

# Visvesvaraya Technological University

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A Project Work Phase-II (17CSP85)  
Report on

## “BE MY BOOK”

*Project Report submitted in partial fulfilment of the requirement for the  
award of the degree of*

**BACHELOR OF ENGINEERING**

IN

**COMPUTER SCIENCE AND ENGINEERING**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

**K. S. Institute of Technology**

#14, Raghuvanahalli, Kanakapura Road, Bengaluru - 560109

2020 - 2021

# K. S. Institute of Technology

#14, Raghuvanahalli, Kanakapura Road, Bengaluru - 560109

## Department of Computer Science & Engineering



**KSIT**  
K. S. INSTITUTE OF TECHNOLOGY

### CERTIFICATE

Certified that the Project Work Phase-II (17CSP85) entitled “**Be My Book**” is a bonafide work carried out by:

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in partial fulfilment for VII semester B.E., Project Work in the branch of Computer Science and Engineering prescribed by **Visvesvaraya Technological University, Belagavi** during the period of January 2021 to July 2021. It is certified that all the corrections and suggestions indicated for internal assessment have been incorporated. The Project Work Phase-II Report has been approved as it satisfies the academic requirements in report of project work prescribed for the Bachelor of Engineering degree.

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**DECLARATION**

We, the undersigned students of 8th semester, Computer Science & Engineering, KSIT, declare that our Project Work Phase-II entitled “Be My Book”, is a bonafide work of ours. Our project is neither a copy nor by means a modification of any other engineering project.

We also declare that this project was not entitled for submission to any other university in the past and shall remain the only submission made and will not be submitted by us to any other university in the future.

Place: *Bangalore*  
Date: *23/7/2021*

<b>Name and USN</b>	<b>Signature</b>
AMOGHA MANJUNATHA K (1KS17CS006)	<i>Amogha K M</i>
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## Chapter 1

# INTRODUCTION

### 1.1 Overview

Reading is a part of everyone's life. We read almost every day from morning while reading a newspaper to night while reading our favourite book. So our proposed model helps the visually impaired person to read any book or document via voice commands. The introduction of an automatic turner and scanner makes this model more sophisticated. It makes use of a new style of scanning the document or book, where the scanner captures all the images of the pages in a book while the turner continuously turns through the pages of a book. The proposed model turns the pages of a book by using a suction pump which works along with a slider to turn exactly one page to the other side of the book. We use the concept of Optical Character Recognition (OCR) to extract the text of the images which are captured and Text to Speech Synthesizer (TTS) to convert the extracted text to speech. The application provides information on every screen appearing to the user in audio format, including a navigation control system that gives the control to the user to read the book in an interesting way, and many more features like authentication and user manual.

### 1.2 Purpose of Project

According to WHO, there are 2.2 billion people who have near or distance vision impairment. Many intelligent systems have been introduced by our scientists to assist visually impaired people in difficult ways. This encourages them to actively involve themselves with others, for instance, the braille method is used for reading and writing. Also, the white cane (a commonly used mechanical device), is a travel aid for visually impaired people, which helps them to avoid obstacles by detecting obstacles in front of them. There are many pdf readers available for people to listen to. But unfortunately, these pdf readers cannot be used by visually impaired people.

Suppose when a visually impaired person wants to read a physical book and it is not available in audio format, which is true for most cases, then he/she needs to get help from a third party to read it. To avoid these inconveniences incurred we propose a suitable model which will assist visually impaired people to read a book without any human assistance.

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The proposed model comprises an Automatic Page Turner and Scanner, which turns the pages of the book and simultaneously scans it. The scanned book is stored as images and transferred to the Android Application. Then OCR and TTS play is used in converting the captured images to speech. This leaves an impression to the visually impaired person that a human is reading the book for him/her. Then the concept of Speech Recognition is used to implement the VoiceOver- friendly Navigation Control in our application. The controls include capturing the voice input/instruction, and conversion from voice data to text, processing the text using grammar and semantics and relaying the processed output to the user via audio. The Voice Over Friendly Navigation Controls includes options like START, STOP, PAUSE, RESUME, CHANGE VOICE and many other commands. It works according to the voice input taken from the user. The application also provides the facility to search for the desired book, and if present on the internet, it downloads it in our application, hence avoiding the necessity of scanning the Book. Hence this model helps the visually impaired person to hear the book in an interactive way.

### **1.3 Scope of the project**

The scope of this project is as follows:

- 1) Automatic Page turner and scanner is built to turn the pages of the book and scanner to scan the respective pages.
- 2) Android Application is built to save the captured images in the folder and provides a voice-over friendly navigation system to navigate through the book of interest.
- 3) Voice assistant is built to act as an interface between application and user.
- 4) To achieve the best accuracy for english language during text extraction and page-turner during page-lifting.
- 5) To build a user-friendly application.
- 6) To make the device as fully automated as possible and try to work without any third party intervention.

### **1.4 Definitions**

#### **1.4.1 Automatic page turner**

An automatic page turner can be used as a really helpful device for people who suffer from disabilities and also includes people whose upper-body function is limited due to their disabilities. A page turner can be useful for enthusiastic readers as it provides suitable support

for their books and also includes page turning features. The pages of the book will be turned automatically by the turner once it is switched on by the user.

### **1.4.2 Automatic Page Scanner**

An automatic page scanner is really useful in scanning or capturing a document or text picture, digitizing the information which has been captured and making it available on any device without causing any human interruption. Here it takes the pictures of the pages of a book which are turned by the turner.

### **1.4.3 Android Application**

Android App is a software which is designed for an Android device or emulator. It also refers to an Android package which is abbreviated as APK. This file is actually a Zip archive which contains details about the application code, meta information and resources. Languages used to build the Android apps can be Kotlin, Java, C++, and Angular. They are then run inside Virtual Machine. Our android application takes voice commands from the user and acts as an interface between scanner and page turner.

### **1.4.4 Google Vision API**

The Google Cloud Vision API permits the developers who use it to easily combine vision detection features within applications, can also include labeling the images, detection of face and landmark, optical character recognition (OCR), and tagging of explicit content. We use Google vision api for text extraction, text-to-speech conversion and speech-to-text conversion.

