A PROJECT REPORT

ON

THINGS TRANSLATOR

Submitted by

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In fulfilment for the award of the degree

Of

BACHELOR OF ENGINEERING

In

Department of Computer Engineering

ALPHA COLLEGE OF ENGINEERING AND TECHNOLOGY,
KHATRAJ

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD

May, 2018

ALPHA COLLEGE OF ENGINEERING AND TECHNOLOGY,

KHATRAJ

COMPUTER ENGINEERING

CERTIFICATE

This is to certify that the Project Work entitled **"THINGS TRANSLATOR"** has been carried out by **ANUJ RAVAL** ***(140510107093)*** under my guidance in fulfillment of the degree of Bachelor of Engineering ***in Department of Computer Engineering*** 8th Semester of Gujarat Technological University, Ahmedabad during the academic year 2017-18.

Internal Guide	**Head of Department**
Prof. Ajaykumar T. Shah	Prof. Ajaykumar T. Shah
Computer Department	Computer Department

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ACKNOWLEDGEMENT

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Finally, at the outset, we would like to thank all those who have directly or indirectly helped us to accomplish our project successfully.

With Sincere Regards,

Anuj Raval (140510107093)

Sameer Bhatt (140510107096)

ABSRACT

THINGS TRANSLATOR
(Made For Indians, Made By Indians)

There is 27 states and 7 union territories in INDIA so if we go to some other region then maybe we don't know how speak their native language and we don't understand what language they have used.

Also if we want to read their newspaper or go to shopping it's hard to recognize their language & whatever the language they used in newspaper or in shopping they don't know how to speak in some other language so language barrier hits them, to remove this type of barrier we introduce "Things Translator", A smart and user friendly object recognition, easy to use platform to make translation very easy in different location by just capturing image or hover over text, it also can tells you what a thing called into your desired language and also pronounce it for.

User can set here:

- Their Desired Output language
- Object Recognition
- Object Character Recognition
- Offline Mode OCR and Online Mode Object Analysis
- Available so many target languages.

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1. INTRODUCTION

1.1 PROJECT SUMMARY

It is an object of the present invention to provide an improved object translation system which is capable of translation in real time with also translating & recognizing particular object by hover over it or capturing image of it.
It is another object of the present invention to provide a translation of any text to your own language with one image capturing. In this you can either capture image of particular text otherwise hover over object it will tell which the object in your desired language and also will pronounce the word of translated object text/word.
Our application is also capable of recognizing particular text which is in foreign language i.e. newspaper, books, boarding of shops, etc.
So you need to select desired translating language provided by us in application
And you have two options to translate this you can hover over any newspaper ,books etc. so it will translate in real time otherwise you can capture image of any object it will process on image by using object character recognition and cloud vision and will provide a picture for desired translation language.

You can set here:

- what language you want to translate to
- what (and how) to translate when you click on the capture button / hover over
- Available target languages : Indian Languages except English

1.2 PURPOSE

- Reducing Language barrier between different localities
- An user friendly , object recognition easy to use platform to make translation very easy in different location by just capturing image or hover over text
- An platform which tells you how to pronounce thing/object translated in different languages
- There is 27 states and 7 union territories in INDIA so if we go to some other region then maybe we don’t know how speak their native language and we don’t understand what language they have used
- Also if we want to read their newspaper or go to shopping its hard to recognize their language & whatever the language they used in newspaper or in shopping they don’t know how to speak in some other language so language barrier hits them.
- Also if foreigner comes to India to visit & shopping the same scenario will occur as said in above point they also don’t know how to speak their native language.

- And if we want to manage the business in some other locality that we don't know the language barrier is issue there.
- Unable to manage the client from different country or states if they speak some other language.

1.3 SCOPE

The *Thing Translator* is quite ease to use and also simple nature at a glance.

It provides the user to translate objects, textbooks, newspapers, sign board, etc.

It can be used in various localities:

- For Office
- For Travelers - Day to day use
- For Education/Study - Different languages
- For Foreigners –To understand & communicate also interact with people
- Freelancers – Easy to talk with clients from different country
- People – To learn new languages

1.4 TECHNOLOGY & LITRATURE REVIEW

1.4.1 TECHNOLOGY

1.4.1.1 Description of Technologies Used

1.4.1.1.1 Java-script

Javascript is a dynamic computer programming language. It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages. It is an interpreted programming language with object-oriented capabilities.

JavaScript was first known as LiveScript, but Netscape changed its name to JavaScript, possibly because of the excitement being generated by Java. JavaScript made its first appearance in Netscape 2.0 in 1995 with the name LiveScript. The general-purpose core of the language has been embedded in Netscape, Internet Explorer, and other web browsers.

The ECMA-262 Specification defined a standard version of the core JavaScript language.

- JavaScript is a lightweight, interpreted programming language.
- Designed for creating network-centric applications.
- Complementary to and integrated with Java.
- Complementary to and integrated with HTML.
- Open and cross-platform

Client-side JavaScript

Client-side JavaScript is the most common form of the language. The script should be included in or referenced by an HTML document for the code to be interpreted by the browser.

It means that a web page need not be a static HTML, but can include programs that interact with the user, control the browser, and dynamically create HTML content.

The JavaScript client-side mechanism provides many advantages over traditional CGI server-side scripts. For example, you might use JavaScript to check if the user has entered a valid e-mail address in a form field.

The JavaScript code is executed when the user submits the form, and only if all the entries are valid, they would be submitted to the Web Server.

JavaScript can be used to trap user-initiated events such as button clicks, link navigation, and other actions that the user initiates explicitly or implicitly.

Advantages of JavaScript

The merits of using JavaScript are −

- Less server interaction − You can validate user input before sending the page off to the server. This saves server traffic, which means less load on your server.

- Immediate feedback to the visitors − They don't have to wait for a page reload to see if they have forgotten to enter something.
- Increased interactivity − You can create interfaces that react when the user hovers over them with a mouse or activates them via the keyboard.
- Richer interfaces − You can use JavaScript to include such items as drag-and-drop components and sliders to give a Rich Interface to your site visitors.

Limitations of JavaScript

We cannot treat JavaScript as a full-fledged programming language. It lacks the following important features −

- Client-side JavaScript does not allow the reading or writing of files. This has been kept for security reason.
- JavaScript cannot be used for networking applications because there is no such support available.
- JavaScript doesn't have any multithreading or multiprocessor capabilities.

Once again, JavaScript is a lightweight, interpreted programming language that allows you to build interactivity into otherwise static HTML pages.

1.4.1.1.2 Node.js

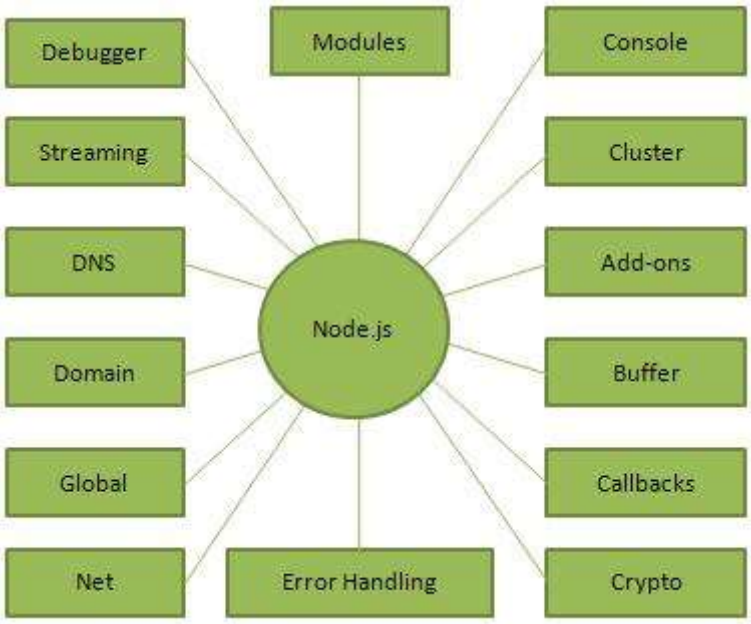
Node.js is a server-side platform built on Google Chrome's JavaScript Engine (V8 Engine). Node.js was developed by Ryan Dahl in 2009 and its latest version is v0.10.36. The definition of Node.js as supplied by its official documentation is as follows −

Node.js is a platform built on Chrome's JavaScript runtime for easily building fast and scalable network applications. Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient, perfect for data-intensive real-time applications that run across distributed devices.

Node.js is an open source, cross-platform runtime environment for developing server-side and networking applications. Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, and Linux.

Node.js also provides a rich library of various JavaScript modules which simplifies the development of web applications using Node.js to a great extent.

Node.js = Runtime Environment + JavaScript Library



Features of Node.js

Following are some of the important features that make Node.js the first choice of software architects.

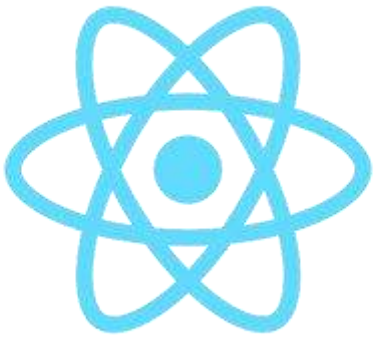
- **Asynchronous and Event Driven** − All APIs of Node.js library are asynchronous, that is, non-blocking. It essentially means a Node.js based server never waits for an API to return data. The server moves to the next API after calling it and a notification mechanism of Events of Node.js helps the server to get a response from the previous API call.

- **Very Fast** − Being built on Google Chrome's V8 JavaScript Engine, Node.js library is very fast in code execution.
- **Single Threaded but Highly Scalable** − Node.js uses a single threaded model with event looping. Event mechanism helps the server to respond in a non-blocking way and makes the server highly scalable as opposed to traditional servers which create limited threads to handle requests. Node.js uses a single threaded program and the same program can provide service to a much larger number of requests than traditional servers like Apache HTTP Server.
- **No Buffering** − Node.js applications never buffer any data. These applications simply output the data in chunks.
- **License** − Node.js is released under the MIT license.

Who Uses Node.js?

Following is the link on github wiki containing an exhaustive list of projects, application and companies which are using Node.js. This list includes eBay, General Electric, GoDaddy, Microsoft, PayPal, Uber, Wikipins, Yahoo!, and Yammer to name a few.

1.4.1.1.3 React



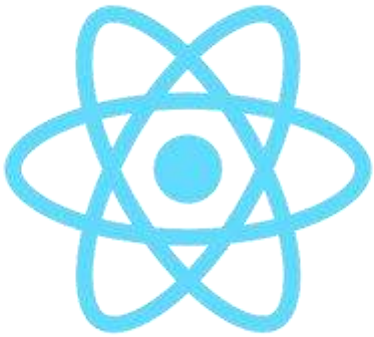
React is a JavaScript library that forces you to think in terms of components. This model of thinking fits user interfaces well. Depending on your background it might feel alien at first. You will have to think very carefully about the concept of state and where it belongs.

Because **state management** is a difficult problem, a variety of solutions have appeared. In this book, we'll start by managing state ourselves and then push it to a Flux implementation known as

Alt. There are also implementations available for several other alternatives, such as Redux, MobX, and Cerebral.

React is pragmatic in the sense that it contains a set of escape hatches. If the React model doesn't work for you, it is still possible to revert back to something lower level. For instance, there are hooks that can be used to wrap older logic that relies on the DOM. This breaks the abstraction and ties your code to a specific environment, but sometimes that's the pragmatic thing to do.

1.4.1.1.4 React-Native



React is a framework created by Facebook for data driven web interfaces. React provides a component driven architecture which uses a declarative syntax and is easily extensible.

So what is the difference between React and React Native? React was originally created for web user interfaces. The mantra behind React has been “Learn Once, Write Anywhere”. Facebook’s goal has been to “be able to develop a consistent set of goals and technologies that let us build applications using the same set of principles across whatever platform we want.”

The benefit of React and React Native is that if you understand how to build a React Native app for iOS, you understand how to build a React Native app for Android. It’s learn once, write anywhere. Libraries like Phonegap provide a wrapper around a web user interface using HTML, CSS and JavaScript. React Native instead provides a virtual DOM representation which then renders native controls. React Native is able to take native platform components like sliders, switches, labels, tab bars and wrap them in React component counterparts.

To install React Native follow the instructions on their website. If you are writing an iOS app then you will need a Mac so you can run Xcode, after all we are creating a native app. Once React Native is installed and you have created a sample project you will notice two separate index JS files for each platform: index.ios.js and index.android.js.

