



VIT[®]
BHOPAL

DSN3099- Engineering Projects in Community Service (EPICS) Final Review

Group
No: 19



OUR GUIDES

Project Supervisor - Dr. H Azath

Reviewer 1 - Dr. Priyanka Roy

Reviewer 2 - Dr. Swagat Kumar

02

The Team



VIKANKSH GAUTAM

19BAI10024



ANURAG SOMANI

19BCY10090



SAMARTH PATIL

19BAI10079



SHASHWAT PANDEY

19BCY10011



ASHUTOSH KISHAN

19BCE10200



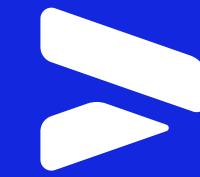
KRITIK KUMAR

19BCE10422



RITISH SINGHAI

19BCE10269



Agenda

Introduction

Problem Statement

Objective

Overview

Methodology

Novelty

Modules Used

Knowledge of Modules

Tech Stack

Architecture Diagram

Real Time Usage

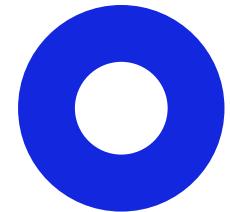
Flowchart

User Interface

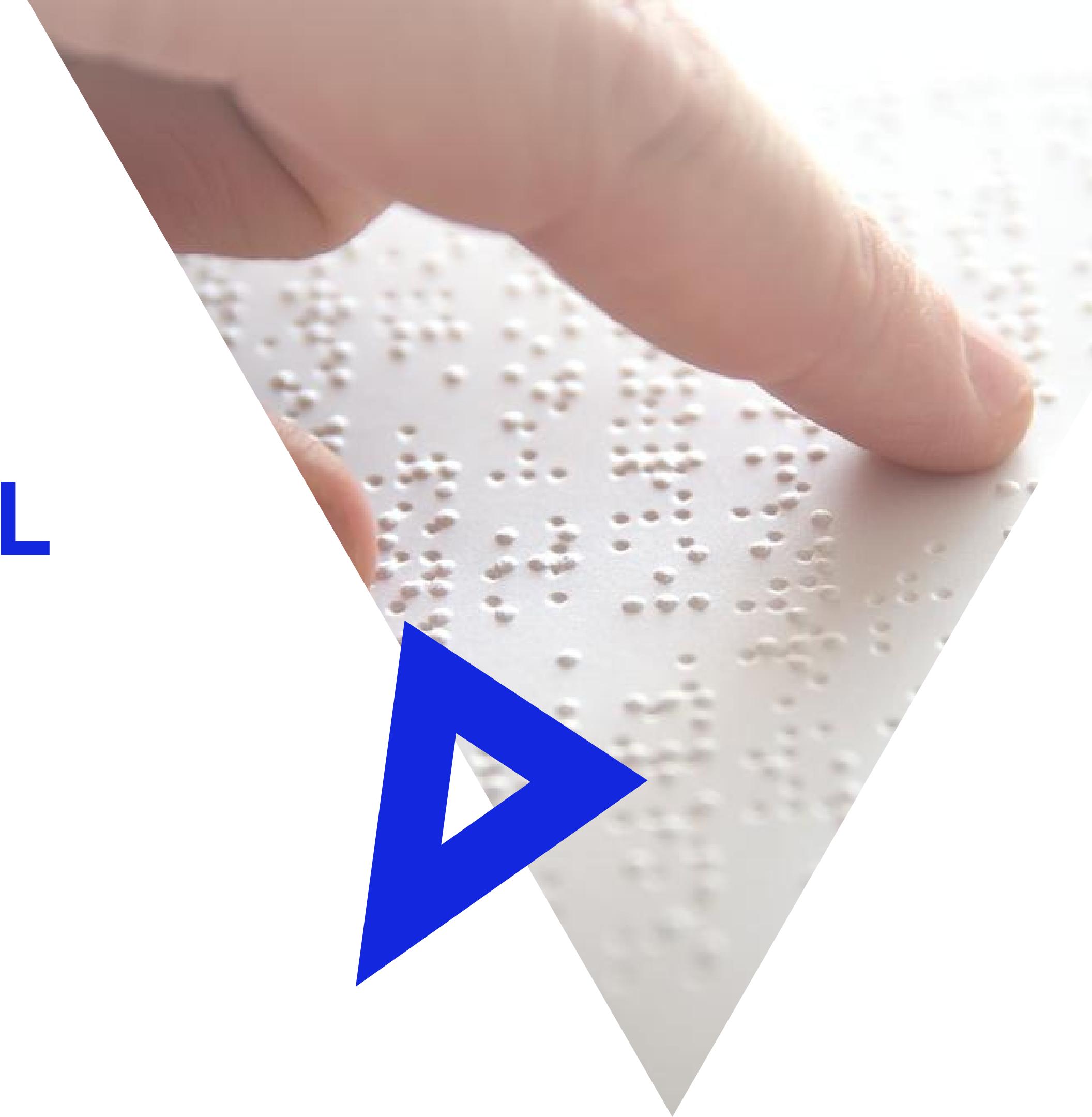
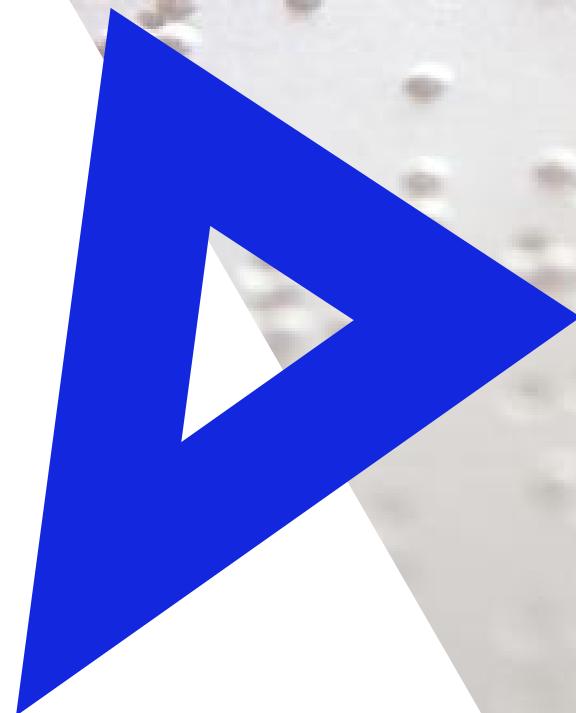
Work Progress