### **1.4.5 Google Cloud Vision OCR**

Google Cloud Vision OCR is part of the Google cloud vision API which is used to extract text from images. To extract texts from any image and then output the machine-encoded texts Text\_Annotation is used (e.g., photos of street views or sceneries). It was initially designed to be used under any lighting conditions. This model is in some sense more robust in reading words of different styles, but only at a more sparse level. It returns a JSON file which includes the entire strings, individual words and their corresponding bounding boxes.

### **1.4.6 Google Cloud Text-to-Speech**

Text-to-Speech is used to create natural-sounding, synthetic human speech as playable audio. Using Text-to-Speech we create audio data files, which help developers to power-up the applications or augment media like videos or audio recordings. Text-to-Speech converts Speech Synthesis Markup Language (SSML) or text input into audio data like LINEAR16 or MP3.

#### **1.4.7 Google Speech-to-Text**

Another part of Google Vision API is Speech-to-Text which enables developers to easily integrate Google speech recognition technologies into the on-premises solution. As the API processes the audio input stream from our application's microphone or sent from a pre-recorded audio file, it can take real-time voice commands .

#### **1.4.8 Ionic**

Ionic is an open-source UI toolkit which helps in building high-quality desktop applications, mobile applications, and progressive web applications. Web technologies such as HTML, CSS, and JavaScript are used to create high-quality cross-platform applications. The main focus of ionic is front-end user experience or UI interaction, which helps developers to create a good look and feel of the application. Ionic can integrate with other libraries or frameworks such as Angular, React, Cordova, etc., and it is very easy to learn .

#### **1.4.9 Apache Cordova**

Apache Cordova is an open-source framework, which allows developers to use HTML, CSS, and JavaScript to create a native application for different mobile platforms. The native features of an application, such as camera, video recording, audio feature, location access, etc. can be accessed using cordova. It also allows us to integrate a lot of different plugins in our application to fulfill all the requirements.

#### **1.4.10 Anjular.js**

Angular.js is basically used to build applications which helps to reuse the code. It has the ability to build applications for any deployment target such as web, mobile web, native mobile and native desktop.

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## Chapter 2

### LITERATURE SURVEY

Yoshihiro Watanabe had developed an Automatic page-turner which is used for turning books at very high speed. It can turn the pages at very high definition at over 250 pages/min using the original media format. This system has been in practical use since 2013[1]. Ellaine Abueg has developed a switch-activated page-turner that has two gear motors of which one activates the page-lifting arm while the other activates the timing belt controlled wiping arm[2]. Daniel Reetz has developed the Big Finger Little Finger scanner prototype. It uses one rod with an eraser at the end to push the page (and possibly separates it) and then another rod near the spine of the book pushes the page over, then a picture is taken. The book lies in a V-shaped stand[3]. Treventus presents ScanRobot which pulls both facing pages to a document scanner bar that then lifts up and scans the pages. They are then both swept in one direction, turning the page and allowing the device to scan another pair[4]. The Page Flipper is a cost effective, simple device that can flip pages of a book one page at a time in both directions which was visualized by Bhavingawali[5]. Google developers proposed a method to search for a book on the internet and download it[6]. Clem has proposed a method for Sending images from Raspberry Pi to Android Applications with code[7]. Dominic Mazzoni proposed a method to describe the images to visually impaired people using AI[8]. Voice commands were used in the development of a prototype at the digital library of the Department of Mathematics in Usmanu Danfodiyo University, Sokoto for reading books[9]. N Bano worked on an Automatic Page scanner to preserve the books and documents using digitalization[10]. S Venkateswarlu worked on Text to Speech conversion which used an innovative method that helps the user to hear the contents of text images instead of reading through them. It makes use of OCR and TTS in Raspberry pi[11]. Kaz Sato designed a method for converting PDF to Audiobook using machine learning[12]. Aditya Dhapola in his article introduced a method for voice recognition to perform tasks done on a daily basis[13]. Bashier Suliman Elbashier Ahmed and Huwaida Tagelsir Elshoush had worked on Biometrics Solutions for Visually impaired persons in their Conference Paper[14]. Mandeep Singh Kandhari developed Voice-controlled E-Commerce Web Application[15]. Scan.it web application is a Natural Language Processing based system that is used for text recognition. The code was implemented using Node.js. Tesseract OCR is used to recognize the text and ImTranslator is used to translate this extracted text to speech[16].



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## Chapter 3

# SYSTEM REQUIREMENT SPECIFICATION

A software requirements specification (SRS) is a detailed description about what a software will be doing, on what factors and how the software will be expected to perform when they are under the development phase. It specifically provides the requirements which are essential to fulfil the customer needs before the design begins. It thus minimises the redesign of the software which is to be built.

The SRS document gives a list of all the important requirements that are utterly required for the purpose of project development. Having a complete knowledge about the products which are being developed is utterly important in order to extract the requirements. This is made possible with detailed and uninterrupted communications with the customer along with the project team until the software is fully developed, tested and deployed. There should not be any chance of miscommunication among the customer and the project team while taking requirement lists from the customer.

### 3.1 Developer Requirements

#### 3.1.1 Hardware Requirements

We use the following hardware requirements for building Automatic page-turner :

- Atmega48 development board
- HC -05 development
- DC motor
- Page Suction module
- Relay Module
- LCD

Regular hardware specifications as mentioned below:

- Processor: Intel i5 2nd generation and above
- RAM : 8GB
- Hard Disk : 500GB

#### 3.1.2 Software Requirements

We use the following software requirements:

- Coding Language: Angular.js
- Framework : Ionic, Cordova
- Tools used: Android Studio, Visual studio Code
- Operating System: Windows 7 and above

### **3.2 End User Requirements**

The end user needs the following requirements:

An android mobile above version 7 with a good quality camera.

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## Chapter 4

### DESIGN

Systems design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development.

