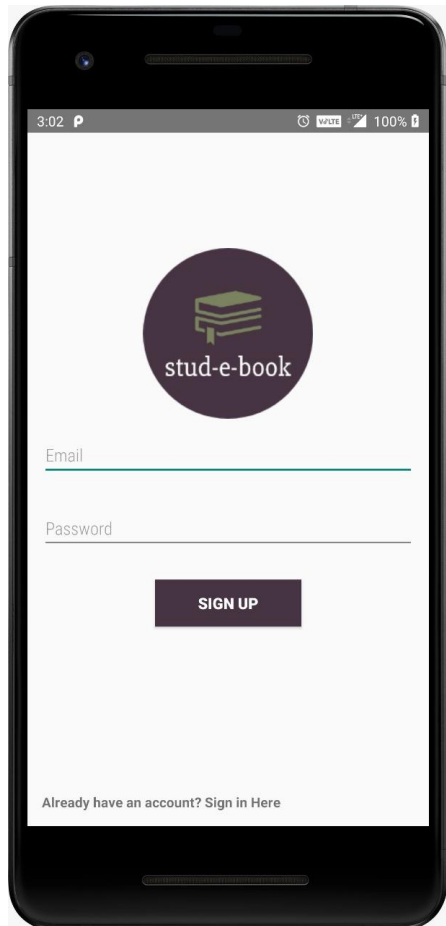
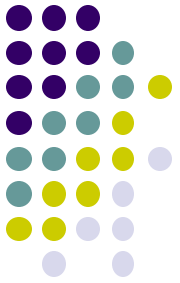
**Gesture Recognition -
Proximity & Gyroscope
Sensors**



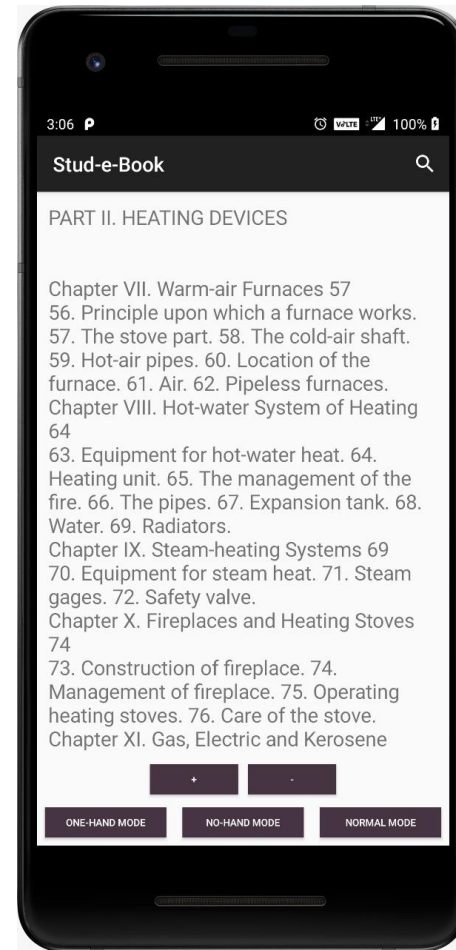
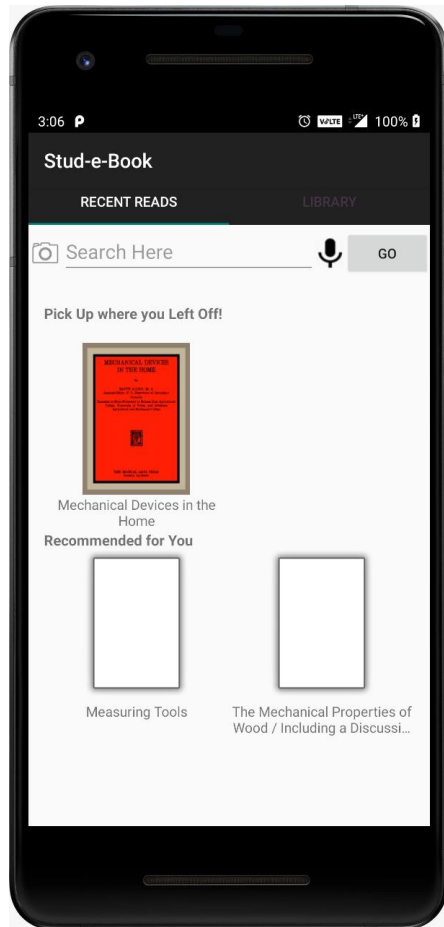
Implementation – Software Architecture