Individual Contribution

References

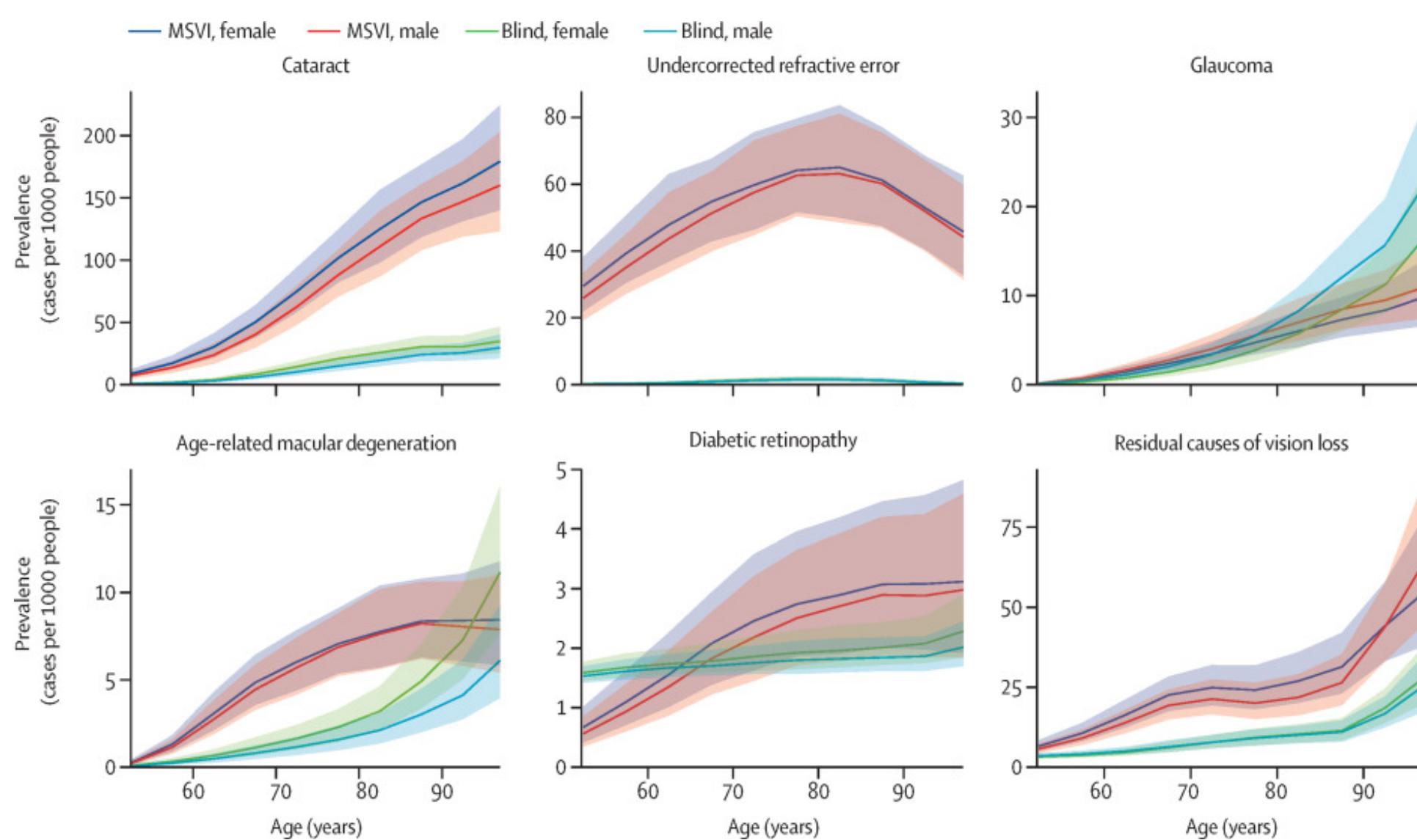


WHAT IS VISUAL IMPAIRMENT



EYE CARE

Some Stats



THE FACTS

253 million people are visually impaired
• 81% of people are aged 50 years and over

84% of visual impairment results from chronic eye diseases

CONSEQUENCES OF VISUAL IMPAIRMENT



OPPORTUNITIES

81% of visual impairment could be avoided if diagnosed and treated early

1.4 million children could benefit from vision rehabilitation

US\$102 billion could be saved with appropriate eye care services

ACTION



PROBLEM STATEMENT

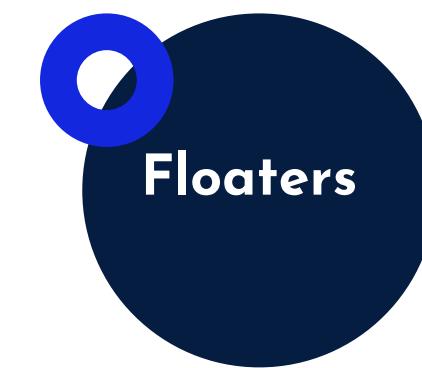
In our planet of 7.4 billion humans, 285 million are visually impaired out of whom 39 million people are completely blind, i.e. have no vision at all, and 246 million have a mild or severe visual impairment. It was predicted that by the year 2020, these numbers will rise to 75 million blind and 200 million people with visual impairment



Presbyopia refers to the loss of the ability to see close objects or small print.



Dry eyes happen when tear glands can't make enough tears or produce poor quality tears.



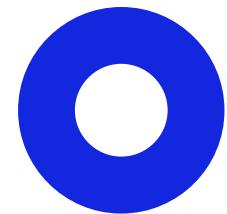
Floaters are tiny spots or specks that float across the field of vision.



Epiphora Tearing, or having too many tears, can come from being sensitive to light, wind, or temperature changes.

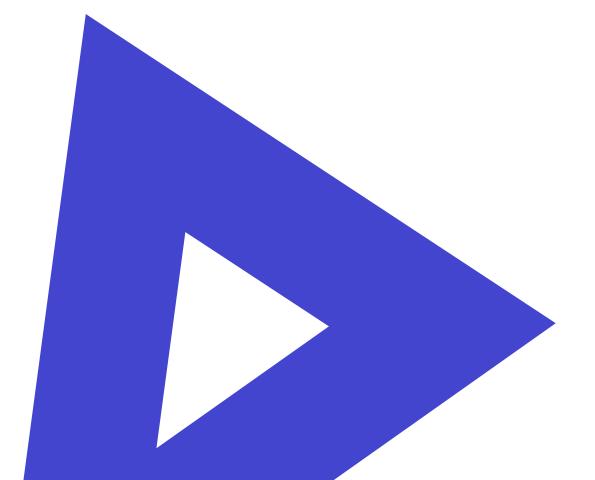


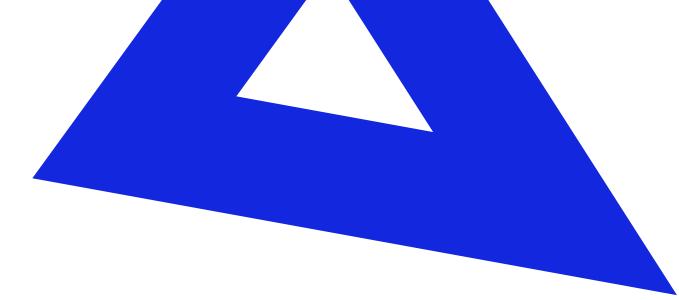
PhonicVision



OBJECTIVE

Our main aim is to build an application that can convert Text to Speech in a simple manner that can benefit the visually impaired user.