The proposed model comprises an Automatic Page Turner and Scanner, which turns the pages of the book and simultaneously scans it. The scanned book is stored as images and transferred to the Android Application. Then OCR and TTS play is used in converting the captured images to speech. This leaves an impression to the visually impaired person that a human is reading the book for him/her. Then the concept of Speech Recognition is used to implement the VoiceOver- friendly Navigation Control in our application. The controls include capturing the voice input/instruction, and conversion from voice data to text, processing the text using grammar and semantics and relaying the processed output to the user via audio. The Voice Over Friendly Navigation Controls includes options like START, STOP, PAUSE, RESUME, CHANGE VOICE and many other commands. It works according to the voice input taken from the user. The application also provides the facility to search for the desired book, and if present on the internet, it downloads it in our application, hence avoiding the necessity of scanning the Book. Hence this model helps the visually impaired person to hear the book in an interactive way.

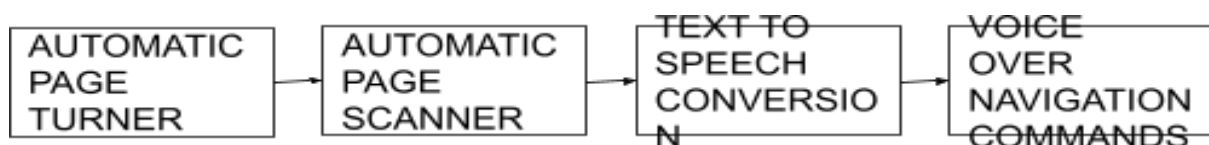


Figure 4.1: System Design

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## Chapter 5

# IMPLEMENTATION

The steps involved in the methodology are as follows:

- The user has to keep a physical book near the Automatic page turner and turn on the device and have to issue the command “OPEN CAMERA” to open the scanner (camera module) in the application.
- Automatic page-turner will start to turn exactly one page and send a raw signal to the android application.
- Camera will start taking the pictures of the book and save the images in the form of a folder in the android application.
- OCR is used for text extraction and text to speech is implemented to convert image to speech.
- Users can give different voice commands to navigate through the book of interest.

There are total four Modules:-

### 5.1 Turning and Scanning Module

The proposed prototype for automatic turner consist of these components:

#### 1. Atmega48 development board



**Fig 5.1.1: Atmega48 Board**

This board consists of AVR based atmega48 microcontroller which works as the main control board for all Operations in our Turner.

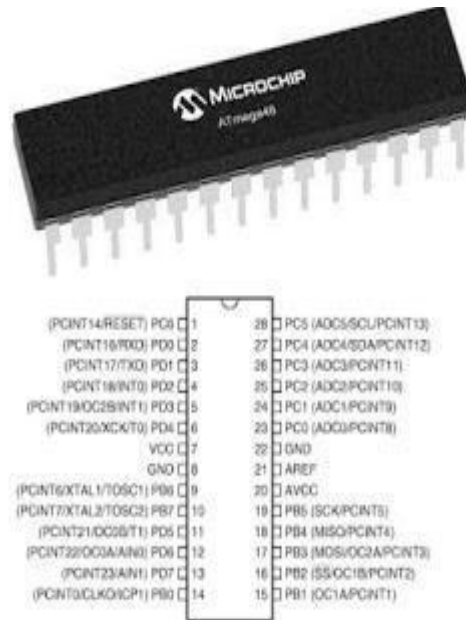


Fig 5.1.2 Microchip components

## 2. HC -05 development

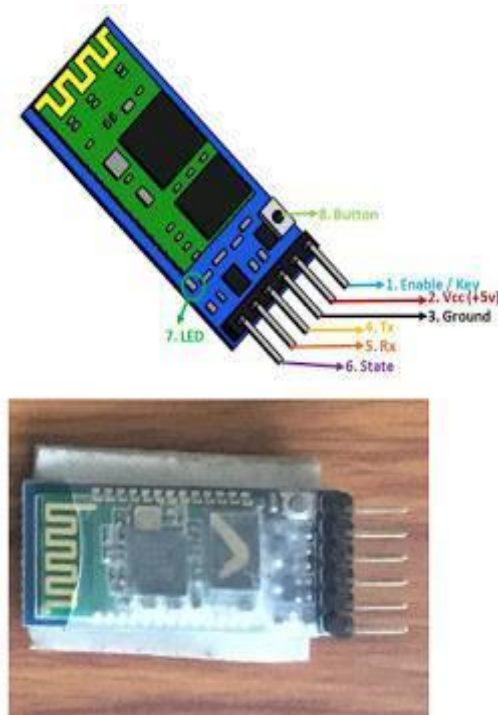


Fig 5.1.3: HC-05 development

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### HC-05 Technical Specifications

- This is the bluetooth module used in Turner to send raw signals to the application that it has finished turning the page.
- Operating Voltage: 4V to 6V (Typically +5V)
- Operating Current: 30mA Range: <100m
- It is TTL compatible
- Follows IEEE 802.15.1 standardized protocol
- Uses Frequency-Hopping Spread spectrum (FHSS)
- Can operate in Master, Slave or Master/Slave mode
- Can be easily interfaced with Laptop or Mobile phones with Bluetooth
- Supported baud rate: 9600,19200,38400,57600,115200,230400,460800.

### 3. DC motor

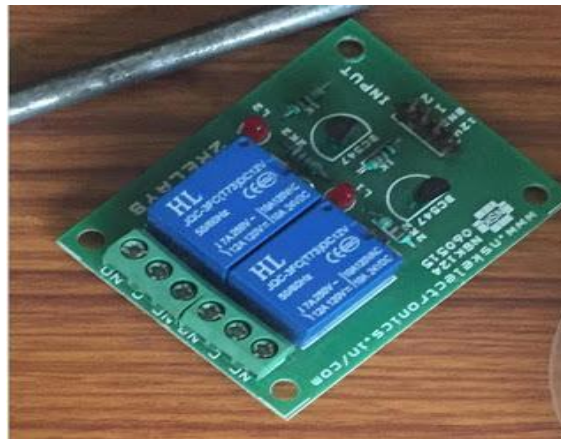


**Fig 5.1.4: DC Motor**

### DC MOTOR Technical Specifications

- The metal gears have better wear and tear properties.
- Gearbox is sealed and lubricated with lithium grease and requires no maintenance.
- The motor runs smoothly from 4V to 12V and gives a wide range of RPM, and torque.
- Operating Voltage(V): 12
- Rated Torque(kg-cm): 5
- Stall Torque(kg-cm): 18.8

#### 4. Relay Module



**Fig 5.1.5: Relay Module**

Relays are switches which can open and close the circuits electro mechanically or electronically. Relays open and closes contacts to control one electrical circuit in another circuit. Normally when a relay contact is open (NO), then the relay is not energized as there is an open contact. Normally when a relay contact is Closed (NC), then the relay is not energized due to closed contact. Therefore in both the cases there is a change in state when electric current is applied to the contacts.