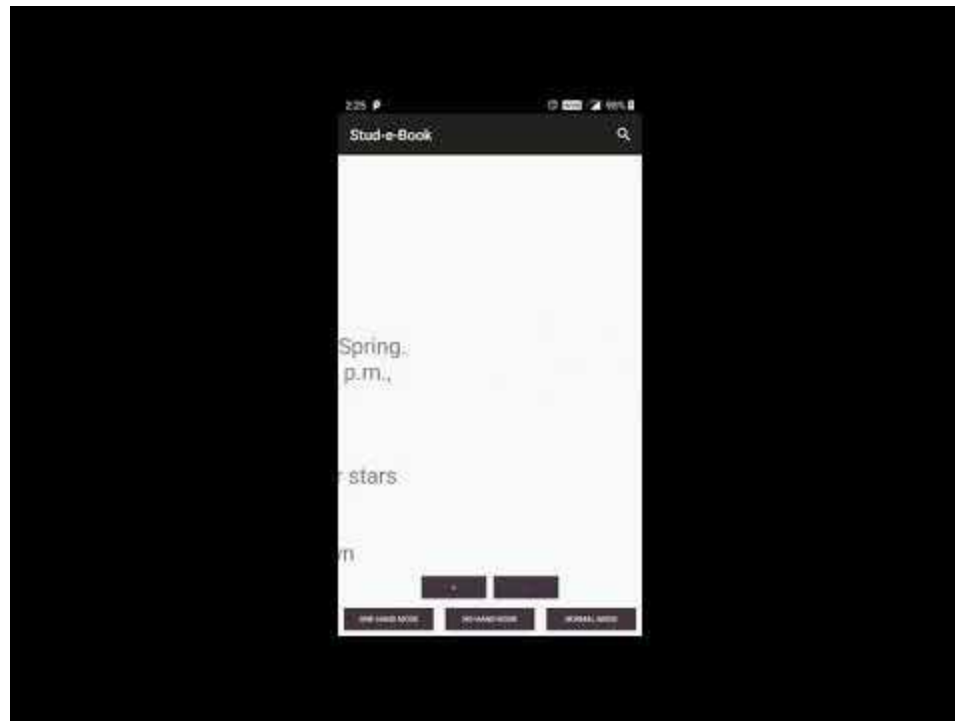
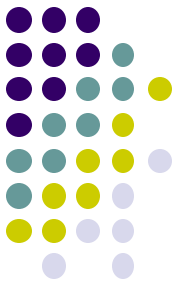
Implementation – UI Screenshots

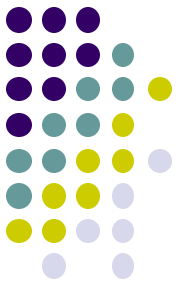


Implementation – UI Screenshots



Demo





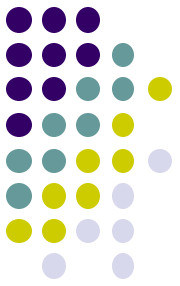
Results and Evaluation

- Recommendation Similarity results

Most Similar Books		Cosine Similarity
	An Elementary Study of Insects	0.82
An elementary study of Chemistry	The Chemistry of Hat Manufacturing	0.46
	The Chemistry of Food and Nutrition	0.43

- Mobile sensors performance evaluation on different phones
- Tested and evaluated by 12 of our peers

Evaluation feedback



Onehand mode, transitions too many pages at a time



Readjust proximity measure



Reading mode buttons too small



Customize font size



Remove text or web view

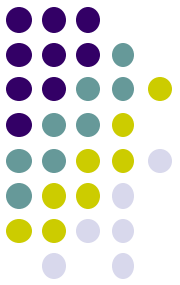


Add night/day mode



Add unit and integration tests





Future Scope

Epub files did not all have cover images – Fix by using other sources



**Implement
requested
features through
feedback**



**Increase library
size and
categories**



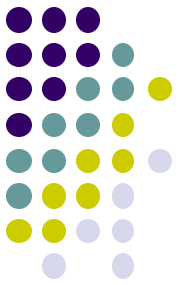
**Improve UI on
tablet view**



**Highlight and
lookup word
meaning**



**Recognize
boredom and
push user
notifications**



References

- <https://developer.android.com/docs>
- <https://firebase.google.com/docs/android/>
- <https://developers.google.com/android/guides/overview>