1.4.1.1.5 Kotlin

Kotlin is a statically typed programming language which works on multiple platforms. It is a new programming language that runs on JVM and can also be compiled into JavaScript. Also, it is useful for Android as it is compiled into JVM byte code. Google officially announced that Kotlin is a supported language for Android on 17th May 2017.

Kotlin was developed by JetBrains, the same team which developed IntelliJ and Android Studio. Its latest version is 1.1.2 Its name comes from Kotlin Island near St. Petersberg, Russia where JetBrains developers did the primary development.

There is a plugin from JetBrains which is available on the official website. We can easily install it and build the applications on Java and Android in this new language. Kotlin is 100% interoperable with Java and Android and compatible with Java, which means we can easily convert the Java code into Kotlin code and vice-versa also, it can use any frameworks and Library in Java. In Android, it is integrated with Gradle, after successful installation of the Kotlin plugin in the Android Studio.

Why Use Kotlin?

As the programming world moves ahead, the programming languages get obsoleted and cannot compete with the modern languages. As we see in Android, below Android 7.1, developers are using Java 6 or some parts of Java 7 and above Android 7.1 they are using Java 8 functionalities, which is not quite new. The developers consider it as a simple language which supports Android just as “iOS supports Swift,” which makes coding easy and simple. Kotlin comes with some features like it is concise and reduces the amount of boilerplate code, safe as it avoids the entire class errors like null pointer exceptions, interoperable as it supports the existing libraries for JVM, Android and the browser, Tool-Friendly as one can choose any Java IDE or build from the command line.

Kotlin is an open source, and its support for Android Studio is gradually improving. The developer may easily integrate with existing Java project and Android project. It is a lightweight programming language and it has only 7000 methods as compared to the Java libraries. It has new features which make the language simple and safe, supporting lambdas, null safety, extensions, data classes, optional arguments, etc.

1.4.1.1.6 Java

Java is a programming language created by James Gosling from Sun Microsystems (Sun) in 1991. The target of Java is to write a program once and then run this program on multiple operating systems. The first publicly available version of Java (Java 1.0) was released in 1995. Sun Microsystems was acquired by the Oracle Corporation in 2010. Oracle has now the statesmanship for Java. In 2006 Sun started to make Java available under the GNU General Public License (GPL). Oracle continues this project called *OpenJDK*.

Over time new enhanced versions of Java have been released. The current version of Java is Java 1.8 which is also known as *Java 8*.

Java is defined by a specification and consists of a programming language, a compiler, core libraries and a runtime (Java virtual machine) The Java runtime allows software developers to write program code in other languages than the Java programming language which still runs on the Java virtual machine. The *Java platform* is usually associated with the *Java virtual machine* and the *Java core libraries*.

The Java language was designed with the following properties:

- Platform independent: Java programs use the Java virtual machine as abstraction and do not access the operating system directly. This makes Java programs highly portable. A Java program (which is standard-compliant and follows certain rules) can run unmodified on all supported platforms, e.g., Windows or Linux.
- Object-orientated programming language: Except the primitive data types, all elements in Java are objects.

- Strongly-typed programming language: Java is strongly-typed, e.g., the types of the used variables must be pre-defined and conversion to other objects is relatively strict, e.g., must be done in most cases by the programmer.
- Interpreted and compiled language: Java source code is transferred into the bytecode format which does not depend on the target platform. These bytecode instructions will be interpreted by the Java Virtual machine (JVM). The JVM contains a so called Hotspot-Compiler which translates performance critical bytecode instructions into native code instructions.
- Automatic memory management: Java manages the memory allocation and de-allocation for creating new objects. The program does not have direct access to the memory. The so-called garbage collector automatically deletes objects to which no active pointer exists.

The Java syntax is similar to C++. Java is case-sensitive, e.g., variables called `myValue` and `myvalue` are treated as different variables.

1.4.1.2 Description of Tools Used

1.4.1.2.1 Android Studio

It's an Android focused IDE, designed specially for the Android development. It was launched on 16th May 2013, during Google I/O 2013 annual event. Android studio contains all the Android sDK tools to design, test, debug and profile your app. By looking at the development tools and environment, we can its similar to eclispe with the ADT plug-in but as I have mentioned above its android focused IDE, there are many cool features available in Android Studio which can foster and increase your development productivity.

One great thing is that it depends on the IntelliJ Idea IDE which is proved itself a great IDE and has been using by most all the Android engineers.

1.4.1.2.2 Expo

Expo apps are React Native apps which contain the Expo SDK. The SDK is a native-and-JS library which provides access to the device's system functionality (things like the camera, contacts, local storage, and other hardware). That means you don't need to use Xcode or Android Studio, or write any native code, and it also makes your pure-JS project very portable because it can run in any native environment containing the Expo SDK.

Expo also provides UI components to handle a variety of use-cases that almost all apps will cover but are not baked into React Native core, e.g. icons, blur views, and more.

Finally, the Expo SDK provides access to services which typically are a pain to manage but are required by almost every app. Most popular among these: Expo can manage your Assets for you, it can take care of Push Notifications for you, and it can build native binaries which are ready to deploy to the app store.

1.4.1.2.3 NPM

npm opens up an entire world of JavaScript talent for you and your team. It's the world's largest software registry, with approximately 3 billion downloads per week. The registry contains over 600,000 *packages* (building blocks of code). Open-source developers from every continent use npm to share and borrow packages, and many organizations use npm to manage private development as well.

1.4.2 LITRATURE REVIEW

The investigation of the idea was taken place and it was known that most of the language translator we used will not so much relevant for our Indian languages an also there is nothing available which can translate text in real time and also can tell you thing name into your own desired language.

There are so many software's, applications are available like Google translator, Bing translator, Microsoft's own language translator, yendex translator and so on but these all are only work when you type something and then it will translate that text into your desired language, but for our Indian that is so hard thing because we have so many languages here in India so it hard to learn them all and write them all,

So like if you want to read newspaper in other state of India what you will do? You have nothing which can help you to translate that newspaper into your own language? So that the limitation of this all products available on internet in market.

So this Things Translator Application is able to translate text in real time just hover our text and done you will get your output that's not it, this application also provide you a text to speech feature by which you can able to know how to pronounce that word which is written there. And main part

its very user friendly and easy to use system. Not just text translation, this application is also able to translate thing name, like you can capture image of bird or chair or glass anything it will tell you what that thing is and also what it called in different languages and it will pronounce that name for you. This is how easy it is for user to translate text and thing name into their local language.

2. PROJECT MANAGEMENT

2.1 PROJECT PLANNING & SCHEDULING

Project planning is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment. Initially, the project scope is defined and the appropriate methods for completing the project are determined. Following this step, the durations for the various tasks necessary to complete the work are listed and grouped into a work breakdown structure. The logical dependencies between tasks are defined using an activity network diagram that enables identification of the critical path. Float or slack time in the schedule can be calculated using project management software. Then the necessary resources can be estimated and costs for each activity can be allocated to each resource, giving the total project cost. At this stage, the project plan may be optimized to achieve the appropriate balance between resource usage and project duration to comply with the project objectives. Once established and agreed, the plan becomes what is known as the baseline. Progress will be measured against the baseline throughout the life of the project. Analyzing progress compared to the baseline is known as earned value management.

2.1.1 PROJECT DEVELOPMENT APRROACH

We have used Iterative and Incremental Development model (IID) for our project development. This development approach is also referred to as Iterative Waterfall Development approach. Iterative and Incremental Development is a software development process developed in response to the more traditional waterfall model.

Life Cycle:

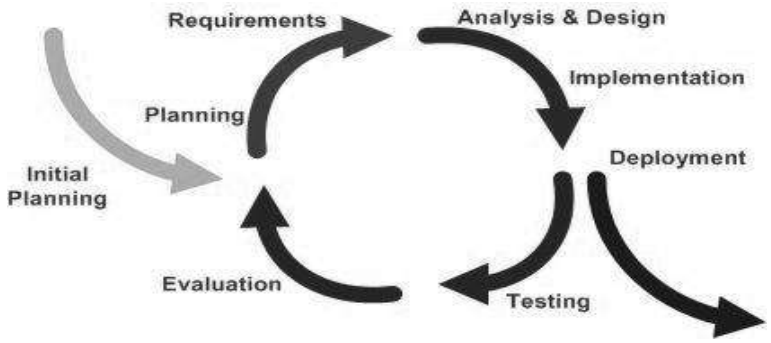


Figure 2.1: Iterative and Incremental Life Cycle

The basic idea behind iterative enhancement is to develop a software system incrementally, allowing the developer to take advantage of what was being learned during the development of earlier, incremental, deliverable versions of the system. Learning comes from both the development and use of the system, where possible. Key steps in the process were to start with a simple implementation of a subset of the software requirements and iteratively enhance the evolving sequence of versions until the full system is implemented.

At each iteration, the procedure itself consists of the Initialization step, the Iteration step, and the Project Control List. The initialization step creates a base version of the system. The goal for this initial implementation is to create a product to which the user can react. It should offer a sampling of the key aspects of the problem and provide a solution that is simple enough to understand and implement easily. To guide the iteration process, a project control list is created that contains a record of all tasks that need to be performed. It includes such items as new features to be implemented and areas of redesign of the existing solution. The control list is constantly being revised as a result of the analysis phase. The iteration involves the redesign and implementation of a task from project control list, and the analysis of the current version of the system. The goal for the design and implementation of any iteration is to be simple, straightforward, and modular, supporting redesign at that stage or as a task added to the project control list. The code can, in some cases, represent the major source of documentation of the system. The analysis of iteration is based upon user feedback, and the program analysis facilities available. It involves analysis of the structure, modularity, usability, reliability, efficiency, and achievement of goals. The project control list is modified in light of the analysis results.

During the implementation of the project by this approach, a step called **V&V** i.e. Verification and Validation is carried out at certain intervals.

- Verification: “Are we building the product right?”
- Validation: “Are we building the right product?”

2.1.2 PROJECT PLANNING

Once we examine that the project is feasible, we undertake project planning. The table below describes how we planned our project.

Phases	**Time Period**	**No. of days**	**Deliverables of the phase**
Feasibility Analysis	JULY - JUNE	30 DAYS	Feasibility Report document
Requirement Gathering	JUNE - AUG	15 DAYS	System Requirement Study
Analysis	AUG - SEP	15 DAYS	
Design	JAN - FAB	45 DAYS	Designing
Testing	FAB - MARCH	30 DAYS	Testing Features

Roles and Responsibilities

Role	Responsibility	Team/Member
Project Guide	Defining scope	Mr. Ajay Shah Anuj Raval Sameer Bhatt
	Providing required resources	
	Project planning, tracking and monitoring.	
	Analysis and Effort Estimation.	
	Coordination between project teams.	
Project Developer	Designing & Documentation	Anuj Raval Sameer Bhatt
	Execution project as per defined schedule.	
	Reporting to PL	
	Software development as per the design and Documentation	

2.1.3 SCHEDULE REPRESENTING

Scheduling the project tasks is an important project planning activity. It involves deciding which tasks would be taken up when. In order to schedule the project activities, a software project manager needs to do the following:

- Identify all the tasks needed to complete the project
- Break down large tasks into small activities.
- Determine the dependencies among different activities.
- Establish the most likely estimates for the time durations necessary to complete the activities.
- Allocate resources to activities.
- Plan the starting and ending dates for various activities.
- Determine the critical path. A critical path is the chain of activities that determines the duration of the project.