#### 5. LCD



**Fig 5.1.6: LCD**

The LCD which has 16 connectors uses a HD44780 controller. These devices give the same pinout as the controller which makes us work with it easily. The LCD uses a parallel interface hence it needs many connections to connect with the Raspberry pi. Here we are using 4 data pins and 2 control pins. Here we are using LCD to only display data and hence only read mode is enabled.

The register select pin has two uses. When it is pulled low it we can either clear the screen or specify the number of characters to move.. This function is called as writing to Instruction. When it is pulled high the register select pin goes into a data mode and will be used to send data to the screen.

The read/write pin will be pulled low as we only want to write to the LCD based on this setup. The enable pin will be toggled to write data to the registers.

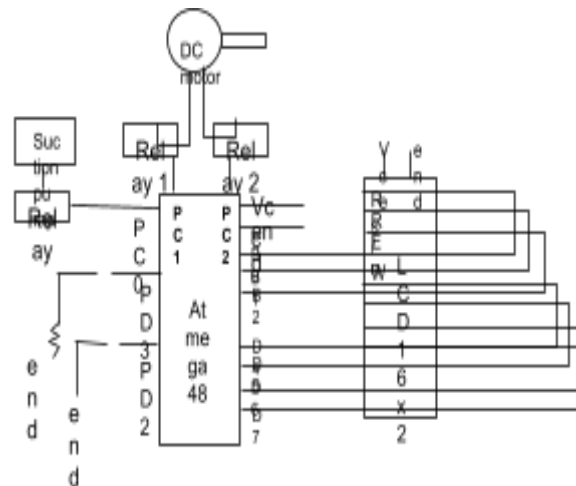
### LCD Pinout

1. Ground
2. VCC - 5v not 3.3v
3. Contrast adjustment (VO) from potentiometer
4. Register Select (RS). RS=0: Command, RS=1: Data
5. Read/Write (R/W). R/W=0: Write, R/W=1: Read
6. Clock (Enable). Falling edge triggered
7. Bit 0 (Not used in 4-bit operation)
8. Bit 1 (Not used in 4-bit operation)
9. Bit 2 (Not used in 4-bit operation)
10. Bit 3 (Not used in 4-bit operation)
11. Bit 4
12. Bit 5
13. Bit 6
14. Bit 7
15. Backlight LED Anode (+)
16. Backlight LED Cathode (-)

Before wiring the setup we need to check whether the LCD has LED backlight and not EL Backlight. LED backlights use 10-40mA of power, EL backlights use 200+ma. EL backlights are cheaper compared to LED Backlights but the only disadvantage is it overloads the Pi hence we are not using it. And make sure that your LCD has a resistor by connecting to a 1k Ohm resistor between pin 15 and 5V instead of connecting directly.

To begin with the process of the automatic page-turner, the first step for the user is to place the book on the rectangular slab and turn on the switch on the turner. . The page suction motor rests on the book and it sucks exactly one page at a time. Later the slider which is connected to the DC motor slides the page to the other side completely and turns one page at a time without causing any damage to the page or the book.





**Fig 5.1.7: Circuit diagram of Automatic Turner**

Above is the circuit diagram of the page-turner. This board consists of an AVR based Atmega48 microcontroller which works as the main control board for various operations. We have used an LCD to tell the user whether the turner is switched on or not. Two Relay modules are used where one is connected to the Atmega48 board and another to the DC motor to control the current flow between the components.

The current provided to the DC motor is 12 volts and that has been converted to 5 volts by the Relay Module to run the turner. Thus, the current flow between the components is 5 volts. DC motor is connected to the slider and a page suction motor, where the motor will suck exactly 1 page at a time and after that turner slides that particular page. After a page is turned, a raw signal is sent to our android application. This process is achieved by using the HC-05 Bluetooth module. Once the raw signal is received by the android application, the camera module will capture the respective page in regular intervals. Time taken to turn exactly 1 page is fixed to 10 seconds.

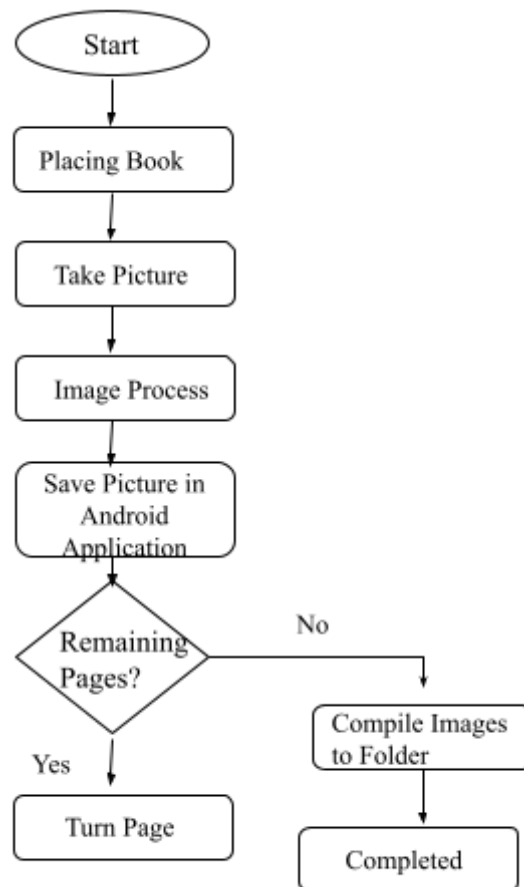


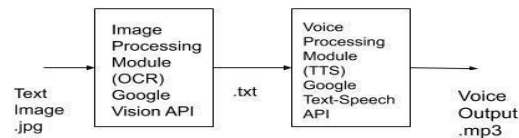
Fig 5.1.8: Process flow of Scanner and turner

## 5.2 Saving Images in Android Application

After images have been captured by the android application, it compiles these images in the form of a folder and saves them in our application. Once the folder is successfully stored, the application then gives the notification to the user saying “<BOOK\_NAME> successfully saved”. Book’s folder is saved using the “SAVE AS <Book Name>” command which is taken from the user.