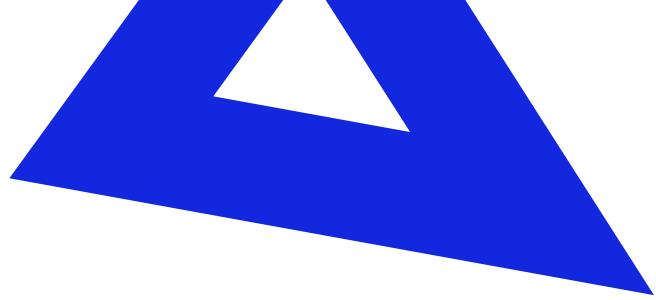




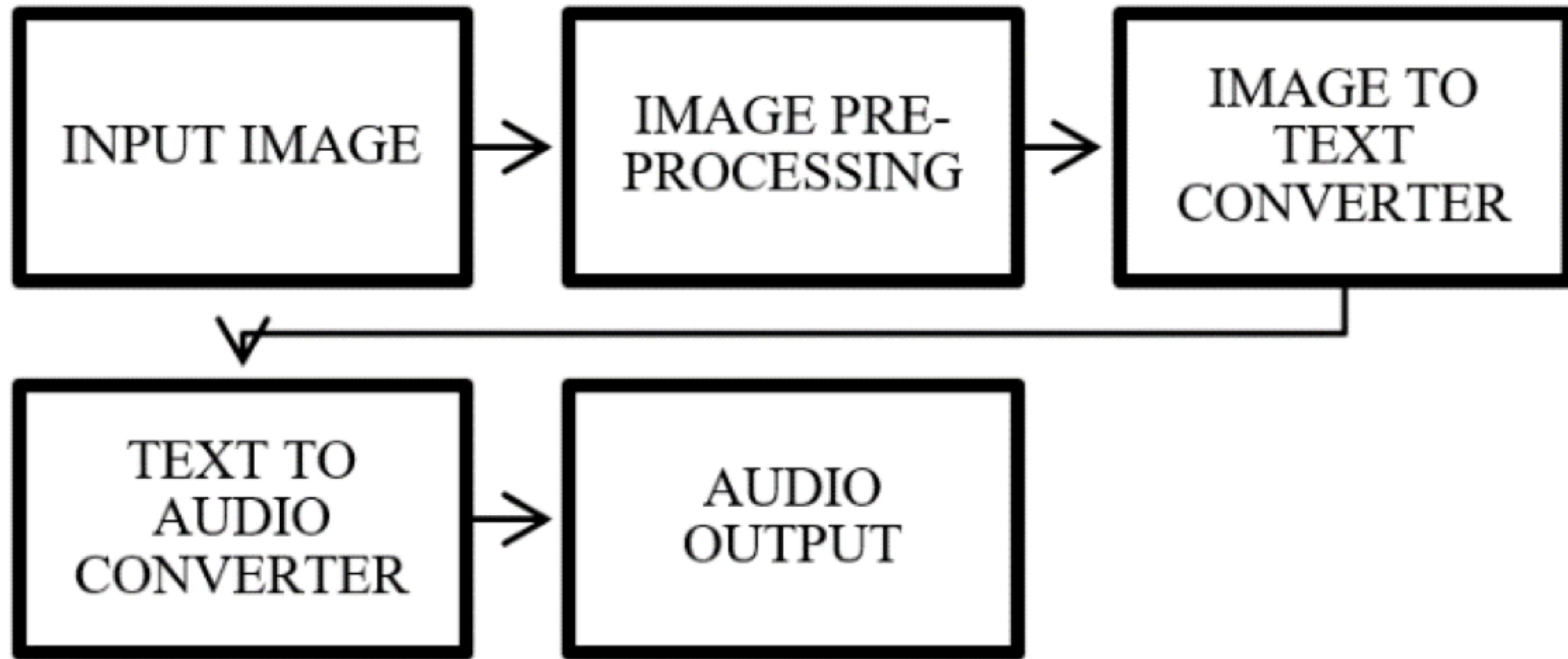
AN OVERVIEW

- The Entire idea focusses on the use of technology to help the visually impaired people lead a life of dignity and knowledge .
- We aim to create an app that enables the people to take an image of the object they want to read , which on being fed to the ocr network gets converted into text.
- This text then gets converted to speech by the text to speech software which would enable the user to listen the text written on the image .





METHODOLOGY

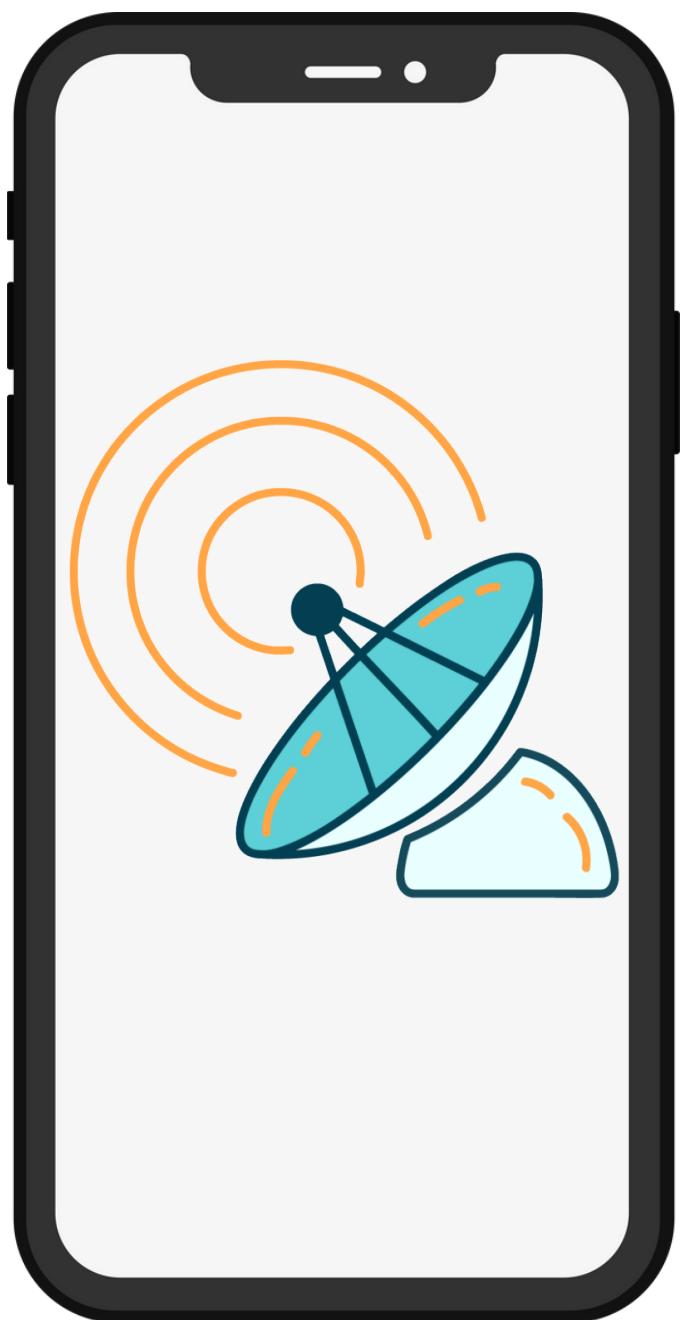


Existing Projects and Novelty

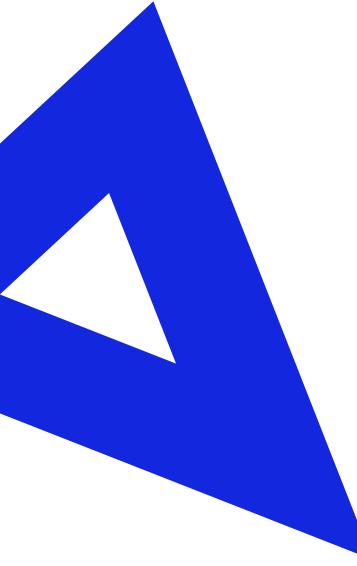
- The portability of our application is one of its most appealing features. As a result, the blind can use them to recognize printed content even if they don't have access to the internet.
- No need to learn braille because one app can accomplish everything.
- The app is free to use.
- The visually impaired user just scans/takes a photo of the written/typed text, which is then shown on screen as well as heard through the app's voice generator.
- One of the features of our software is that it allows users to save documents in pdf format in case they need to listen to them again.
- Some of the existing scanners are lens, OpenScan

A

MODULES USED



C



KNOWLEDGE OF MODULES



Flutter



Lite



Dart



Tesseract OCR
| Python

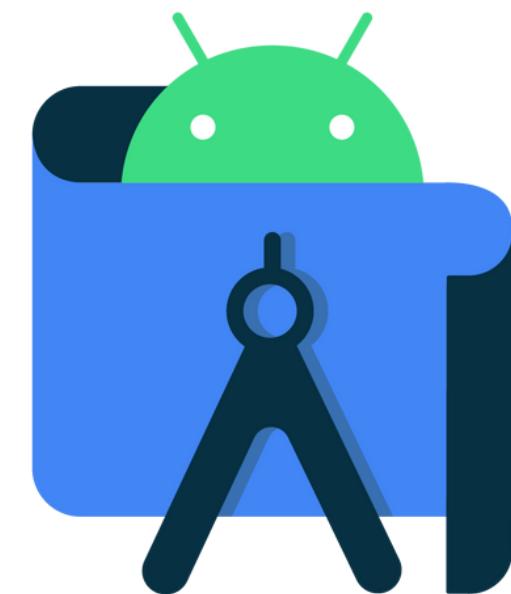
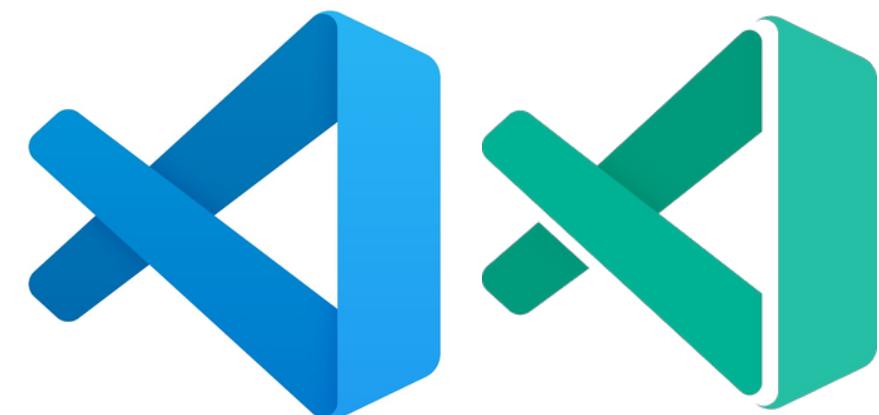


