



PDPM Indian Institute of Information Technology
Design and Manufacturing
Jabalpur

PR-201

Topic: Coping with Dyslexia

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Abstract:-

The aim is to create an application for helping people suffering from dyslexia. The main features of this application include conversion of text into speech, speech into text and regular practice of spelling and pronunciation.

Introduction:-

Dyslexia-

Dyslexia is a specific language disorder that causes problem in reading, writing and speaking. It has been described as a specific learning disability that is neurobiological in origin and is characterized by poor word recognition, spelling and decoding abilities despite having higher cognitive abilities and receiving effective classroom experience.

Thus, it is paramount to develop a less expensive and easily available tool for helping dyslexic children to master their reading skills because if left untreated, they will develop low self-esteem, poor confidence and emotional problems.

Application-

This android application made of dyslexic is different from most of the existing reader applications as here users can scan any text and listen the correct pronunciation instead of listening already stored books.

Background Study:-

According to the Cognitive Theory of Multimedia Learning (Mayer, 2009) the human information-processing system contains channels for processing visual/pictorial and auditory/verbal stimulus, in which each channel has restricted

capacity for processing, and active learning requires performing suitable cognitive processing during learning. The theory views multimedia learning as a knowledge construction tool, which supports learner to actively make sense of the presented information, rather than as a passive receiver.

Past research has shown the effectiveness of multimedia learning application in teacher education. Multimedia apps can be helpful for dyslexics.

There are certain apps, for example Google Play Books [Text to Speech, Android], Dragon Dictation [Dictation, IOS] ,Natural Reader [Text-to-Speech, Windows or Mac, + free online utility] etc. for dyslexics which either read out the pre- stored books for improving reading skills or have dictation for spelling practice or contains some game to reduce the confusions in similar looking letters.

Main features of application:-

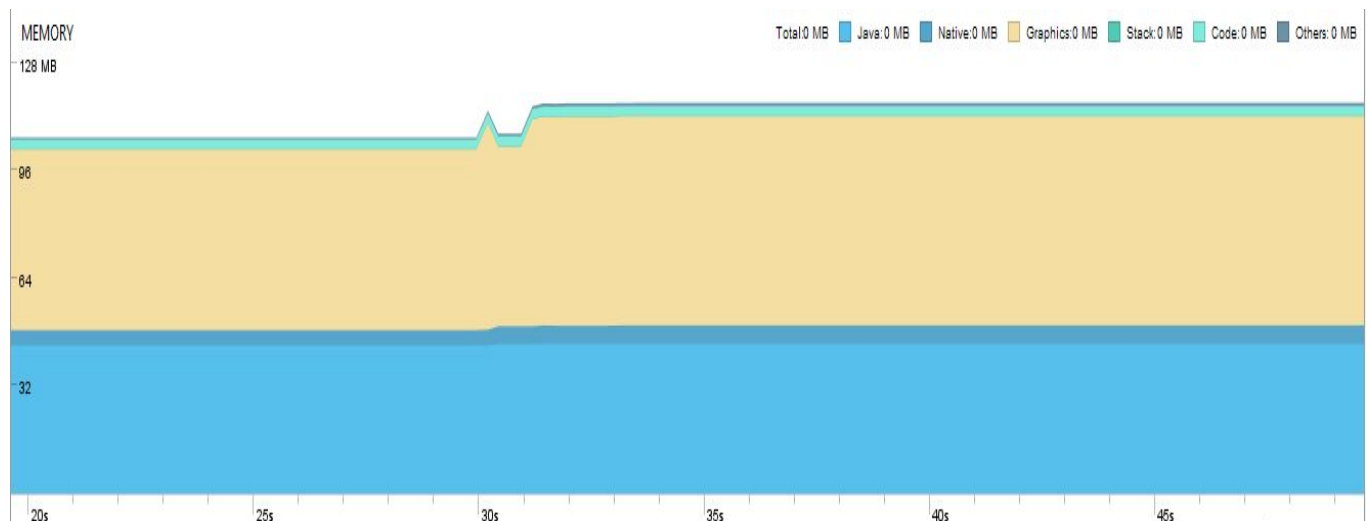
- Text-to-speech: This feature is for conversion of text into speech which can be used by dyslexics for checking pronunciation or in reading. For implementing this feature android-vision text(ocr - optical character recognition) API is used.
- Speech-to-text: Dyslexics get confused easily in similar looking letters or words. Many times they know pronunciation but struggle while figuring out the correct spelling. For such scenarios, this feature which shows the spelling of spoken words on the mobile screen can be of great use.
- Practice: This feature is for regular practice of both spelling and pronunciation of the words added by user. For storing words SQLite database is used and an appealing design is followed for showing words on screen and proper practice procedure is being followed for making this application effective.

How is this application different from existing applications?

In this application, user can learn and practice both spelling and pronunciation through a single tool which is easy to use. They can store words for practicing spellings and pronunciations which wasn't a part of any of the application we found.