## 5.3 Image and Voice Processing Module

The main goal of this module is to convert the given text to speech[11] format. The input given to our application is an image of a page of a book. First, the text is extracted from the image using Optical Character Recognition (OCR), which is a process that is used for converting printed text images into editable text for further processing.



**Fig 5.3.1: Block diagram of the text-to-speech module**

The image processing module converts the image into text. A plugin known as Google OCR and Google Text-to-Speech is used here. The voice processing module changes the extracted text into sound. This sound is further processed with few specific physical characteristics so that it can be understood. OCR or Optical Character Recognition is a technology that makes use of optical mechanisms to automatically recognize the character. This technology imitates the ability of the human senses of sight, where the camera replaces the human eye and image processing acts as a substitute for the human brain, which is done in the computer engine. The Google Cloud Vision API[12] can detect and transcribe text from PDF and TIFF files. Vision API uses OCR to detect text (in more than 50 languages) within images and various file types. It is also a part of an AI document, which allows one to process pdfs to text accurately.

For converting the extracted text into speech we are using Google Text-to-Speech API. Text-to-Speech is used to create raw audio data of natural human speech, i.e. the audio that creates sounds as if a person is talking. Google Text-to-Speech API uses a technology called WaveNet to produce very lifelike voices. This API supports lots of voices and languages which helps the user listen to the book in their desired language. For the English language, we achieved 97% accuracy in the text extraction process.

## 5.4 Voice Over Friendly Navigation Module

Voice recognition technology[13] is one of the emerging technologies in the world today, as it provides easy interaction between the developed systems and the users. Input to the computers can be given as voice commands. These kinds of voice commands are suitable alternatives to conventional hardware devices such as mouse and keyboard interactions. This also provides the most natural way of communication with computer systems. In this paper, we have come up with a convenient method to assist visually impaired people to read books using voice-based navigation systems. The incorporation of voice-based navigation systems enabled users to avoid the usage of mouse and/or keyboards and to make use of voice commands to find and navigate through any kind of book that interests them.

Google Speech to Text API is used to take voice input from the user, divide the text into broken words and understand the words and give the output to the user. So a plugin known as Speech Recognition is used. Here the user is interacting with the application using a voice assistant(Speech Recognition Dialog). Voice assistant takes different voice commands from the user, interprets them and gives the user the output.

The Speech Recognition Dialog is opened when the user touches anywhere on the screen and can give the desired commands given in the next module and hence the application acts accordingly. The Speech Recognition Dialog is active for 6 seconds. And, if the narration of the command from the user is delayed for 3 seconds then the Speech Recognition Dialog will be closed and the user should give the command once again.

#### 5.4.1 Voice Over Friendly Navigation Controls

COMMANDS	DESCRIPTION
SAVE AS<BOOK_NAME>	The App saves the book with a given BOOK_NAME.
OPEN <BOOK_NAME>	The App opens the book with a given BOOK_NAME.
START	The App starts reading from the first line of the first page of the book.
PAUSE/RESUME	The App will pause and resume reading from the same line.
NEXT PAGE	The App will read from the first line of the next page of the book.
PREVIOUS PAGE	The App will read from the first line of the previous page of the book.
GO TO <PAGE NUMBER>	The App will read from the first line of the given PAGE NUMBER.

READ SLOW/READ FAST	The App will decrease or increase the speed of narration.
SEARCH <BOOK_NAME>	The App will search for a given BOOK_NAME on the internet.
FIND <WORD>	The App finds for a particular word in the entire book and tells the line number the WORD is found.
CHANGE VOICE	The App changes the narration voice from EN-IN (Indian English) to EN-US (US English).
LOGOUT	This command helps to exit from Application.
START/STOP MANUAL	The App starts or stops reading the above mentioned commands.
LOAD CAMERA	The App will open the camera to capture the pictures
LOAD LIBRARY	The App will open the local storage to save the images in folder

**TABLE I. Commands and Description**

## 5.5 Features

### 5.5.1 Authentication

Security solutions are often required without paying attention to human disabilities. We have included fingerprint authentication in the registration process by using the Cordova-plugin-fingerprint-aio. We can also use this plugin in such a way that if the user closes the application without logging out and then re-enters the application, it will force the user to scan their fingerprint.

### 5.5.2 Search Engine

It is used to search for a particular book on the internet and download it in the application when the “SEARCH<BOOK\_NAME>” command is given by the user.. This feature avoids the necessity of scanning the book.

### **5.5.3 Instruction Manual**

Whenever the App is newly installed the App narrates the Instruction manual as Voice. Whenever the user wishes to know the Instruction manual at any time he can give the “START MANUAL” command and can get familiar with instructions used in the App.

### **5.5.4 Different languages**

The App can identify and read about 42 languages including English, Hindi, Kannada, Bengali, Gujarati, Malayalam, Tamil, Telugu, Urdu and many more which are recognised using Google vision API.