Work Breakdown Structure

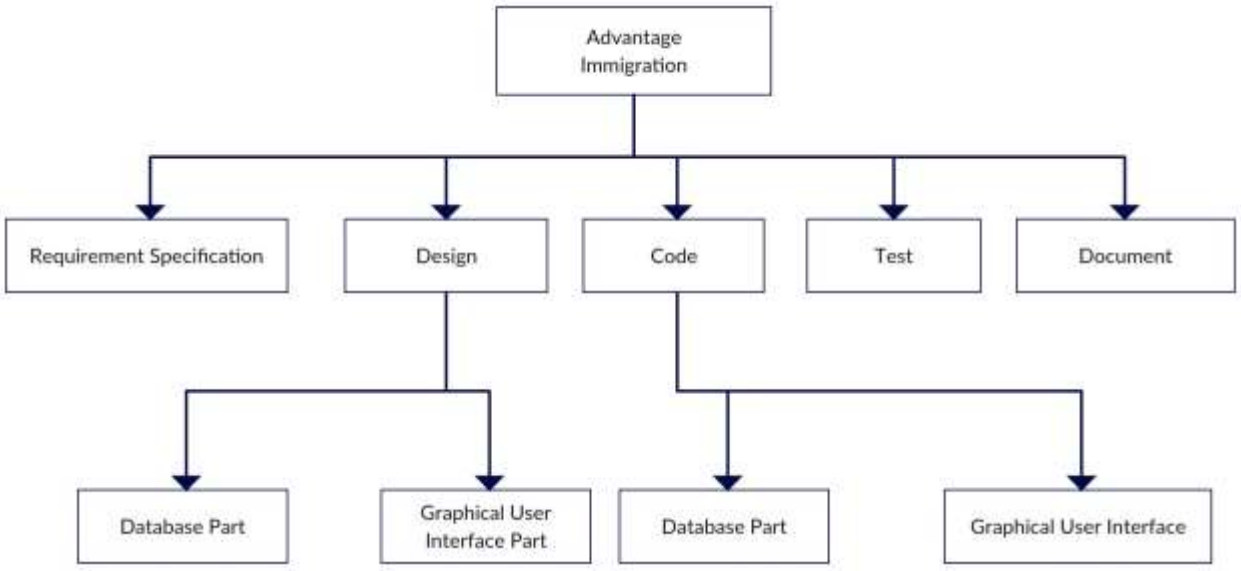


Figure 2.2: Work breakdown structure of Advantage Immigration System

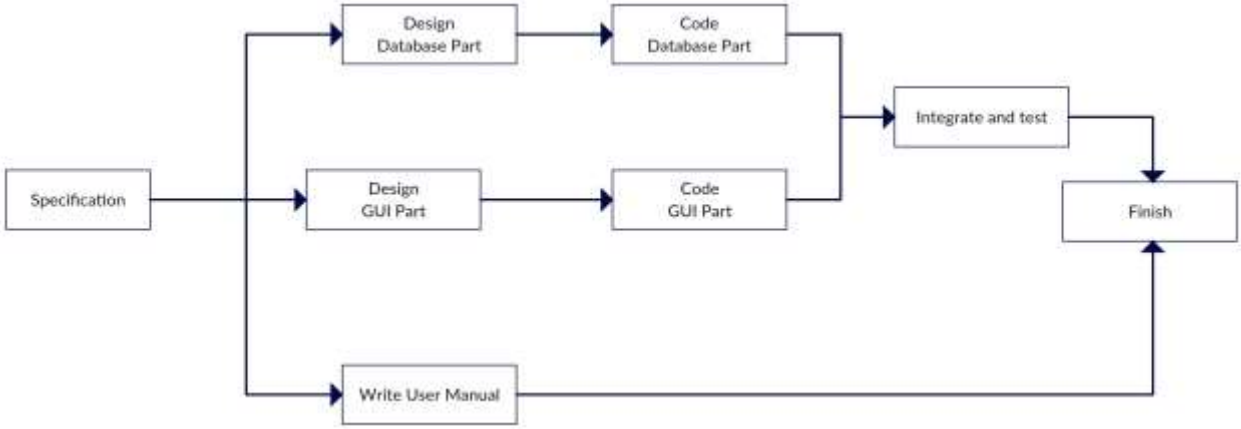


Figure 2.3: Activity Network representation of Advantage Immigration System

2.2 RISK MANGEMENT

Software Risk Management is a proactive approach for minimizing the uncertainty and potential loss associated with a project. Some categories of risk include product size, business impact, customer-related, process, technology, development environment, staffing (size and experience), schedule, and cost. Risk Management is a practice with processes, methods, and tools for managing risks in a project. It provides a disciplined environment for proactive decision making to

- Assess continuously what could go wrong (risks)
- Determine which risks are important to deal with
- Implement strategies to deal with those risks

2.2.1 RISK IDENTIFICATION

Risk identification is a systematic attempt to specify threats to the project plan. By identifying known and predictable risks, we can take a first step toward avoiding them when possible and controlling them when necessary.

To perform the risk identification, we categorized the risk into different categories as:

A. Project Risk:

The Project Risk threatens the project plan. The project risks here are:

- Schedule slippage.
- Incomplete requirement specification.
- Change in user Requirements.
- Non-availability of required resources.
- Lack of communication with end user.
- Improper vision about the project.
- Staffing and organization problems.
- Non-technical customer with high technical expectations.

B. Technical Risk:

The Technical Risk threatens the quality and timeliness of the software to be produced. If the technical risk becomes a reality, implementation may become difficult or impossible. The technical risks identified in our project are:

B1. Unavailable library files.

B2. Problem in connection to dB server

B3. Problem in application server.

C. Business Risk:

The Business Risk threatens the viability of the software to be built.

C1. Project not delivered on time.

C2. Switching of database structure.

D. Predictable Risk:

The Predictable risks are extrapolated from past project experience. Since we have not done any live industry project during the academic years, the predictable risks were very few. The predictable risk include mainly:

D1. Language error predictions.

E. Unpredictable Risk

The Unpredictable risks are the joker in the deck. They can and do occur, but they are extremely difficult to identify in advance.

2.2.2 RISK ANALYSIS

Each identified risk is considered and the effect and probability of each risk is identified during risk analysis.

2.2.3 RISK PLANNING

Risk planning lists the checkpoints that are made continually to find out situation where the risk can becomes reality.

- Plan entire schedule on paper in the beginning and follow it.
- Understand the scope from external guide to have the correct design.
- Find out proper documentation, manuals and guides from the person having the required knowledge.
- Schedule should not be delayed too much.

- Take backups regularly.
- Perform thorough requirement gathering and analysis. Confirm the collected requirements with the guide.

2.3 ESTIMATION

The estimation of various project parameters is a basic project planning activity. The important project parameters that are estimated include: project size, effort required to develop the software, project duration and cost. These estimates not only help in quoting the project cost to the customer, but also prove useful in resource planning and scheduling.
There are three broad categories of estimation techniques:

- Empirical estimation techniques
- Heuristic techniques
- Analytical estimation techniques

*COCOMO (Co**nstructive** Co**st estimation** Mo**del**) – Heuristic technique*

The basic COCOMO model gives an approximate estimate of the project parameters. The basic COCOMO estimation model is given by the following expressions:

$$Effort = a1 * (KLOC)^{a2}\ PM$$
$$Tdev = b1 * (Effort)^{b2}\ months$$

Where a1, a2, b1, b2 are constants for each category of software process. KLOC is the estimated size of product in Kilo Lines of Code. Tdev is the estimated time to develop the software, expressed in months. Effort is the total effort required to develop the software product, expressed in person month.

The COCOMO model estimation can be classified into three categories

- Organic
- Semidetached
- Embedded

2.3.1 EFFORT ESTIMATION

We followed the most common and feasible approach for estimating the effort required in the software development in which *project size* is variable and the equation of the effort is given by

EFFORT = a * SIZE ^{b}.

According to the survey and analysis carried out at IBM Federal System Division, if the size estimate is in KDLOC and the project is ranging from 4000 to 467000 lines of delivered source code then the equation for total effort, E, in person months (PM) can be given by

E = 4.1 * 5 $^{0.7}$ = 12.64 PM.

Where 3.2 and 0.7 are values of *a* & *b* determined depending upon the data about the projects that has been performed in the past.

2.3.2 DURATION ESTIMATION

As mentioned earlier we used the survey and analysis results given by IBM Federal System Division and according to those results the total duration, D , in calendar months can be estimated by the equation **D = a * E ^{b}.**

Again determining the values of *a* and *b* from the data about the projects that has been performed in the past we get the equation

D = 2.3 * 12.64 $^{0.38}$ = 6.03 Months.

3. SYSTEM REQUIREMENT STUDY

3.1 USER CHARACTERISTICS

The administrator has all the rights to access the system. He is the one who has all rights to view the applicant details, modify those details. The administrator also keeps a track of the file status of the applicants. The administrator can upload various languages, new features like dictionary. Create, view, and delete models, and view and modify model properties. Modify and update designs of user interface. Decides the view control. (What will be shown/hidden to/from user?)

- Applicant is the one who wish to install the application into cell phone or tablet with internet.
- He / She will first see camera UI to capture image or to hover over any object or text to get translation.

USER selects

- what language you want to translate to
- what (and how) to translate when you click on the capture button / hover over
- Available target languages : Indian Languages except English
- Get desired output of translated language

3.2 HARDWARE & SOFTWARE REQUIREMENTS

The following are minimum hardware and requirements that should be present to run the project successfully.

Development technologies	Android Studio, npm, react-native, js6, kotlin, React, Node.js
Development tools	SDK tool kit, Android development tool kit Android development studio
API	Google play service, Translation, Cloud vision, OCR.
Operating system	Any device having OS 6.0 or later on. (Client side)
Hardware	2 G B R a m & 3 5 0 G B H D D

[Table 3.1 Tools and Technology]

3.2.1 Hardware Requirements

Client Configuration
Any Android device having Android 6.0 or later up gradations.
Developer Configuration
Operating System: Win 7 or later RAM: 4GB Minimum, 8GB recommend. 240GB Minimum Free Space on Drive

[Table 3.2 Hardware Requirement]

3.2.2 Software Requirements

System Software
Android Development Studio
NPM
React Native
Expo

[Table 3.3 Software Requirement]

3.3 CONSTRAINTS

3.3.1 REGULATORY POLICES

The length of the project is 9 months which a limited amount of time.

The project developers are beginners and will take time to understand about the technology.

The users of the system are anyone.

3.3.2 RELIABILITY REQUIREMENTS

The system should be reliable enough so that the data found in the database system is consistent at any point.

The system should be able to handle loads of requests from different users around the world at the same time.

3.3.3 CRITICALITY OF THE APPLICATION

The system is an Android application and so some features fails to work if there is no Internet connection. The system might not work if the Internet connection slows down.

The system stops working in case if the database server or the application server stops working.

The system might give erroneous output if it fails to connect to the database server.

3.3.4 SAFETY AND SECURITY CONSIDERATION

This application is asking for some permission like Camera, audio apart form that there is no extra permission or data needed. It is easy to access and work in real time.

4. SYSTEM ANALYSIS AND DESIGNING

4.1 STUDY OF CURRENT SYSTEM

Let’s talk about how current scenarios is going on, Write now we do have so many translation tools, applications, software’s but still nothing is work for our Indian because we have so many different languages. Talk about big companies like Google, yahoo, Microsoft yes they do have their translation APIs but still those are not so relevant.

Google can translate text to text thing, while with image only work when we have English text written in there.

Well there is nothing developed yet which can detect the thing or object name and pronounce it to our under stable desired language.

Right now Google just grab text from user detect its language type and try to translate it into desired language.

4.2 PROBLEM AND WEAKNESS OF CURRENT SYSTEM

Here In India we have so many religion with its different caste thus they speak different languages as per their locality.

So it’s hard to understand and learn all the languages across country INDIA and also to interact and communicate with them in their native language.

This language barrier is mainly hit to foreigners and tourists or travelers, they don't our native language so it’s hard for them to talk with native peoples.

Some time we does know which type of language people talk in an area but we don't know how to pronounce things name there like food name, street name, home name, person name, so we know the language type but still don't know how to pronounce things name in their native language.

Some time while travelling in different states of India and we don't know what’s written on sign board, newspaper, shop name, or also while study in different state this language barriers is really effect so much.

4.3 FEASIBILITY STUDY

Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of the existing business or proposed venture, opportunities and threats as presented by the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest term, the two criteria to judge feasibility are cost required and value to be attained. Generally, feasibility studies precede technical development and project implementation. Various feasibility studies are as below:

Economic feasibility:

Economic analysis is the most frequently used method for evaluating the effectiveness of a new system. More commonly known as cost/benefit analysis, the procedure is to determine the benefits and savings that are expected from a candidate system and compare them with costs. If benefits outweigh costs, then the decision is made to design and implement the system. An entrepreneur must accurately weigh the cost versus benefits before taking an action.

- **Cost-based study:** It is important to identify cost and benefit factors, which can be categorized as follows: 1. Development costs; and 2. Operating costs. This is an analysis of the costs to be incurred in the system and the benefits derivable out of the system.

- **Time-based study:** This is an analysis of the time required to achieve a return on investments. The future value of a project is also a factor.

Legal feasibility:

Determines whether the proposed system conflicts with legal requirements or not. For example, a data processing system must comply with the local Data Protection Acts.

Operational feasibility:

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.

Schedule feasibility:

A project will fail if it takes too long to be completed before it is useful. Typically this means estimating how long the system will take to develop, and if it can be completed in a given time period using some methods like payback period. Schedule feasibility is a measure of how reasonable the project timetable is. Given our technical expertise, are the project deadlines reasonable? Some projects are initiated with specific deadlines. You need to determine whether the deadlines are mandatory or desirable.