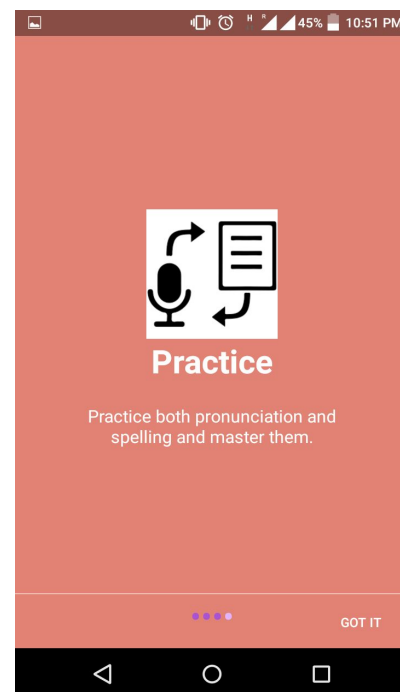
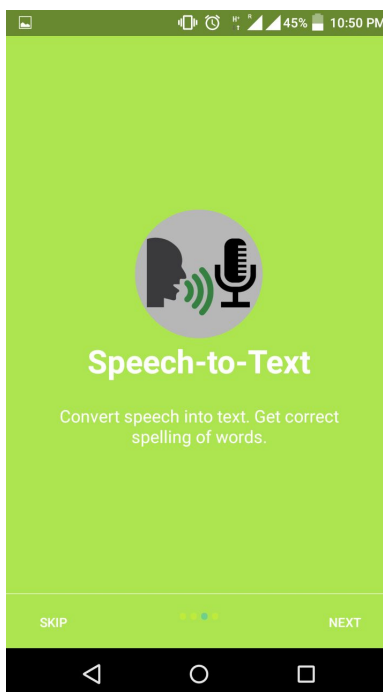
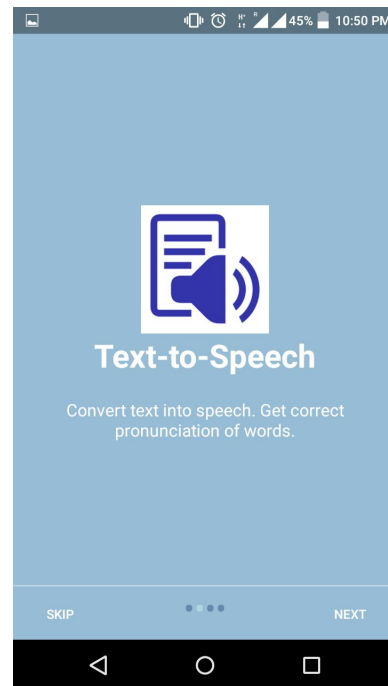
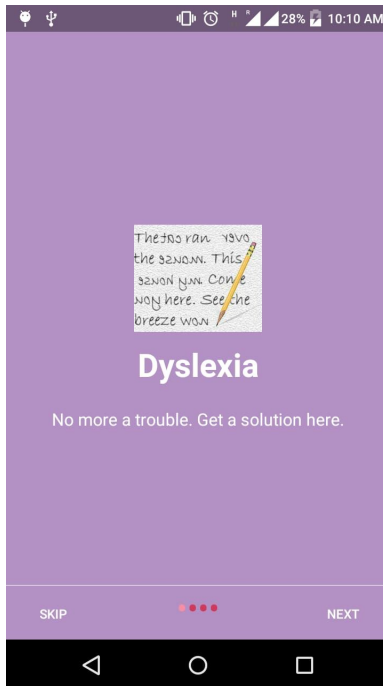
Graphs:-

The application is memory efficient as recycle views have been used to store data. Recycle views, or scrap views, are used when a large amount of data has to be stored. These views take the data off the screen and bind them to the data which is rolling into the screen. These view holders are stored on either side of the list, and can be reused. Thus, the application takes up less space.