## Chapter 6

# SNAPSHOTS

### 6.1 Automatic Page Turner and Scanner



Fig.6.1 Automatic Page turner and scanner

### 6.2 Android application Introduction

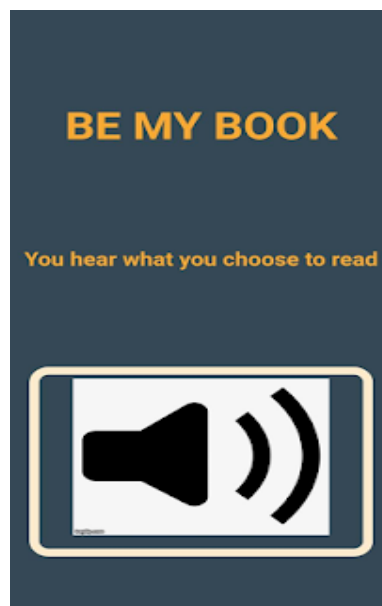


Fig.6.2 App introduction with logo in a form of animation with voice

## 6.3 Login page



TELL YOUR NAME

**Fig.6.3 Login page**

## 6.4 User Manual

### manual

START - This command is used to Start reading from the beginning of the book.

STOP - This command will stop reading the book.

PAUSE - To temporarily stop reading.

Resume- To continue from where it was paused.

GOTO - To goto a particular page. Eg: goto "pg number".

OPEN- To open a particular book or manual. Eg: open manual.

SAVE\_AS - To save the book with particular name. Eg: save\_as book 1.

FIND: To find a particular word in the book. Eg: find word.

SEARCH : To search for a book online. Eg: search book.

READ\_FAST/ READ\_SLOW - To increase or decrease the speed of reading.

CHANGE\_VOICE- To change from female to male voice and vice-versa.