4.4 REQUIREMENT VALIDATION

Requirements validations contain how i get the actual requirements of my customers after completion of SRS (system requirement specification). Requirement analysis contains have we got the right requirements? After requirement analysis we will perform requirement validation. Requirement validation contains following:

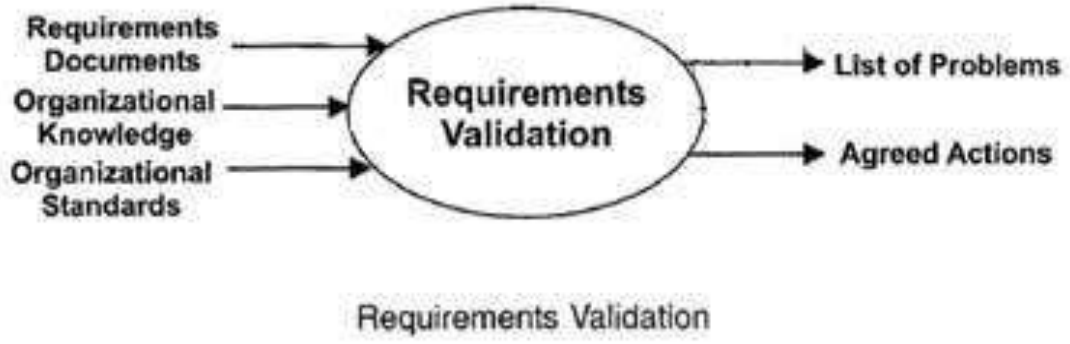
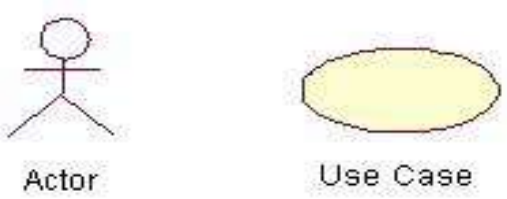


Fig 4.4.1 Requirements Validation

4.5 FUNCTIONS OF SYSTEM

4.5.1 USE CASE

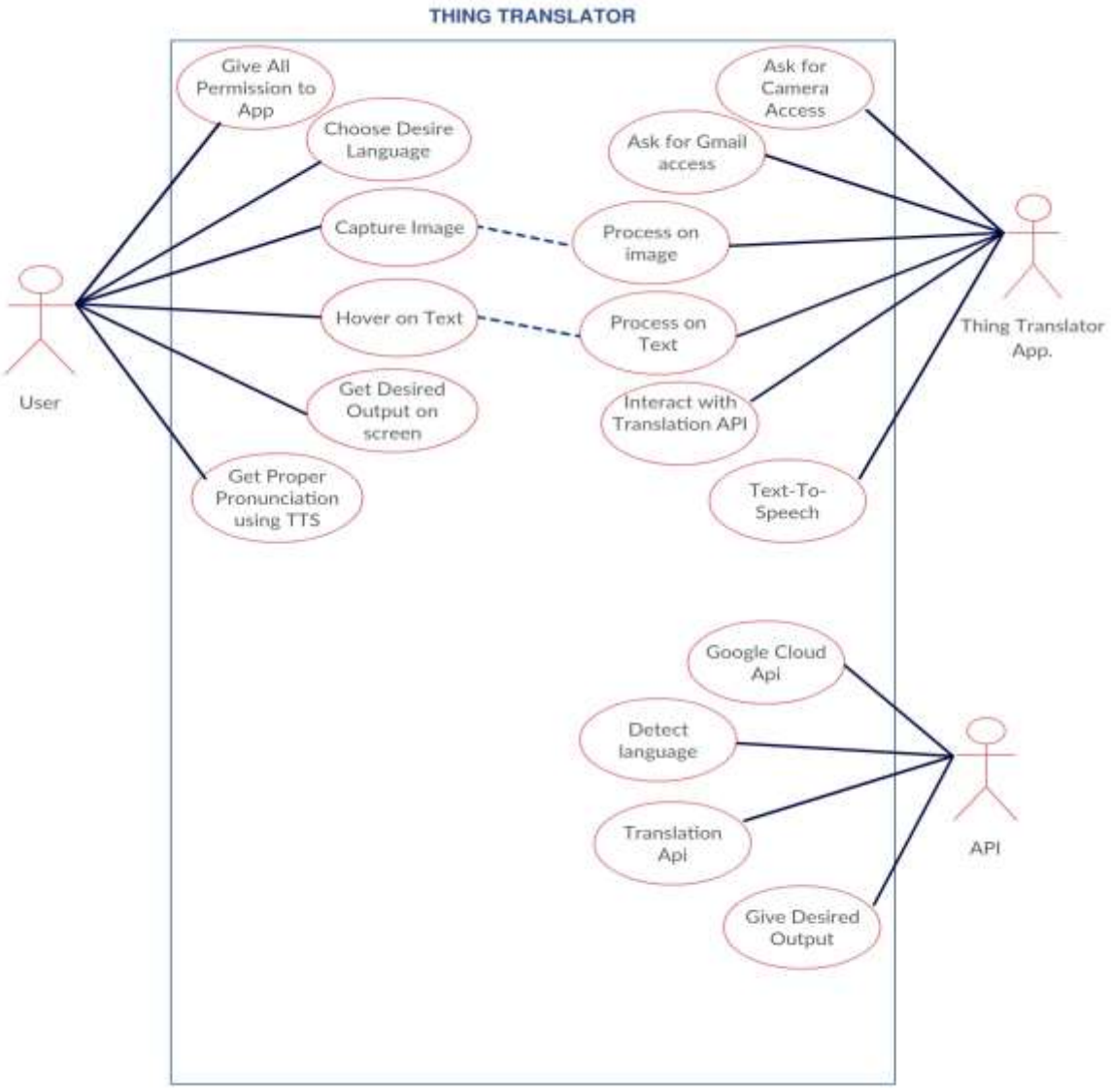
The requirements of a system can be captured by Use Case Diagrams. They are modelled to capture the intended behaviour of the system. Use Cases interact with human or actors that use the system to accomplish some work. They define a set of sequence of actions that a system performs to yield an observable result of value to an actor. An actor represents a role that a human, a hardware device or another system plays with a system.



Use Cases are used to come to a common understanding with the systems end users and the domain experts.

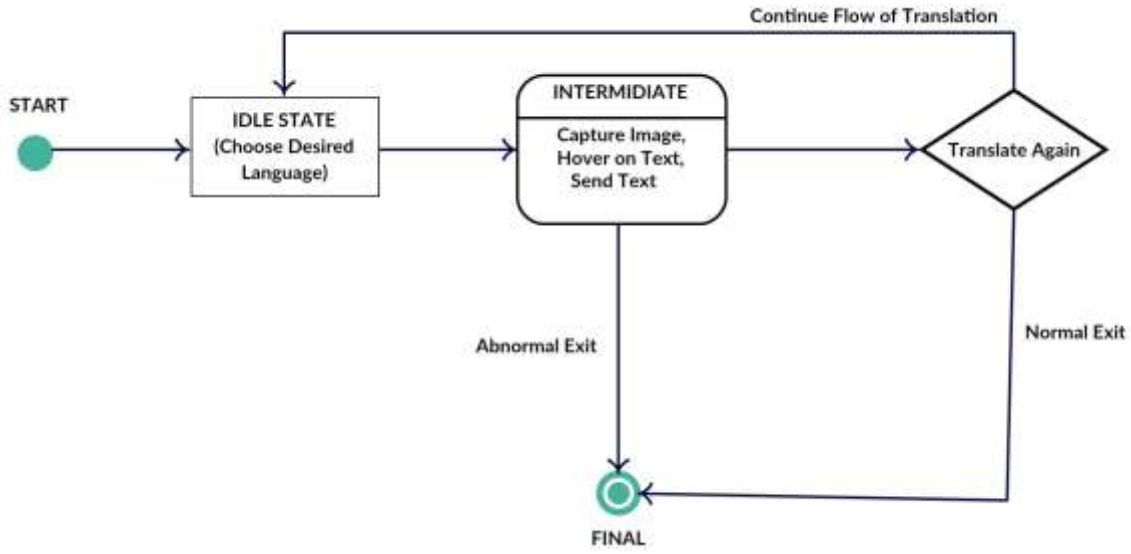
They help in validating the systems architecture and its evolution process. After a thorough understanding of the requirements of the system the use cases are modelled following the steps mentioned below: -

- Identify the actors that interact with the system.
- Organize actors according to their roles.
- Identify the primary ways in which an actor interacts with the system elements.
- Organize these behaviours as use cases.



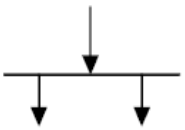
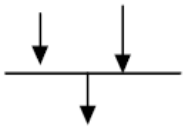
(Use case diagram)

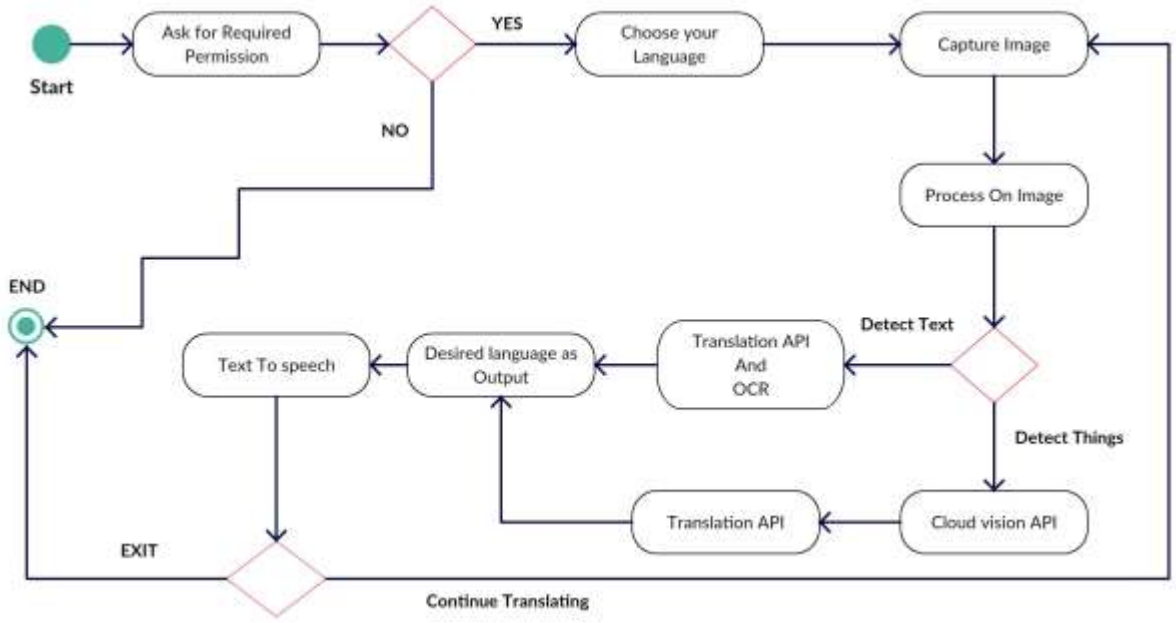
4.5.2 STATE DIAGRAM



4.5.3 ACTIVITY DIAGRAM

Activity diagrams are typically used for business process modelling, for modelling the logic captured by a single use case or usage scenario, or for modelling the detailed logic of a business rule. Although UML activity diagrams could potentially model the internal logic of a complex operation it would be far better to simply rewrite the operation so that it is simple enough that you don't require an activity diagram. In many ways UML activity diagrams are the object-oriented equivalent of flow charts and data flow diagrams (DFD) from structured development.