Cloud AutoML Vision



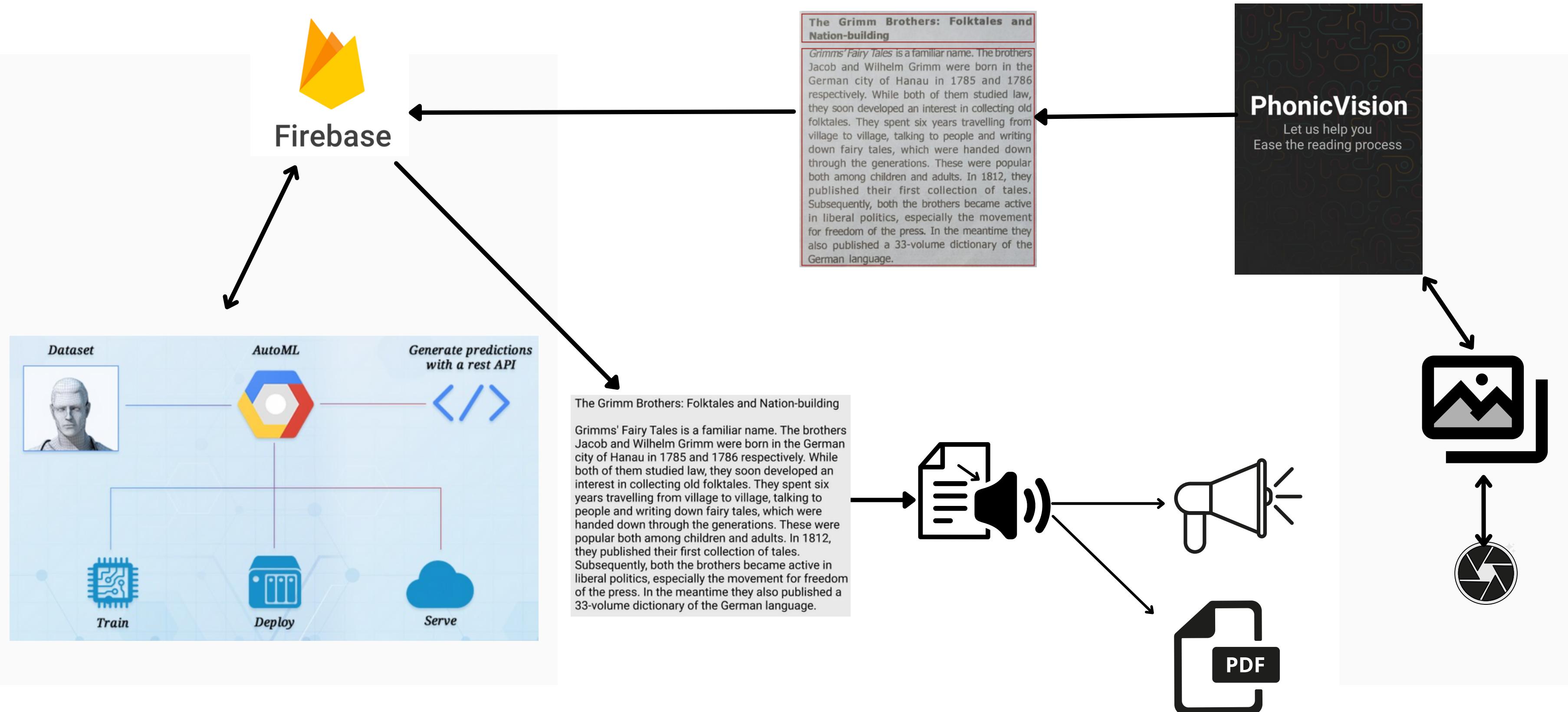
ML Kit

TECH. STACK

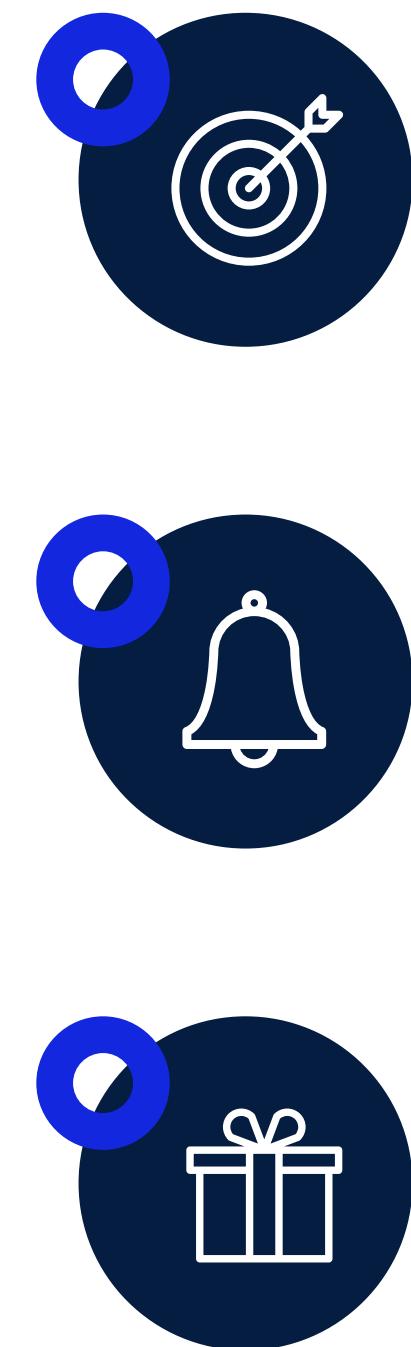


Firebase

Proposed Architecture Diagram



Real Time