**Fig 6.4 User manual**



## 6.5 Book Folder

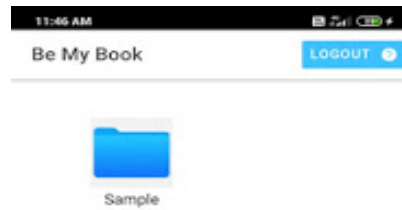


Fig 6.5: Folder Screen

## 6.6 Load Camera Command

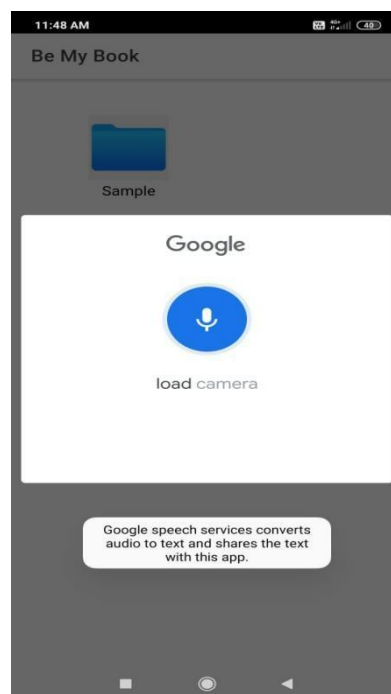


Fig 6.6: To open the Scanner LOAD CAMERA command is given

## 6.7 New folder being created

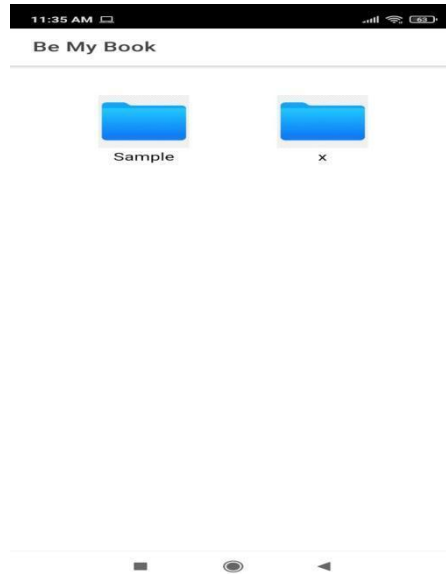


Fig 6.7: New folder containing images captured through camera

## 6.8 Text Extraction

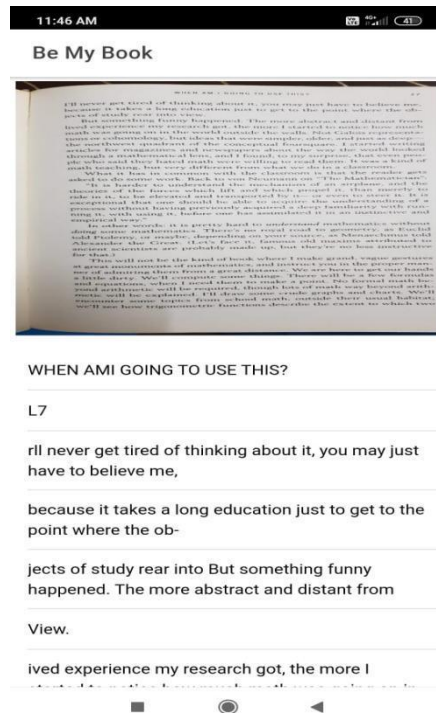


Fig 6.8: Image which is read

## 6.9 Load storage

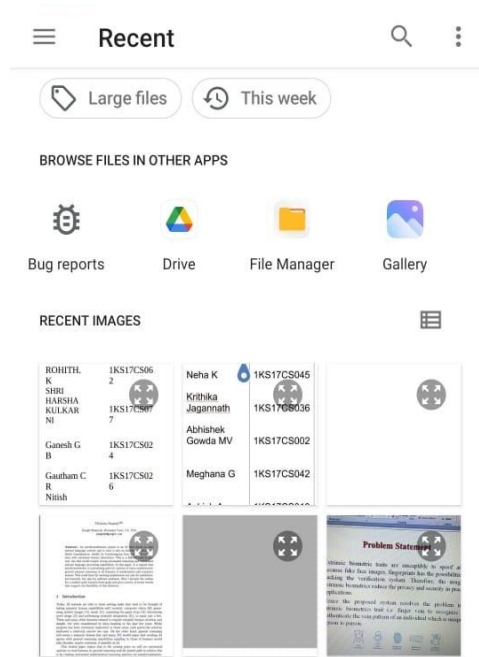


Fig 6.9: Loading images from folder

## 6.10 OPEN COMMAND

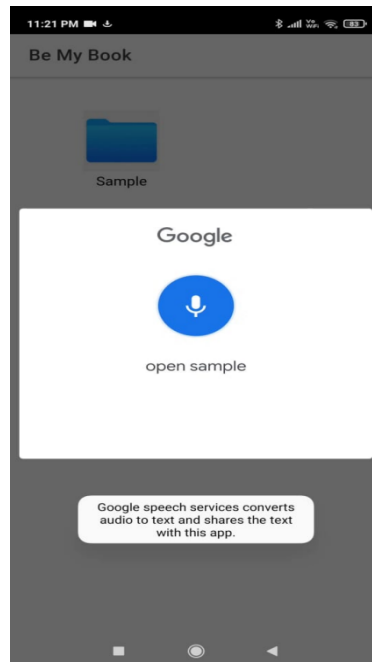


Fig 6.10: To open a book

## 6.11 Start Command

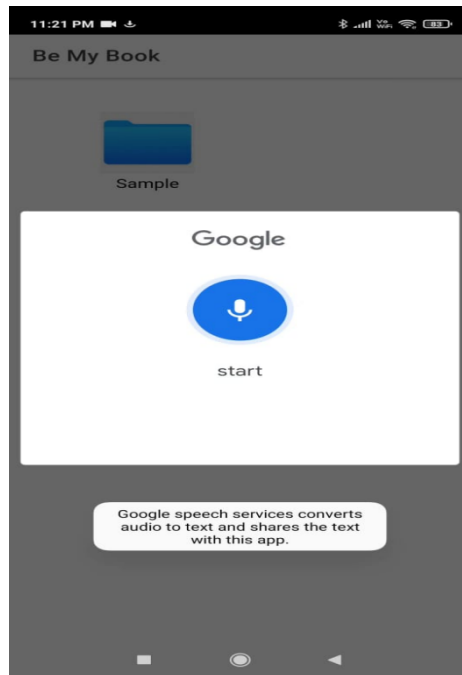


Fig 6.11: To start reading the book

## 6.12 Pause Command

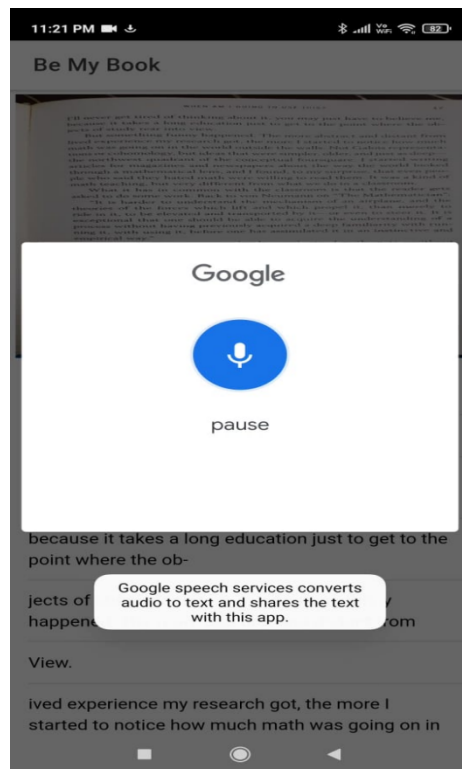


Fig 6.12: To pause the reading of the book

## 6.13 Read Slow/Read Fast Command

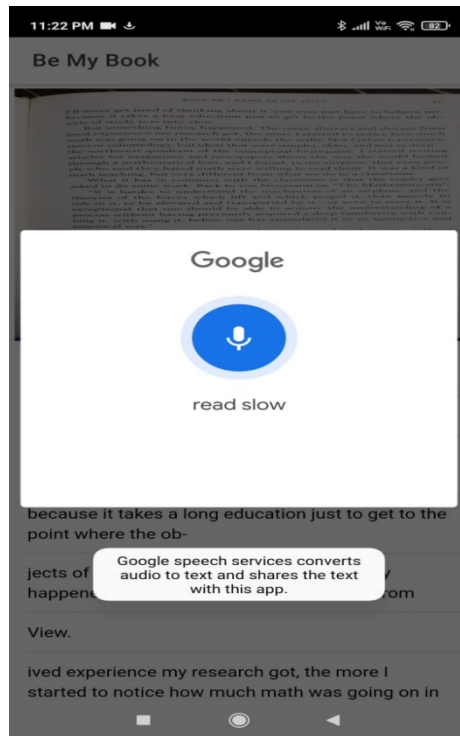


Fig 6.13: To make the reading fast or slow

## 6.14 Goto Command

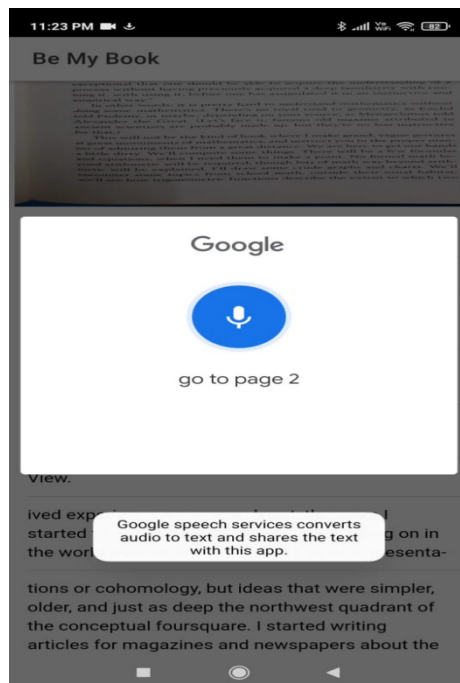


Fig 6.14: Navigate to different pages

### 6.15 Search Command

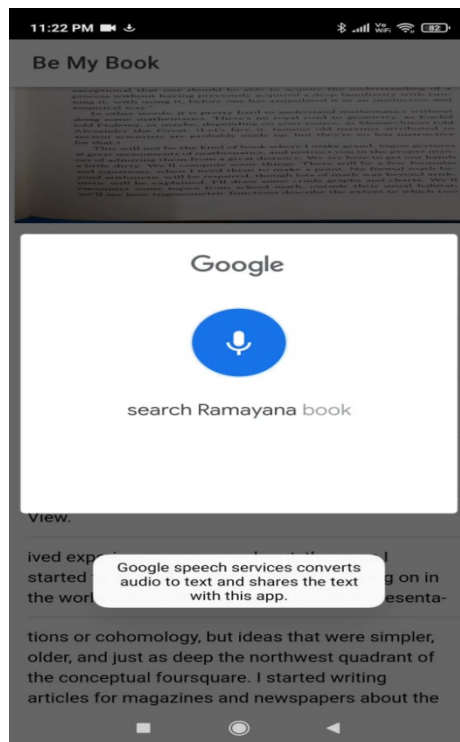


Fig 6.15: To search for any book online

### 6.16 After Issuing Search Command

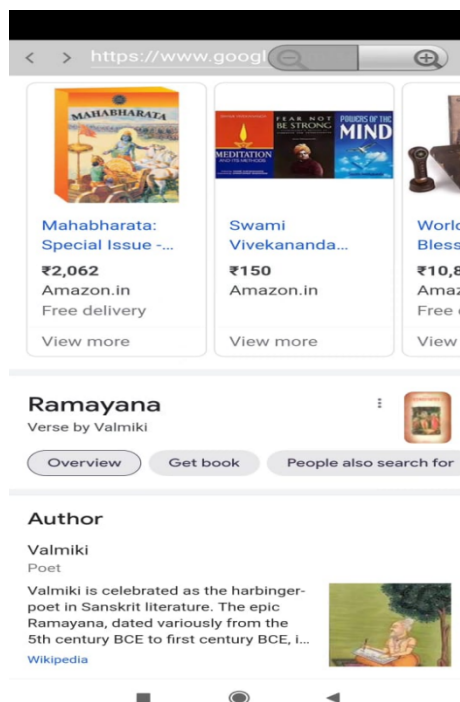


Fig 6.16: After giving Search “RAMAYANA BOOK”

## Chapter 7

### RESULTS

- The automatic page-turning and scanning system has low project cost and high accuracy which is up to 90%. The automatic turner lifts only one page at a time, and simultaneously clicks pictures, to save operational time. The most important thing to note is that this system is fully automated. This device is capable of precisely flipping the page automatically, one at a time without any misbehaviour.
- Text is extracted from the images and is converted to audio format. It recognizes both capital and small letters, numbers, and different symbols. The text extraction has achieved an accuracy rate of up to 97% in our application.
- A voice assistant is used to take voice input from the user and perform the tasks accordingly.
- Many features are provided like authentication facility, searching for a particular book on the internet, instruction manual feature and identifying and recognizing the text and voice up to 42 languages which are supported by Google Vision API.

## Chapter 8

# CONCLUSION AND FUTURE ENHANCEMENT

The prototype turner can turn the pages of the book smoothly without causing any damage to the page and the scanner scans the pages of the book simultaneously. At the time of scanning the pages of the book, the pages will not get skipped. Also, books or documents can easily be converted into digital form by using the automatic turner. The android application can convert the image set(folder) obtained into an audiobook. The application will have a built voice assistant which can be used to perform many tasks given by the user. Users are allowed to navigate throughout the application using voice commands which are implemented through Voice Over Friendly Navigation System. It has features like an instruction manual, and also provides features where it can identify the text and output the voice in different languages, and a search engine for finding the book already available on the internet.