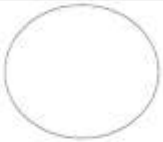
Name	Symbol
Activity	
Data Flow	
Start	
Stop	
Condition	
fork	
Join	



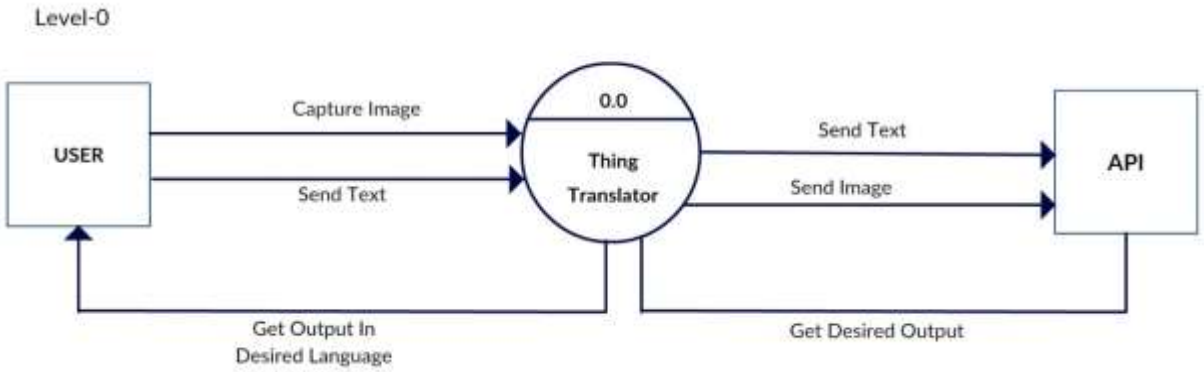
(Activity diagram)

4.5.4 DATA FLOW DIAGRAM

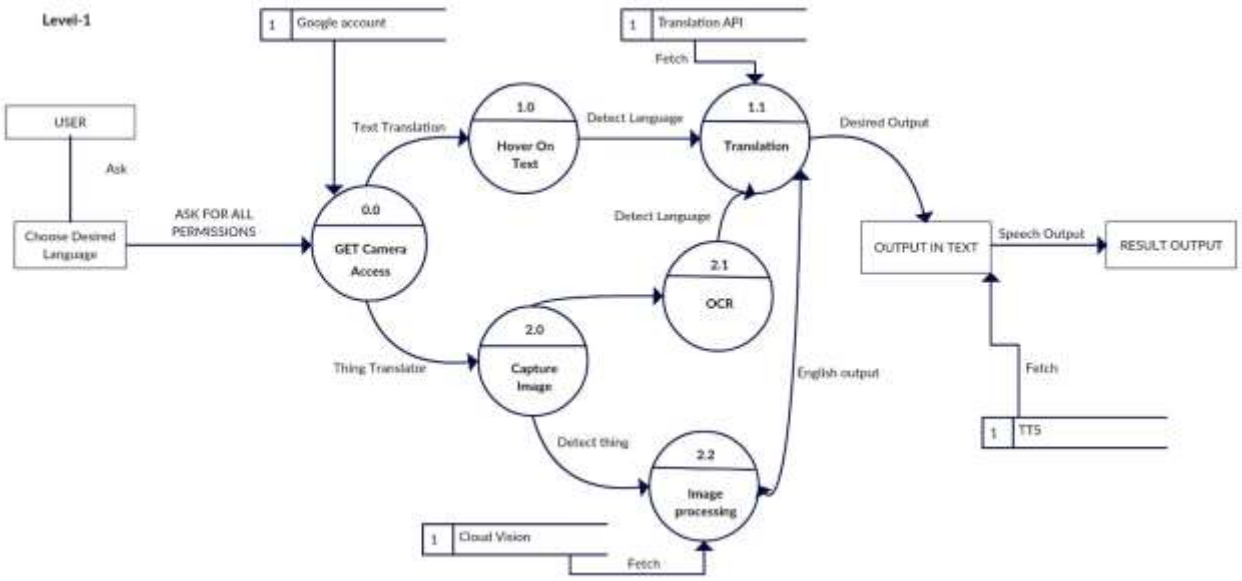
Data flow diagrams show the dependencies between values and the computation of output value from input values and functions, without regard for when or if the functions are executed.

Name	Symbol
An External entity	
Data Flow	
Processes	
Data Store	

4.5.4 DFD LEVEL-0

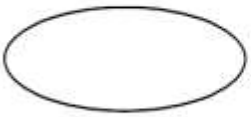
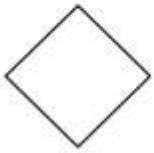


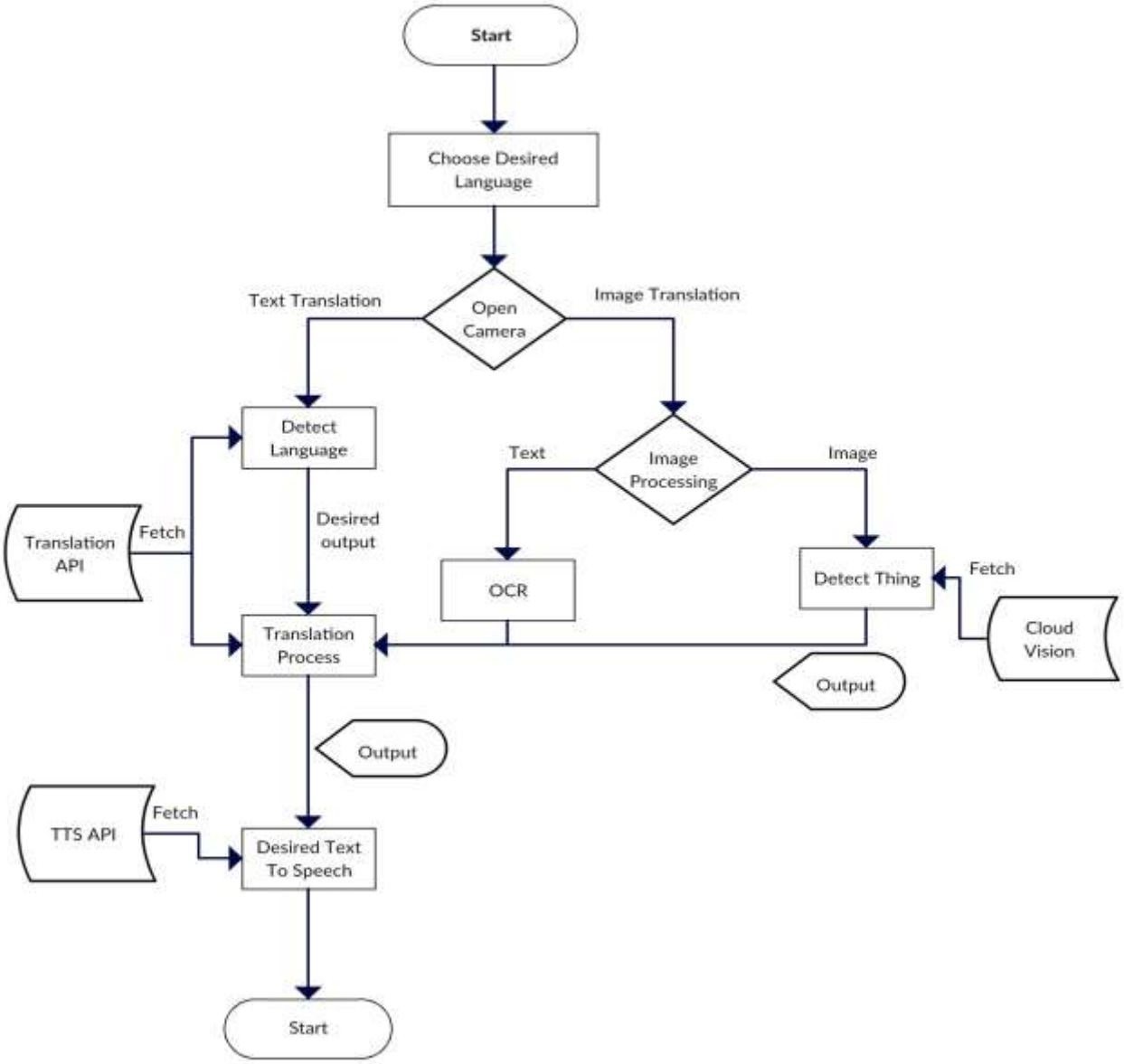
4.5.5 DFD LEVEL-1



4.5.6 FLOW CHART

"The flowchart is a means of visually presenting the flow of data through an information processing systems, the operations performed within the system and the sequence in which they are performed."

Symbol	Name	Description
	Oval	Starting /Ending point
	Flow/Arrow	It shows the flow of diagram.
	Decision	A diamond is used to take a decision with one flow entering & several leaving.


Start
Choose Desired Language
Open Camera
Text Translation
Image Translation
Detect Language
Translation API
Fetch
Desired output
Translation Process
Text
Image Processing
Image
OCR
Detect Thing
Fetch
Cloud Vision
Output
Output
TTS API
Fetch
Desired Text To Speech
Start

(Flow Chart)

4.5.7 SEQUENCE DIAGRAM

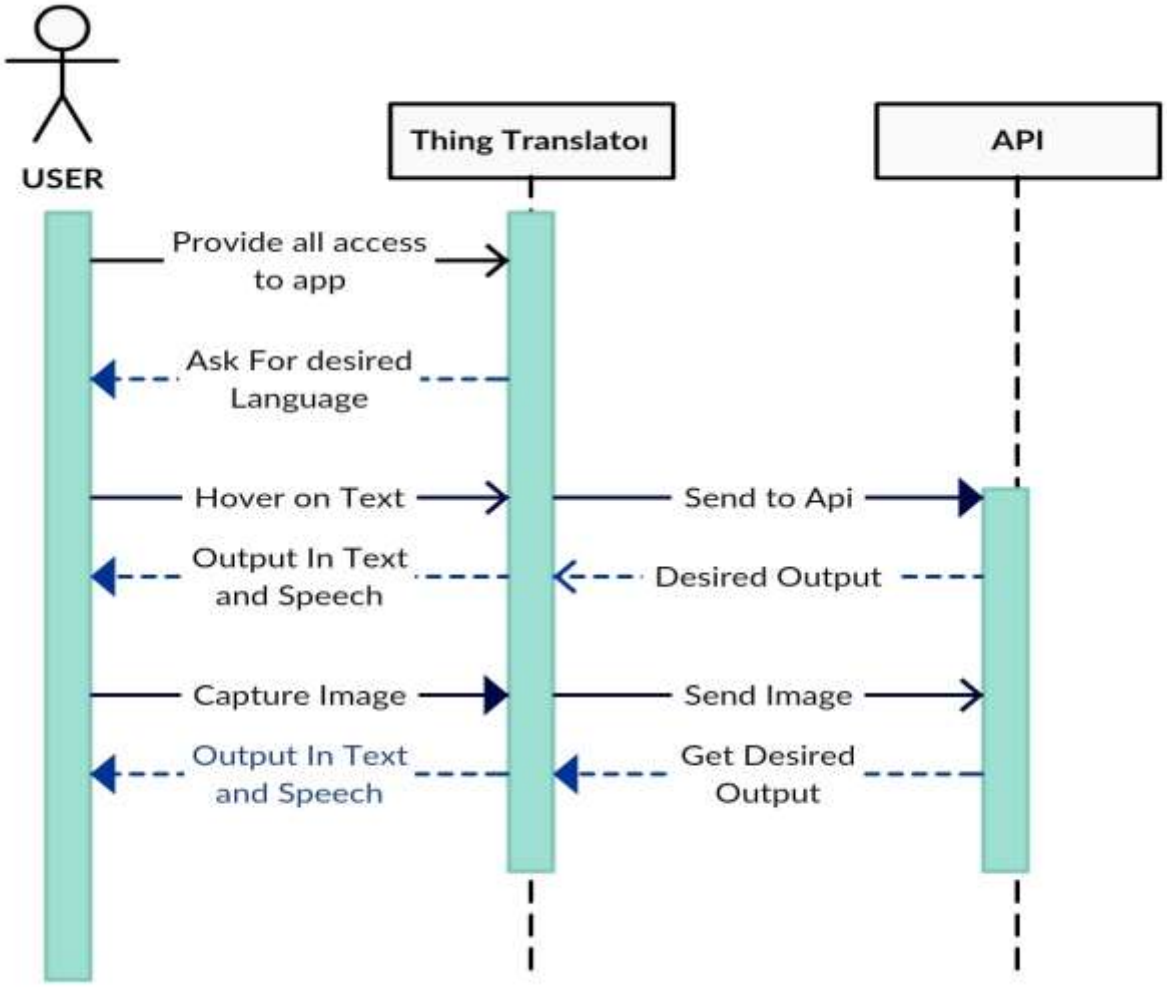
A Sequence diagram depicts the sequence of actions that occur in a system. The invocation of methods in each object, and the order in which the invocation occurs is captured in a Sequence diagram. This makes the Sequence diagram a very useful tool to easily represent the dynamic behaviour of a system.

A Sequence diagram is two-dimensional in nature. On the horizontal axis, it shows the life of the object that it represents, while on the vertical axis, it shows the sequence of the creation or invocation of these objects.

Because it uses class name and object name references, the Sequence diagram is very useful in elaborating and detailing the dynamic design and the sequence and origin of invocation of objects.