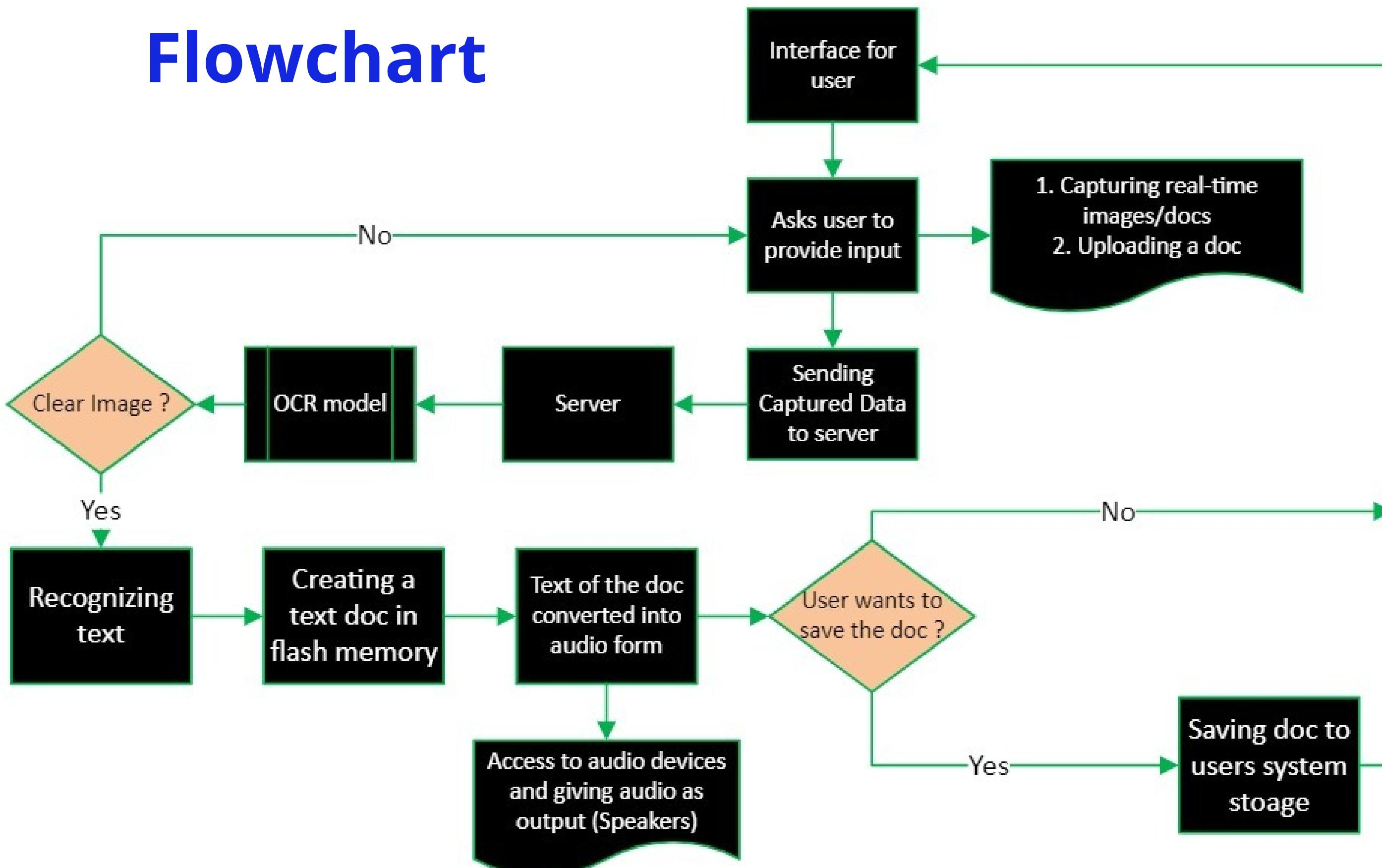


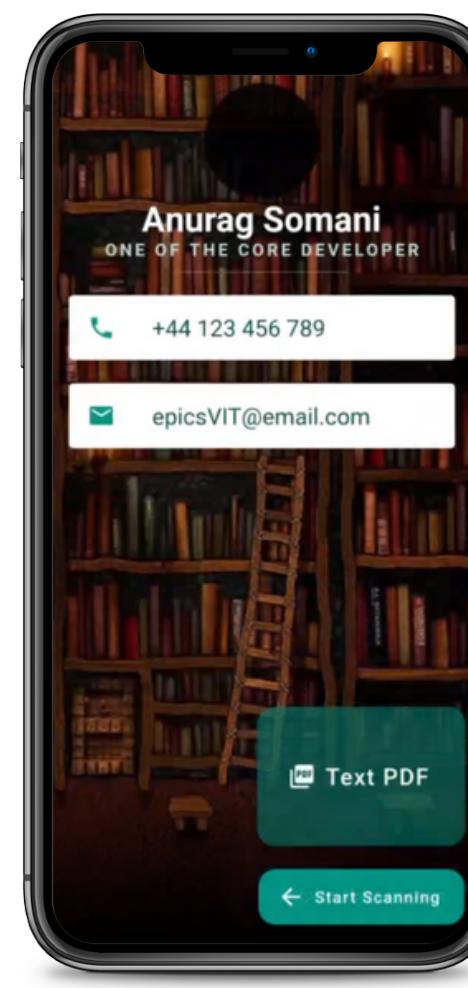
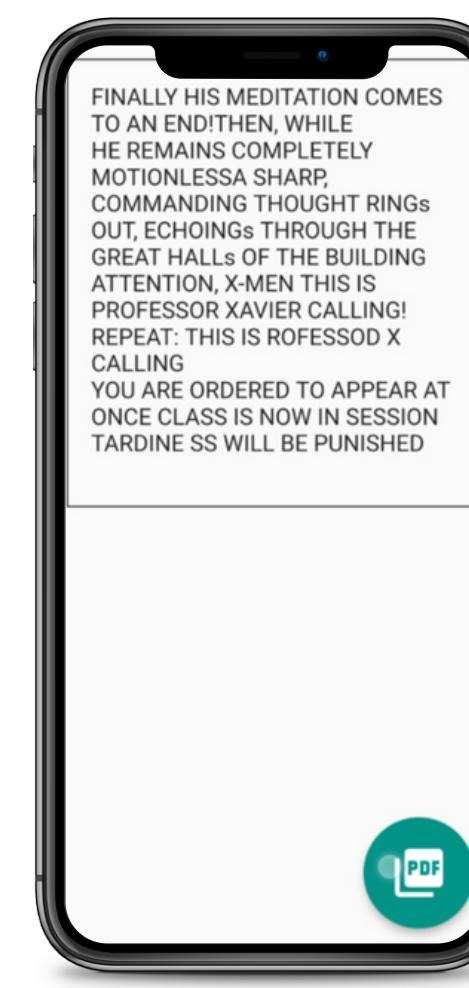
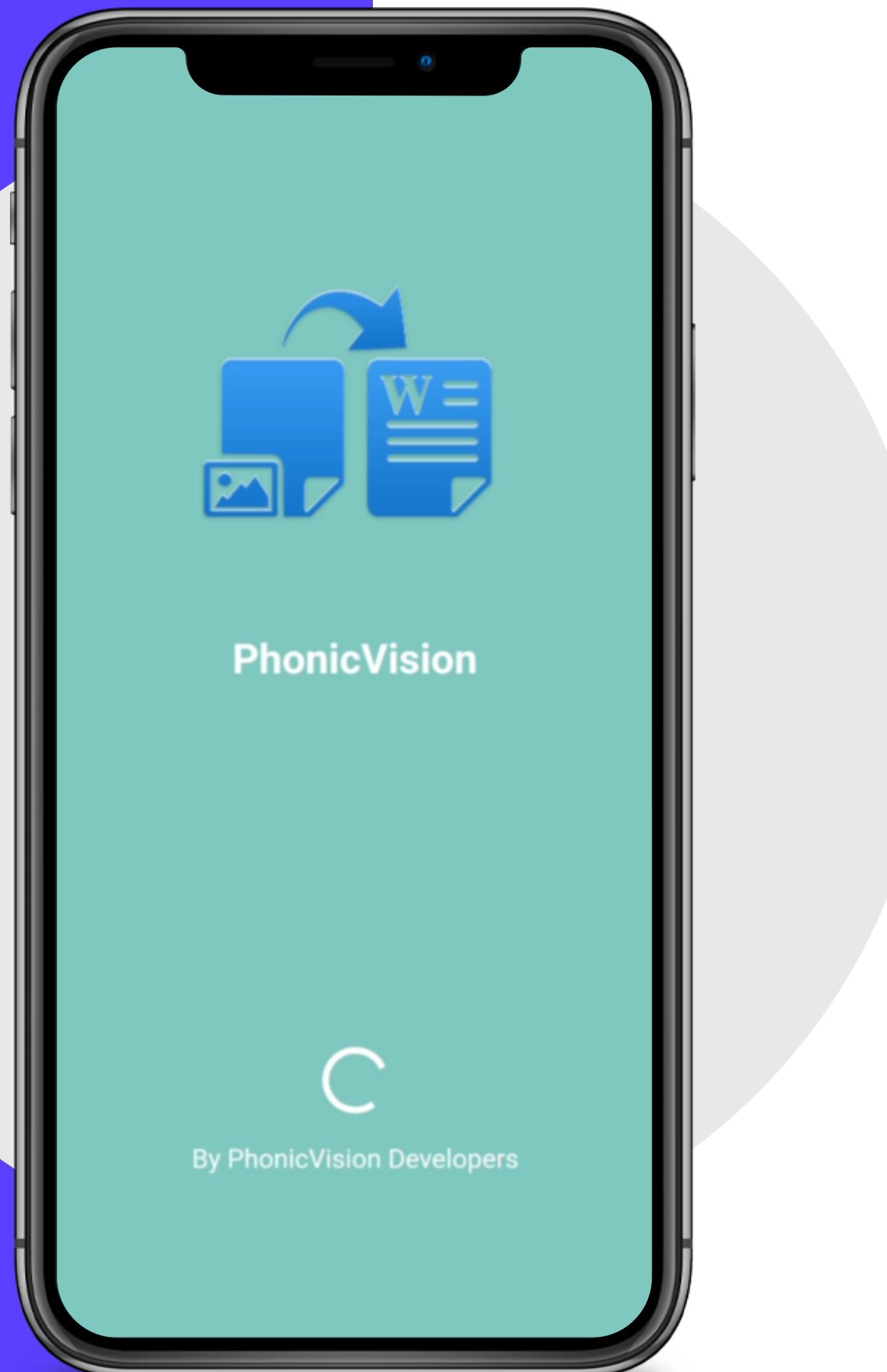
Helping Visually impaired people