- The scanner can possess extra features in the coming future like:
  - i) The users can assign the range for scanning the number of pages.
  - ii) Voice assistance can be added to the scanner and turner as well, which takes instructions from the user directly.
- The application could even provide a small description whenever an image is encountered.
- In the future, the application can even have in-built features such as setting timers, highlighting special sentences, and providing vocabulary to find the meaning of the word.
- The device could even read comic books with different voice features.



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## Chapter 9

### REFERENCES

- [1] Yoshihiro Watanabe, "Automatic page-turner machine for high-speed book digitization", published in 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems, Nov. 2013.
- [2] Ellaine Abueg, "A New Approach to Automated Page-Turner Design Implementing a Reusable Adhesive", published in RESNA 27th International Annual Conference, June 22, 2004, Orlando, Florida.
- [3] Daniel Reetz, "Big Finger Little Finger" for turning the pages and scanning the book simultaneously. Published in May 2010.
- [4] ScanRobot model to lift a page of the book and scan respectively, published in April 2008.
- [5] PageFlipper model flips the pages of the book without the use of hands to turn the pages of the book. Published in April 2011. <https://www.youtube.com/watch?v=XdNdVfPOtko>
- [6] <https://developers.google.com/cloud-search/docs/guides/search-widget>
- [7] <https://www.element14.com/community/thread/73098/1/transfer-image-from-raspberry-pi-python-to-android-app-java>
- [8] <https://blog.google/outreach-initiatives/accessibility/get-image-descriptions/>
- [9] Abba Almu, "Incorporating Voice-Based Books Navigation to the Electronic Library", published in the Journal of Basic and Applied Research International in March 2018.
- [10] N Bano, "Automatic Book Scanner", published in IOP Conference Series Materials Science and Engineering 417(1):012032, October 2018.
- [11] S Venkateswarlu, "Text to Speech Conversion" published in Indian Journal of Science and Technology 9(38), October 2016.
- [12] Kaz Sato has given the methodology to convert the pdf to audiobooks using Google vision API. Article Published on sep, 2020.
- [13] Aditya Dhapola, has given a method for Voice Recognition to perform tasks done on a daily basis. Published in May 2019.
- [14] Bashier Suliman Elbashier Ahmed, "Biometrics solutions for blind person authentication" published in 2017 Intelligent Systems Conference (IntelliSys), September 2017.

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- [15] Mandeep Singh kandhari, “Voice-controlled e-commerce application”, published in 2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON).
- [16] Minal Acharya, “Scan.it - Text Recognition, Translation and Conversion”, published in 2019 International Conference on Advances in Computing, Communication and Control (ICAC3), 16 March 2020.

# Be my book

*by Swati Pai*

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