Hence, the Sequence diagram is one of the most widely used dynamic diagrams in UML.

A sequence diagram is made up of objects and messages. Objects are represented exactly how they have been represented in all UML diagrams—as rectangles with the underlined class name within the rectangle.



(Sequence diagram)

5. IMPLEMENTATION PLANNING

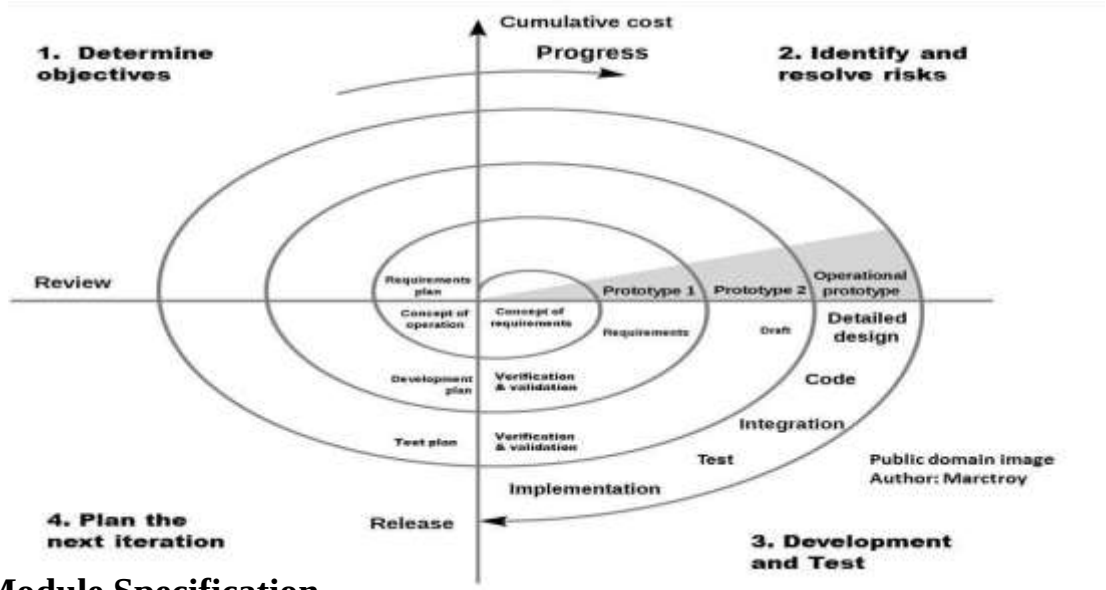
5.1 Implementation Environment

The application's implementation environment is single-user, that is, only one user can be active and can operate this application at a time, and this is hardware based. It follows the given approach for its development and completion:

Spiral Model:

- A project plan, will be defined as a formal, approved document used to guide both project execution and project control.
- Firstly, the analysis regarding the entire project will take place by reviewing various similar systems. The negative and positive aspects of them will be analyzed and evaluated.
- The spiral model is a software development process combining elements of both design and prototyping in stages, in an effort to combine advantages of top-down and bottom-up concepts. Also known as the spiral lifecycle model, it is a system development method used in information technology. This model of development combines the features of the prototyping and the waterfall model. The spiral model is intended for large, expensive, and complicated projects.

Below figure shows the process flow of typical spiral model:



5.2 Module Specification

The implementation will be carried out in various modules. We have identified several modules, which are as follows:

- **User Interface:** Since this project is based on ANDROID and our users will directly deal with the software, our user interface is easy to use hardware interface consists of a camera, processing unit such as android smart phone , memory card, speaker, microphone, and various working internet connection.

5.3 Security and Safety Features

Since this project is a software and online, there are few to none security risks involved. However, there are other issues related to safety that we have to consider to provide a secured and safe device, these are as follows:

- Altercation in OCR or Cloud Vision module might not give proper translation and ultimately, may not work accurately.

6. SYSTEM TESTING

6.1 Testing Plan

- The Test Plan document on the other hand, is derived from the Product Description, Software Requirement Specification SRS, or Use Case Documents.
- The Test Plan document is usually prepared by the Test Lead or Test Manager and the focus of the document is to describe what to test, how to test, when to test and who will do what test.
- It is not uncommon to have one Master Test Plan which is a common document for the test phases and each test phase have their own Test Plan documents.
- There is much debate, as to whether the Test Plan document should also be a static document like the Test Strategy document mentioned above or should it be updated every often to reflect changes according to the direction of the project and activities.
- My own personal view is that when a testing phase starts and the Test Manager is "controlling" the activities, the test plan should be updated to reflect any deviation from the original plan. After all, Planning and Control are continuous activities in the formal test process.

  - ✓ Test Plan id
  - ✓ Introduction
  - ✓ Test items
  - ✓ Features to be tested
  - ✓ Features not to be tested
  - ✓ Test techniques
  - ✓ Testing tasks
  - ✓ Suspension criteria
  - ✓ Features pass or fail criteria
  - ✓ Test environment (Entry criteria, Exit criteria)
  - ✓ Test deliverables
  - ✓ Staff and training needs
  - ✓ Responsibilities

6.2 Testing Strategy

- Test Strategy document is a high level document and normally developed by project manager. This document defines "Testing Approach" to achieve testing objectives. The Test Strategy is normally derived from the Business Requirement Specification document.
- The Test Strategy document is a static document meaning that it is not updated too often. It sets the standards for testing processes and activities and other documents such as the Test Plan draws its contents from those standards set in the Test Strategy Document.
- Some companies include the "Test Approach" or "Strategy" inside the Test Plan, which is fine and it is usually the case for small projects. However, for larger projects, there is

one Test Strategy document and different number of Test Plans for each phase or level of testing

- ✓ Components of the Test Strategy document:
- ✓ Business issues
- ✓ Roles and responsibilities
- ✓ Communication and status reporting
- ✓ Test deliverability
- ✓ Industry standards to follow
- ✓ Test automation and tools
- ✓ Testing measurements and matrices
- ✓ Risks and mitigation
- ✓ Defect reporting and tracking
- ✓ Change and configuration management

- Software testing involves executing an implementation of the software which tests data and examining the outputs of the software and its operational behaviour to check that it is performing as required.

- **Unit Testing:** Unit testing has been done based on state-based testing in which all the functions of the class have been tested for its domain values and boundary case values and for the correct value interaction between the functions within the classes.

- **Integration Testing:** The testing was done for all the modules as mentioned in the process map the input and output details were found to be as per requirement and in consistency with the specifications mentioned in the design.

- **System Testing:** The testing proved that the system was compliant with the requirements as specified in the Use Case and SRS. Integration of Common Login, Master Page, Security and Sub ledger were tested and found to be successful.

- **Acceptance Testing:** After each module completion, meetings were arranged with users to check user acceptance. When user was not satisfied according changes were made to full fill user requirements.

- **Performance Testing:** It was tested that Our System is performing to its maximum potential. Slow response is costly in terms of the known problems reported to customer service and in unknown missed opportunities. Appropriate message display is handled during execution of the application.

We have performed all these testing strategies and acquired the positive results.

6.3 Testing Methods

- In Black Box Testing we just focus on inputs and output of the software system without bothering about internal knowledge of the software program.
- The above Black Box can be any software system you want to test. For example : an operating system like Windows, a website like Google, a database like Oracle or even your own custom application. Under Black Box Testing, you can test these applications by just focusing on the inputs and outputs without knowing their internal code implementation.

6.3.1 Black box testing

Steps:

- Initially requirements and specifications of the system are examined.
- Tester chooses valid inputs (positive test scenario) to check whether SUT processes them correctly. Also some invalid inputs (negative test scenario) are chosen to verify that the SUT is able to detect them.
- Tester determines expected outputs for all those inputs.
- Software tester constructs test cases with the selected inputs.
- The test cases are executed.
- Software tester compares the actual outputs with the expected outputs.
- Defects if any are fixed and re-tested.

Types of Black Box Testing:

There are many types of Black Box Testing but following are the prominent ones

- **Functional Testing**: This black box testing type is related to functional requirements of a system; it is done by software testers.
- **Non-functional Testing** – This type of black box testing is not related to testing of a specific functionality, but non-functional requirements such as performance, scalability and usability.
- **Regression Testing** – Regression testing is done after code fixes, upgrades or any other system maintenance to check the new code has not affected the existing code.

Tools used for Black Box Testing

- Tools used for Black box testing largely depends on the type of black box testing you are doing.
  - ✓ For Functional/ Regression Tests you can use – QTP
  - ✓ For Non-Functional Tests you can use – Load runner

Black box testing strategy

Following are the prominent test strategy amongst the many used in Black box Testing

- **Equivalence Class Testing**: It is used to minimize the number of possible test cases to an optimum level while maintains reasonable test coverage.
- **Boundary Value Testing:** Boundary value testing is focused on the values at boundaries.

This technique determines whether a certain range of values are acceptable by the system or not. It is very useful in reducing the number of test cases. It is mostly suitable for the systems where input is within certain ranges.

6.3.2 Functional Testing:

Functional testing means testing the application against business requirements.
Functional testing is executed using the functional specifications given by the client or by the design specifications according to use cases given by the design team. Role of functional testing is to validating the behaviour of an application.

Functionality testing is performed to verify that a software application performs and functions correctly according to design specifications. During functionality testing we check the core application functions, text input, menu functions and installation and setup on localized machines, etc.

6.3.2.1 Types of Functional Testing

1. Positive functional testing: This testing carries exercising the application's functions with valid input and also verifying that the outputs are correct.

2. Negative functional testing: This testing involves exercising application functionality using a combination of invalid inputs, some unexpected operating conditions and by some other "out-of-bounds" scenarios.

6.3.3 Usability:

In usability testing basically the testers tests the ease with which the user interfaces can be used. It tests that whether the application or the product built is user-friendly or not.
Usability Testing is a black box testing technique.

6.4 Test Cases:

Case 1: Getting permission of Camera and Audio from user:

Purpose: Purpose of this case is the whole things translator is need camera and audio permission of user device so we must ask for that while user opens our app but it won't ask for permission every time once a permission is given after that it will automatically access the camera and audio.

Condition	Expected Result
Camera and Audio Permission Granted	Open up Camera
Camera and Audio Permission Declined	Close the App

Table 6.4.1 Permission Test Case

Case 2: Clicking on Object button:

Purpose: The main object Recognition Concept is built using react.js and node.js because of high speed of JavaScript and we can develop native apps. So we need to check that the .js concept is working while clicking on button.

Condition	Expected Result
Click on Object Button	Open up Camera

Table 6.4.1 Object button Test Case

Case 3: Clicking on OCR button:

Purpose: OCR is basically for detecting test from our around environment in real time, we must make sure that clicking on OCR button will give expected output to us.

Condition	Expected Result
Click on OCR Button	Open up Camera

Table 6.4.1 OCR button Test Case

Case 4: Object Recognition Screen Test Case:

Purpose: Now to detect what's the object is in screen we need to click on capture button it won't consume any space form your phone but it does require internet connection for image analysis and getting output. So we have to test for the all process available there in object recognition screen.

Condition	Expected Result
No internet connection found	Object.js won't work and threw error
All connections are proper	Open up Camera
User can able to choose desired language in which they want output from listed choices	Desired language shown up in list format
Default language	English and Spanish
Capture image by click on capture button (white circle)	Show loading bar and send image to API for analysis and disable Capture button
After analyzing Image	Show output on camera screen
After Getting Output	Enable Capture button and Show list of languages
Clicking on mobile's back button	Go to home page
Clicking on mobile's back button twice	Close the application

Table 6.4.1 Object Recognition Test Case

Case 5: OCR Screen Test Case:

Purpose: OCR is basically for detecting test from our around environment in real time, we must make sure that clicking on OCR button will give expected output to us. So we need to test for all processes and features of OCR screen. OCR works offline too so no need to worry if there is no internet connection available.