Helping read articles/books/print media

Digitize these images, extract and interpret the data by using specific techniques

Flowchart





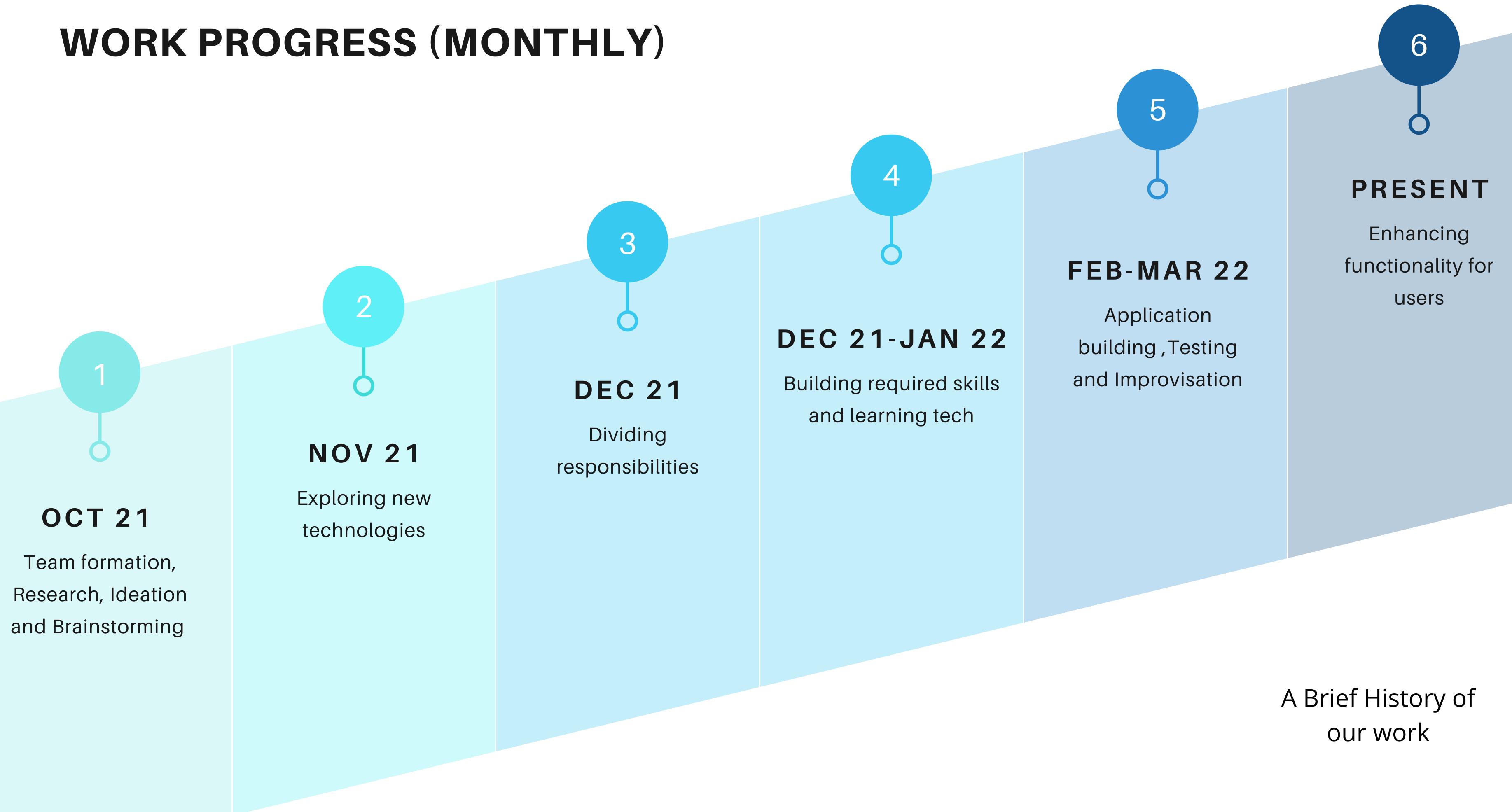
Work Progress

Completed Yet	<i>Each BOLD word represents a page in your Research Report and Board.</i>	
<input type="checkbox"/>	Week 1 & week 2 (started 10 Oct)	Ideation and brainstorming session with idea sorting we narrowed our ideas to one and started concentrating on the idea
<input type="checkbox"/>	Week 3	We started reading research papers to see the possibility of our idea's success and implementation By analyzing the previous year's reports on increasing rate of people facing vision related issues
<input type="checkbox"/>	Week 4 & week 5	We started our research on how the idea could be implemented in more possible and effective ways We came across various methods like – Using an external device for guidance Using a website and enabling a webcam but its not possible Then we came with a solution to implement it on an android solution and using its camera to capture image and work on it
<input type="checkbox"/>	Week 6	We started dividing the teams into two part – - Documentation - Implementation
<input type="checkbox"/>	Week 7 & week 8	We started learning modules like tesseract OCR, deep learning, android development, figma etc.
<input type="checkbox"/>	Week 9	Started documenting the idea

Work Progress

<i>Completed Yet</i>		<i>Each Bold word represents the work topic</i>
<input type="checkbox"/>	Week 11	Finalization of the next upcoming roles and responsibilities and getting started with learning phase.
<input type="checkbox"/>	Week 12	Exploration of the resources for learning and implementation.
<input type="checkbox"/>	Week 15 – Week 19	We started Learning the technologies and finished it with getting some good level experience and also how to debug if stuck with some problem or implementation.
<input type="checkbox"/>	Week 20 – Present	Implementation phase, everything is under implementation phase with parallel research going on as every month a new technology or interface comes out with improved implementation.