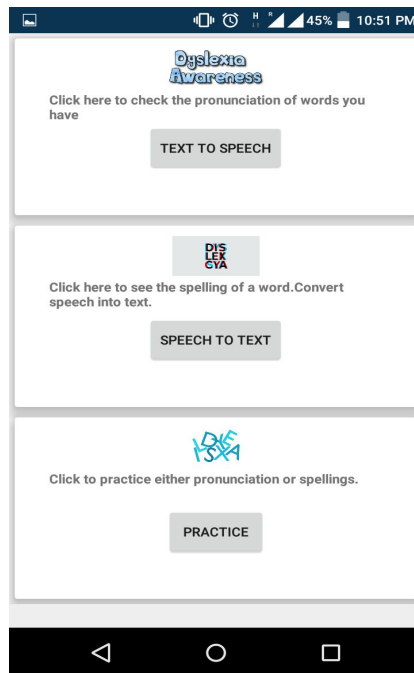


Illustrations:-

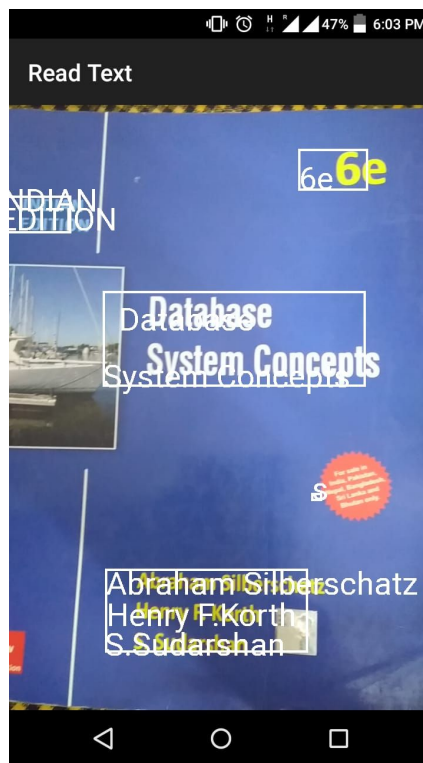
Introduction slides:



Main page showing different features:

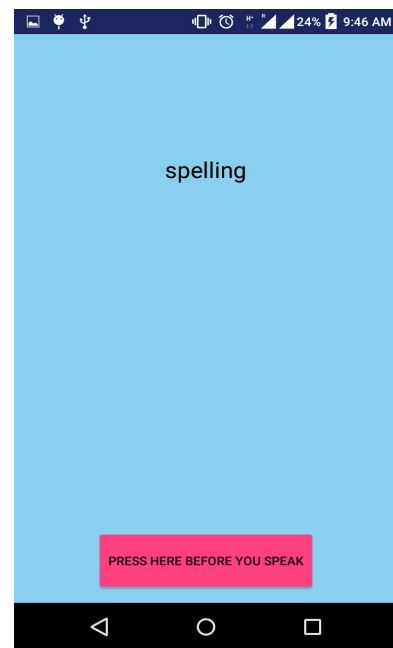
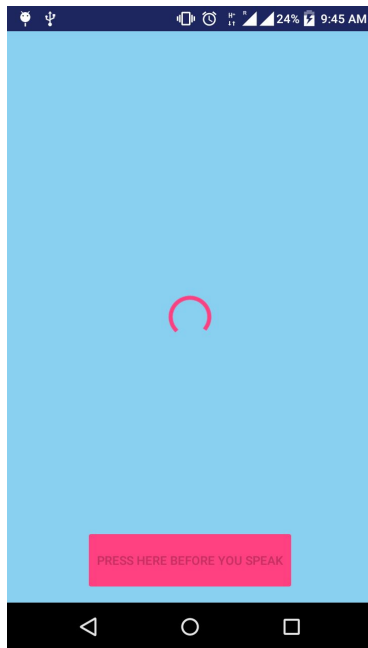


Text-to-Speech:

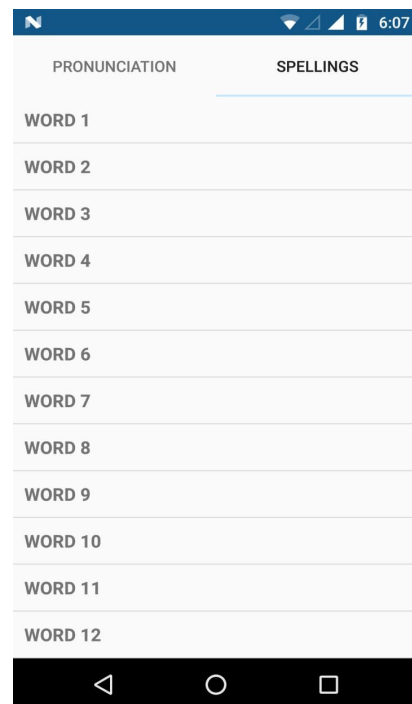
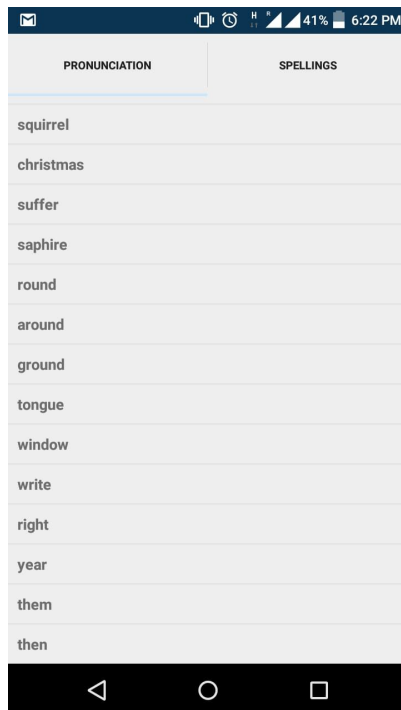


Text recognition

Speech-to-text:



Practice:



Future Plans:-

Future plans include making an web-application for dyslexia to increase the number of users, so that more people get benefit through these methods of practicing. Also, include some games like “selecting the correct letter from similar looking letters” to make application more engaging.

Conclusion:-

The application is successfully designed by using java,xml,android APIs and various tools of android studio. The features of converting text into speech, speech into text and storing words for showing them for practicing are working properly. Also, design of the application is kept appealing to make it engaging.

References:-

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