Condition	Expected Result
Hover over text for detection	Use API for real time character detection and gave output.
Clicking on mobile's back button	Go to home screen
Clicking on mobile's back button twice	Close application

Table 6.4.1 OCR Test Case

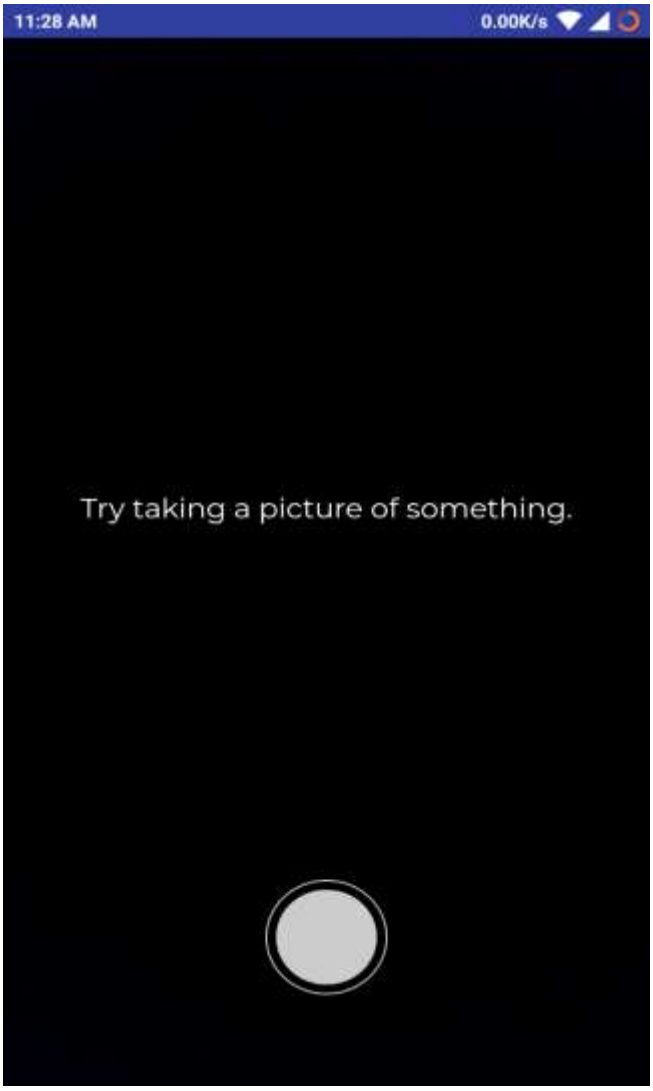
7. SCREEN SHOTS AND USER MANUAL

7.1 PROJECT SCREEN SHOTS

7.1.1 Things Translator Logo

7.1.2 Home Page

7.1.3 Object Recognition UI



7.1.4 Object Recognition Examples:

7.1.4.1 Example 1

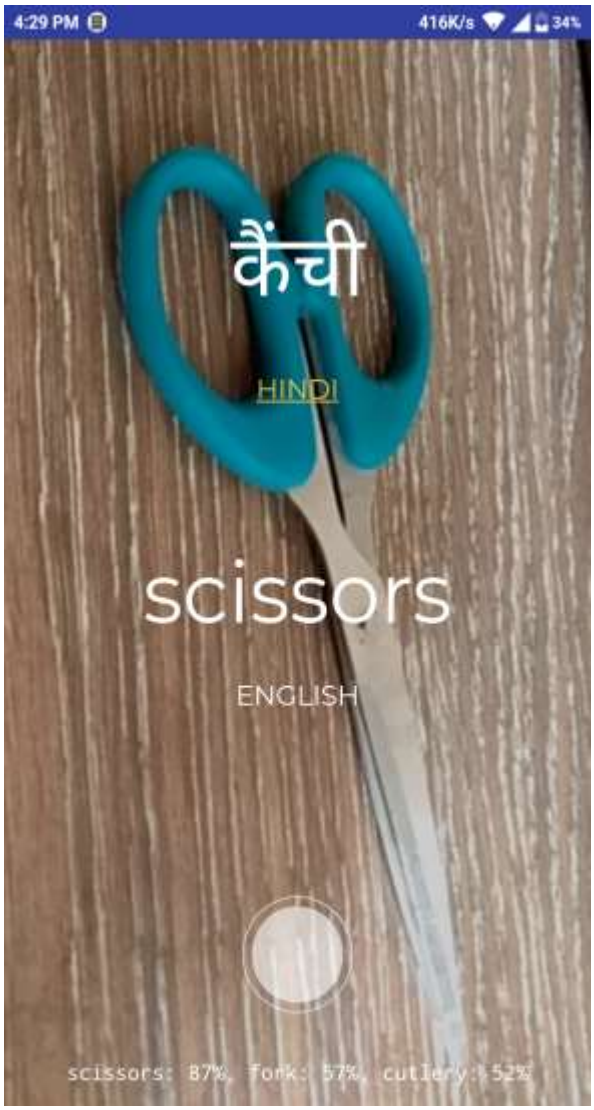
7.1.4.2 Example 2

7.1.4.3 Example 3

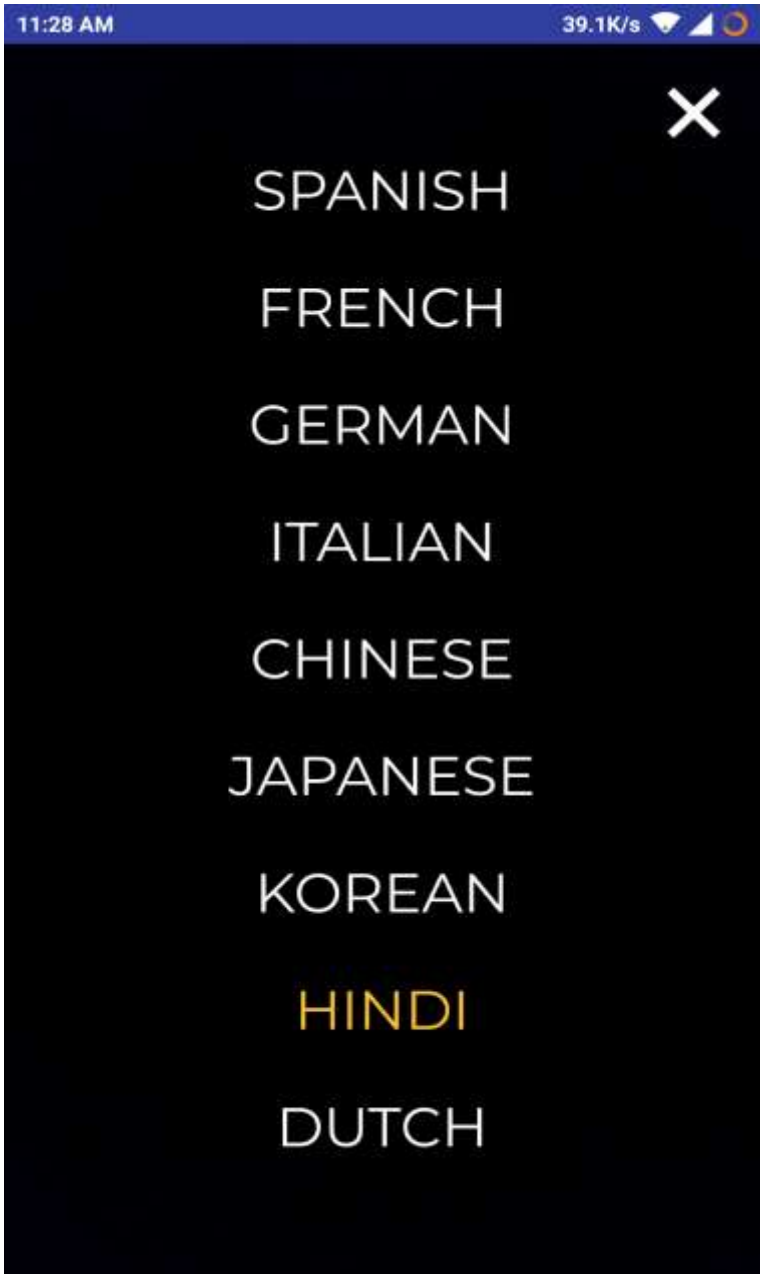
7.1.4.4 Example 4

7.1.4.5 Example 5

7.1.4.6 Example 6



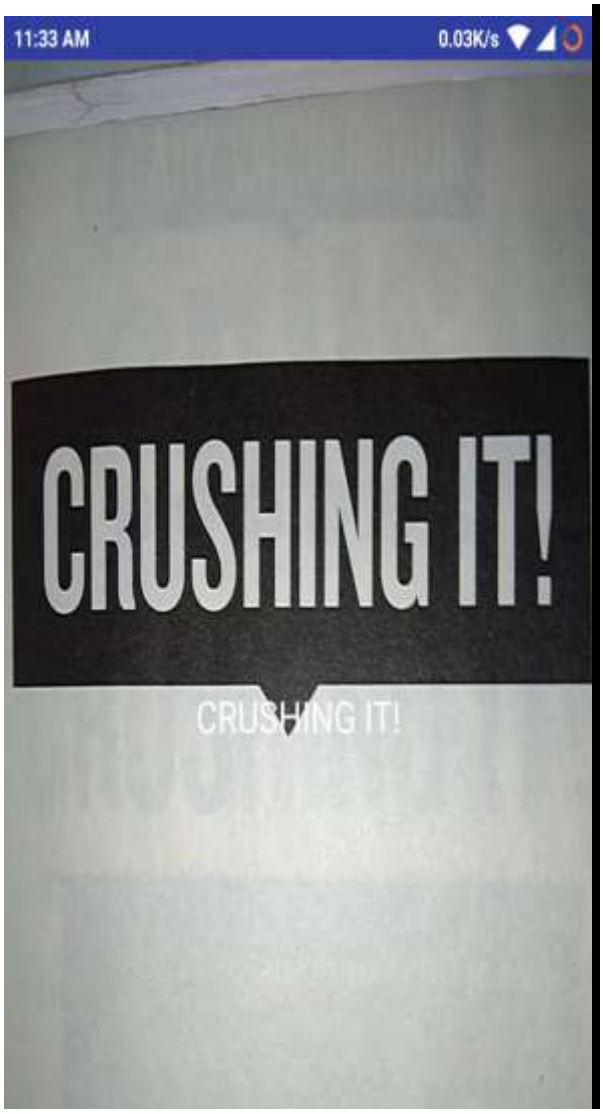
7.1.5 Object Recognition Language List



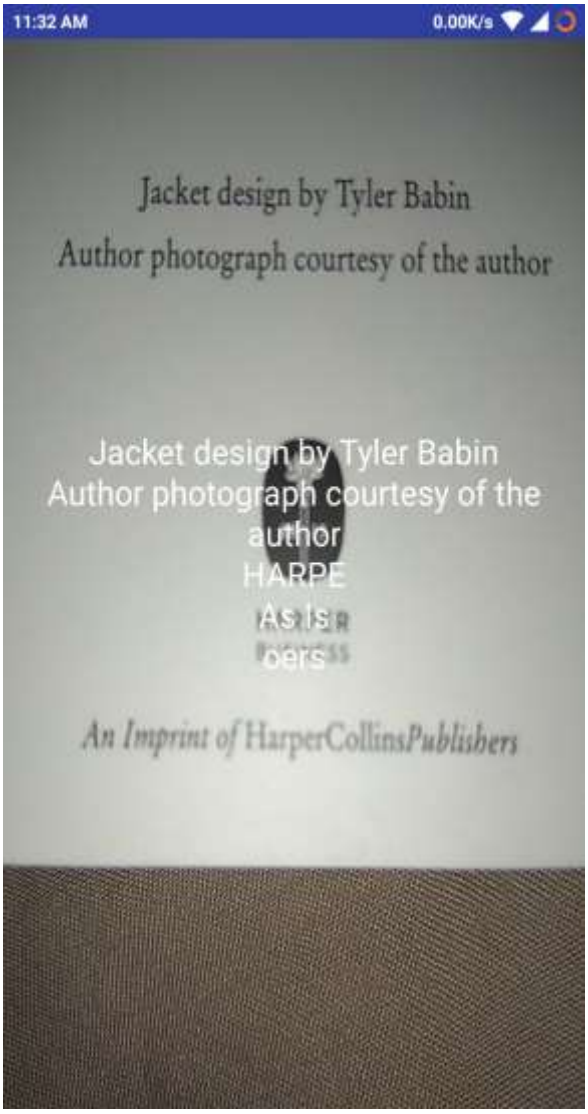
7.1.6 Object Character Recognition UI

7.1.7 Object Character Recognition Examples:

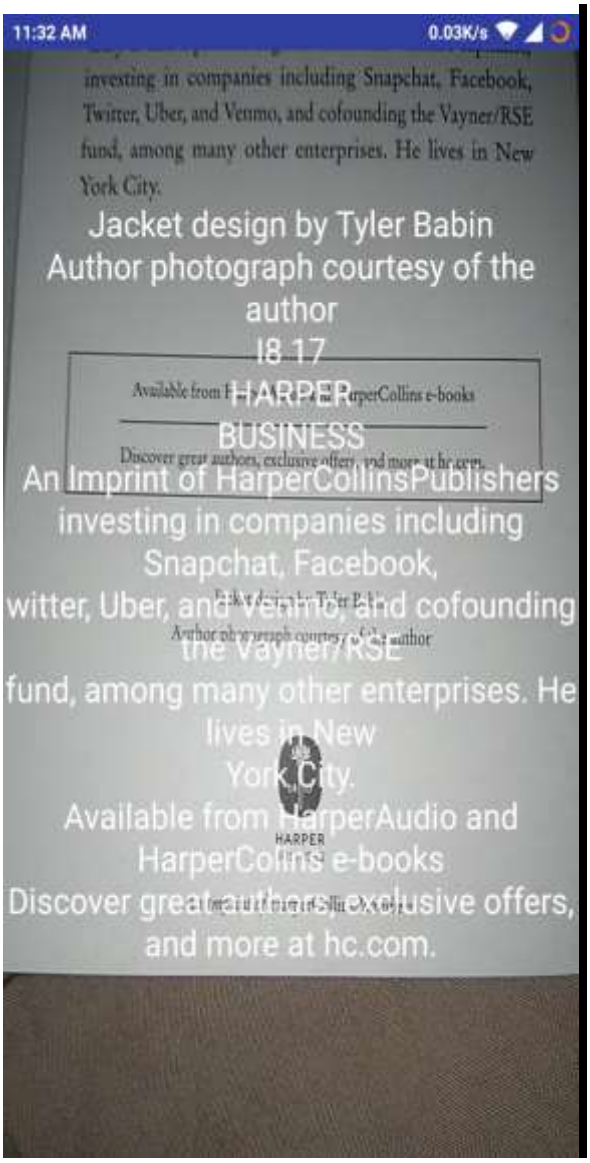
7.1.7.1 Example 1



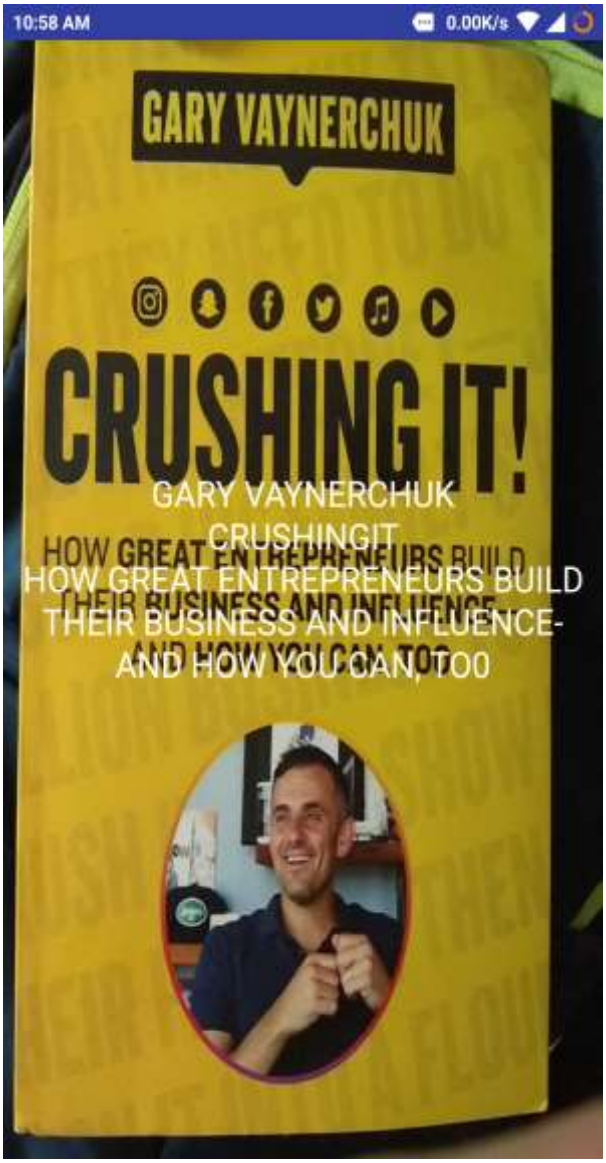
7.1.7.2 Example 2



7.1.7.3 Example 3



7.1.7.4 Example 4



7.2 User Manual

The Main Features of Application:

1. Object Recognition:
   For Performing Object Detection Flow below steps
   a. After opening Things Translator Click on Object Button (Provided on bottom right corner)
   b. When you first time click on Object button it's ask for some permission like camera, audio, click ok and give all permission to Things Translator App.
   c. After Permission is given it will automatically open up a Camera for you, so you just need to capture image of object about which you want to know the details.
   d. After that you can also able to select desired languages from given language list for that just click on top output language by default it's Spanish (Translation language) and detection language is English.
   e. Once you have with Object detection you can press mobile's back button once for going to home screen or twice for quit the application.

2. Object Character Recognition:
   For Performing Text Detection Flow below steps
   a. After opening Things Translator Click on OCR Button (Provided on bottom left corner)
   b. When you first time click on Object button it's ask for some permission like camera, audio, click ok and give all permission to Things Translator App.
   c. After Permission is given it will automatically open up a Camera for you, so you just need to hover over this camera on any text which you want to detect.
   d. No need to capture image or anything it will automatically detect text and show output on same screen.

e. Amazing thing is this feature also works offline so no problem if you don't have internet connection.
f. Once Text is detected you can see that output on screen as well as you can save that on keyboard too.
g. Once you have with Object detection you can press mobile's back button once for going to home screen or twice for quit the application.

So above are the steps of how you user can use our applications full feature without any issue. We tried to make this lot easier for all type user so they won't face any issue while using this application.

We have also prepared a YouTube video about all features of this application and how you can use it.

YouTube Video Link: https://www.youtube.com/watch?v=xYSLxFrCJt0

8. LIMITATION AND FUTURE ENHANCEMENT

8.1 Limitations

One of the major limitation is we won't have much language APIs so we are not able to translate object name into all Indian languages.
Also for whole sentence translation into desired language we need an efficient API Google right only provide less amount of string test for free, but it's not possible by everyone to pay for translation. So we need some awesome open source APIs for this.

8.2 Future Enhancement

- This application for now need internet connection to use it in future we will add an offline portion so that users also can able to use some features of application when they are in offline mode.
- Because this application is based on Image processing and OCR technology we can add an extra and government helpful feature too if government help us in this applications next version than we able to add a new feature, by that any traffic police inspector can able to find detail of about any vehicles using just its number plate.
- We will be adding new languages as per the languages APIs gets Open source
- We will be also adding offline package to download for to work without internet also.
- We can also save OCR text into pdf and can able to translate it into any language that's why we have created a variable for it into language so it can be useable whatever way developer wants.

9. CONCLUSION

This how we think let’s build at least something very useful for our Indians , this Thing translator is made for Indians and made by Indians ,so now no need to learn all the languages across India just use this application and your feel free to talk with anyone in any language, no worry about how to pronounce thing name if what a specific food just order it in their own native language now no need to worry about reading sign board, newspaper, books written in different languages, just use this application hover our text and you'll get accurate translation in second of times, no need to buy dictionary if you have smartphone you can go anywhere in India and can understand any language.

Most of foreigners hesitate to talk with native peoples in India and same Indian people as well because of language barrier or I say don't know how to pronounce words or name in Indian language, but with this application now everything is easy for them too they can talk with anyone can read newspaper can learn new stuff in native language.

Because of India have so many languages and no one can understand all the languages here so we need an assistant who can support us to do thing translation or language translations stuff for us, so for that Thing translator is a perfect solution.

No need to buy anything, this android based application is very easy to use easy to understand, easy to operate and very user-friendly.

Just need android phone with OS version higher than 4, and camera access permission and all setup done, now you have all language stored in into your pocket. Our main purpose is to break this language barrier between people so they can talk with each either very easily and don't feel hesitate while talking with new person from different locality.

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11. RESEARCH PAPER AND CERTIFICATES

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Things Translator

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[3]HOD, Alpha College Of Engineering And Technology