WORK PROGRESS (MONTHLY)

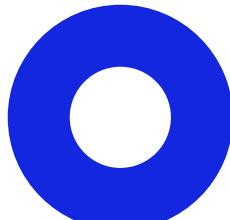


Individual Contribution

Member

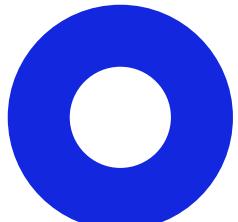
Individual Contribution (Review 1)

<input type="checkbox"/>	Anurag somani 19bcy10090	UI designing, research on android development.
<input type="checkbox"/>	Samarth Patil 19bai10079	Finding optimized algorithm from various research papers.
<input type="checkbox"/>	Vikanksh Gautam 19bai10024	Model implementation
<input type="checkbox"/>	Shashwat Pandey 19bcy10011	Regular project updates with tech research
<input type="checkbox"/>	Ritish Singhai 19BCE10269	Documentation of meetings and finalizing
<input type="checkbox"/>	Kritik Kumar 19BCE10422	Exploration and analysis of possible devices to use for flexibility of application.
<input type="checkbox"/>	Ashutosh Kishan 19BCE10200	Documentation and team coordination



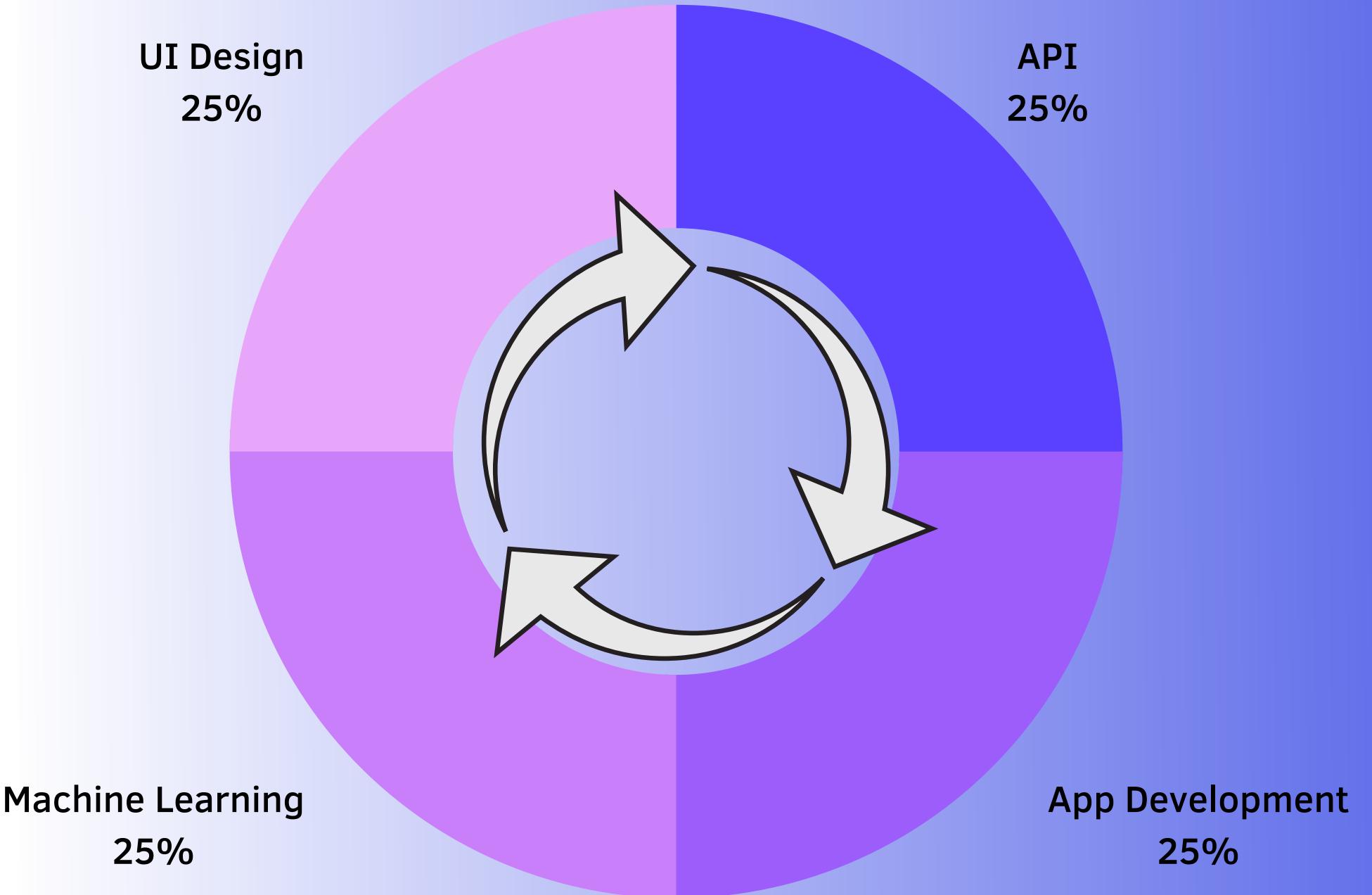
Individual Contribution

<i>Member</i>	<i>Individual Contribution (Review 2)</i>
<input type="checkbox"/> <i>Shashwat Pandey</i>	<i>Integration of OCR and with the Flutter and Dart</i>
<input type="checkbox"/> <i>Vikanksh Gautam</i>	<i>Worked on OCR model and OpenCV</i>
<input type="checkbox"/> <i>Shrirang Alias Samarth Patil</i>	<i>Text manipulation and its conversion into Audio form.</i>
<input type="checkbox"/> <i>Anurag Soman</i>	<i>Firebase and manage Accessibility features</i>
<input type="checkbox"/> <i>Kritik Kumar</i>	<i>Interface available with R&D</i>
<input type="checkbox"/> <i>Ashutosh Kishan</i>	<i>User Convenience and UI colour integration.</i>
<input type="checkbox"/> <i>Ritish Singhai</i>	<i>Smooth interaction both in dark and light mode</i>



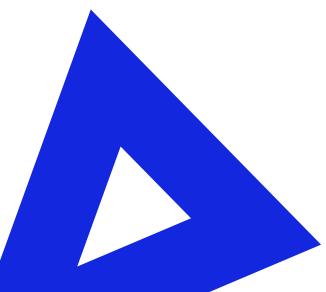
Development Cycle

Our project can be divided into Four classes, these are interrelate to each other



Outcome

We have successfully made a user-friendly application that can convert text to speech in the most effortless way possible. Also, it aids the visually challenged group of society to comprehend any text in an image.

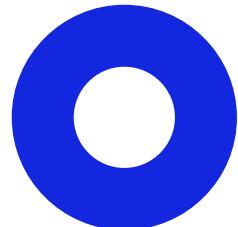
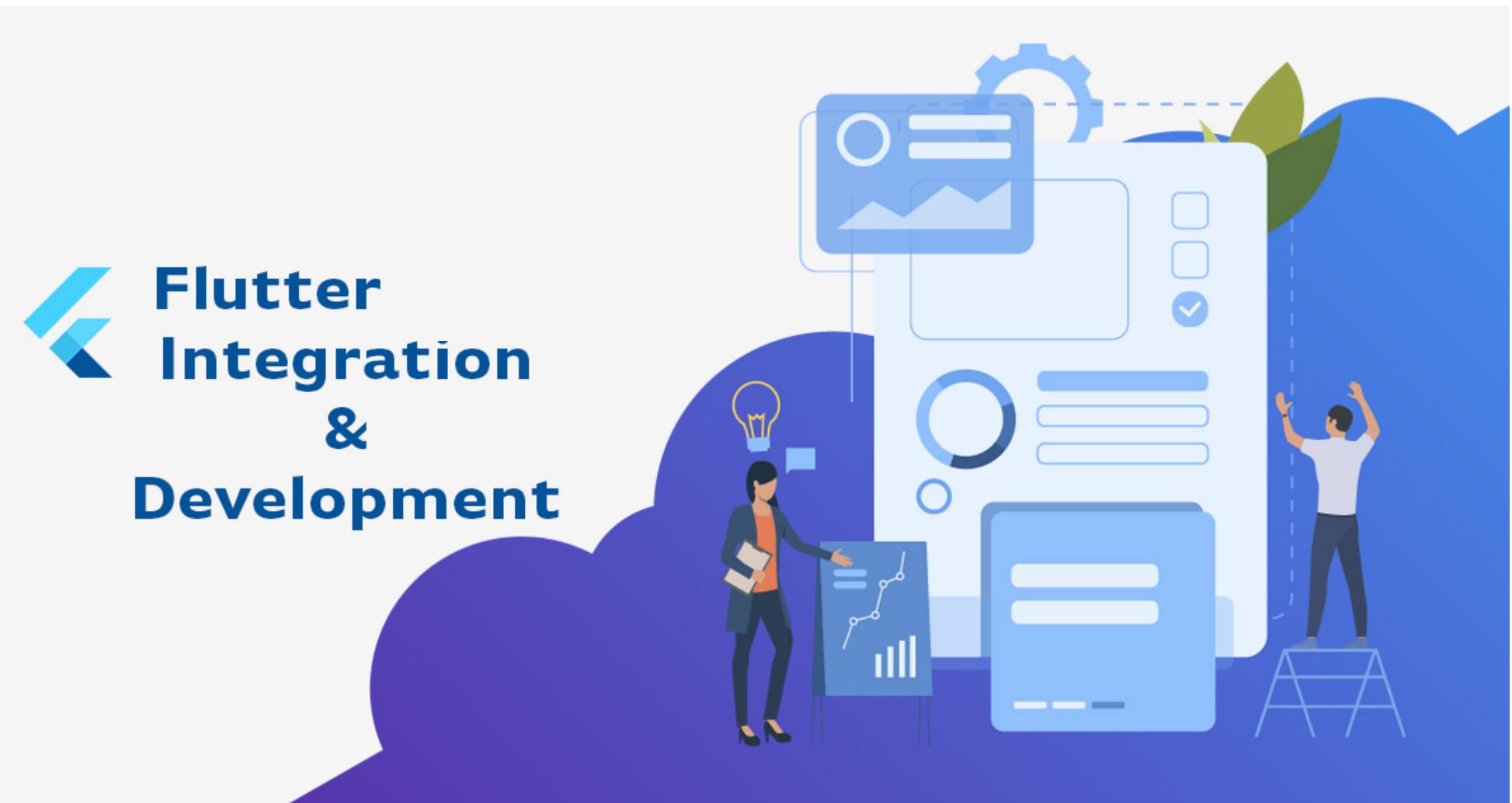


Individual Contribution

Shashwat Pandey

19BCY10011

Module integration of OCR to Speech to our mobile application using flutter framework and dart language.



Individual Contribution

Vikanksh Gautam

19BAI10024

Building OCR model and working with OpenCV for image processing and text extraction.



Individual Contribution

Shrirang Alias Samarth Patil

19BAI10079

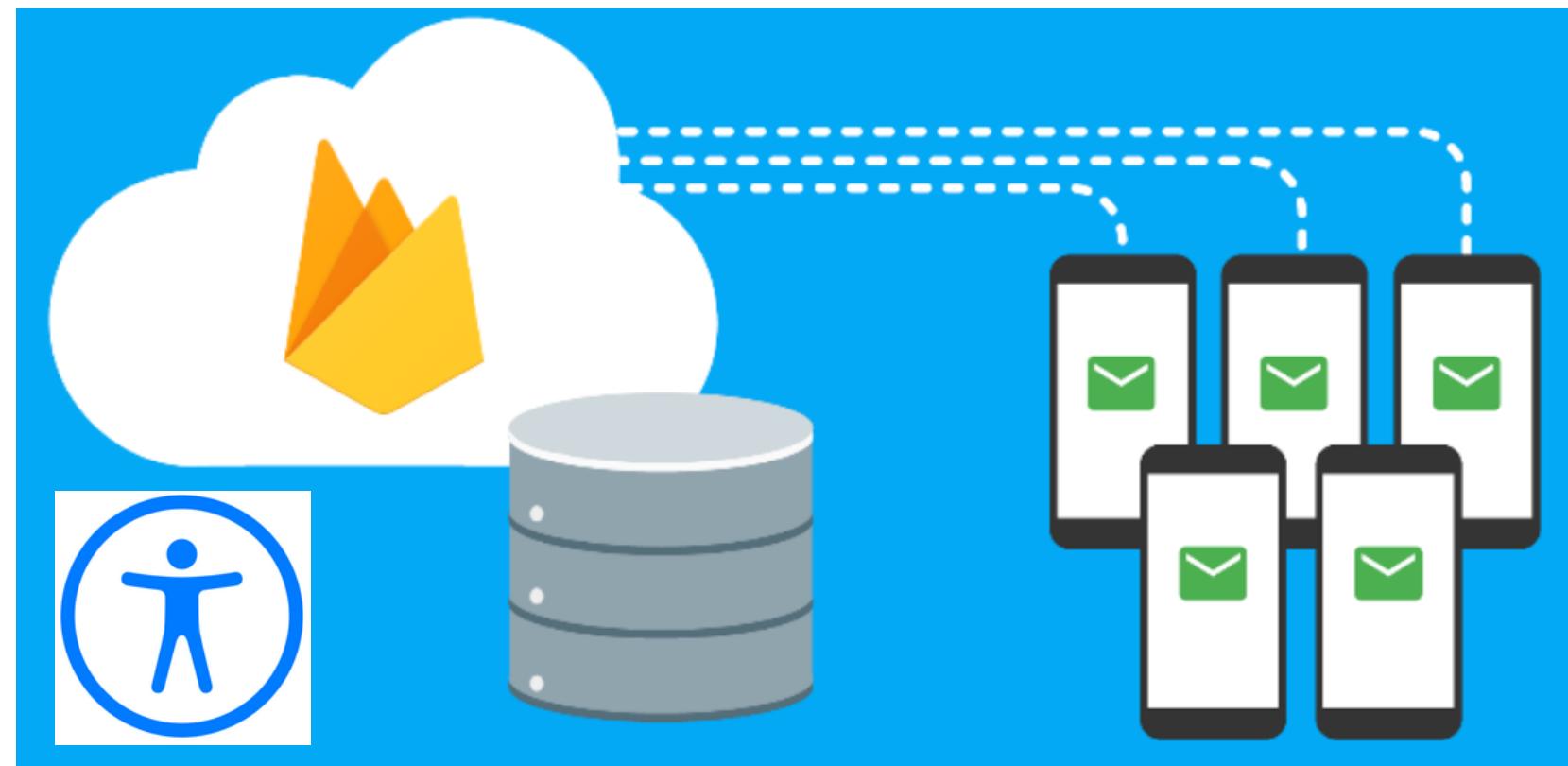
OCR model feature extraction for extracting text and working on text manipulation for its conversion into audio form.



Individual Contribution

**Anurag Somanı
19BCY10090**

*Handling flutter data in firebase and
implementing accessibility features in the
application with testing.*



Individual Contribution

Kritik Kumar

19BCE10422

Updating the application with latest feature or interface available with R&D and handing the social, economic, environmental and technical feasibility and implementation.

Research and Development (R&D) Types

Basic Research

Theoretical to any subject.



Applied Research

Formulated to solve a practical pr



Development Research

Combination of applied and basic rese



Individual Contribution

**Ashutosh Kishan
19BCE10200**

*Working on the essentials of the features
to be provided by the user for
convenience and UI colour integration.*



Individual Contribution

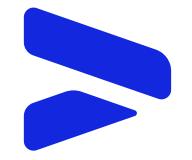
**Ritish Singhai
19BCE100269**

*UI development for one hand modes,
mistouch prevention and smooth
interaction both in dark and light mode.*



References

- <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.418.8328&rep=rep1&type=pdf>
- https://www.researchgate.net/publication/275961177_Optical_Character_Recognition_Based_Hand-Held_Device_for_Printed_Text_to_Braille_Conversion
- <https://easyscreenocr.com/convert-image-text-to-speech-for-free/>
- <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.228.338&rep=rep1&type=pdf>
- <https://www.psychosocial.com/article/PR2020134/20111/>
- <http://www.ijlret.com/Papers/Vol-3-issue-6/2-B2017160.pdf>
- <https://nanonets.com/blog/ocr-with-tesseract/>



PhonicVision

Thank you!