Abstract- *There are 27 states and 7 Union Territories in INDIA -- With 22 scheduled languages are there, and most spoken languages are Hindi, Bengali, Telugu, Marathi so if we want wander around other region in India outside our place there may be consequences that we may not know that language of that particular region, we find language barrier due to not understanding the language they speak plus there is if we want to read newspaper in other region so there would be also consequences that newspaper language is also in language that we don't know there is also a language barrier and also last but not the least if want to shop from other region the problem is same.*

Keywords- Thing Translator, Language Translation, Image Processing, OCR.

I. INTRODUCTION

Things Translator is an application which is object of the present invention to provide an improved object translation system which is capable of translation in real time with also translating & recognizing particular object by hover over it or capturing image of it.

It is another object of the present invention to provide a translation of any text to your own language. In this App you can either capture image of particular text otherwise hover over object it will tell you what that object is called in your desired language And also will pronounce the word of translated object text/word.

Our application is also capable of recognizing particular text which is in foreign language but mainly our aim to build is for local languages i.e. newspaper, books, boarding of shops, etc. So you need to select desired translating language provided by us in application And you have two options to translate this you can hover over any newspaper, books etc. so it will translate in real time otherwise you can capture image of any object it will process on image by using object character recognition and cloud vision and will provide a picture for desired translation language.

II. RESEARCH AND IDEA

Here in India we have so many religion with its different caste thus they speak different languages as per their locality. So it's hard to understand and learn all the languages across country INDIA and also to interact and communicate with them in their native language. This language barrier is mainly hit to foreigners and tourists or travelers, they don't know our native language so it's hard for them to talk with native peoples.
Some time we does know which type of language people talk in an area but we don't know how to pronounce things name there like food name, street name, home name, person name, so we know the language type but still don't know how to pronounce things name in their native language. Some time while travelling in different states of India and we don't know what's written on sign board, newspaper, shop name, or also while study in different state this language barriers is really effect so much.

We did research on so many products available out there like Microsoft translation, Bing translation also other Vision API and Translation also like clarifai (https://www.clarifai.com/), blippar(https://developer.blippar.com/portal/vs-api/index/?checked_login=true), Google cloud vision (https://cloud.google.com/vision/), For Translation we looked for so many libraries and APIs like languagelayer (https://languagelayer.com/), yandex (https://tech.yandex.com/translate/), Google Translation (https://translate.google.com/).
We read about OCR techniques (https://en.wikipedia.org/wiki/Optical_character_recognition) and implemented into our application.

So the idea of this application was inspired by Google translator and Google's AI experiments, which only does this image processing and translation task for English to other languages, there is nothing available on internet for our Indian Languages, also Google translator's process is you need type there which word you want to translate into other languages. So inspired by that we used that idea with our creative imagination and tried to build something for our India and also a very user friendly and easy to use system in which you no need any extra knowledge or no need to type anything for getting your desired output.

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III. CURRENT SYSTEM ANALYSIS

Write now we do have so many translation tools, applications, software's but still nothing is work for our Indians because we have so many different languages. Talk about big companies like Google, yahoo, Microsoft yes they do have their translation APIs but still those are not so relevant, yes our idea is inspired by Google's AI experiment but we did so much analysis on it, and we developed our own android application which is mainly for Indians and also it have more features and also very easy to use.

Google can translate text to text thing, while with image only work when we have English text written in there. But our application will work with most of all Indian languages, or If you API you can suggest for your own local language too. Well there is nothing developed yet which can detect the thing or object name and pronounce it to our desired language. Right now Google just grab text from user detect its language type and try to translate it into desired language.

IV. LITERATURE REVIEW

The investigation of the idea was taken place and it was known that most of the language translator we used will not so much relevant for our Indian languages an also there is nothing available which can translate text and real time and also can tell you thing name into your own desired language, there are so many software's, applications are available like Google translator, Bing translator, Microsoft's own language translator, yendex translator and so on but these all are only work when you type something and then it will translate that text into your desired language, but for our Indian that is so hard thing because we have so many languages here in India so it hard to learn them all and write them all, so like if you want to read newspaper in other state of India what you will do? You have nothing which can help you to translate that newspaper into your own language? So that the limitation of this all products available on internet in market. So this Things Translator Application is able to translate text in real time just hover our text and done you will get your output that's not it, this application also provide you a text to speech feature by which you can able to know how to pronounce that word which is written there. And main part its very user friendly and easy to use system. Not just text translation, this application is also able to translate thing name, like you can capture image of bird or chair or glass anything it will tell you what that thing is and also what it called in different languages and it will pronounce that name for you. This is how easy it is for user to translate text and thing name into their local language.

V. METHODOLOGY

Things Translator- an android application will work on all android devices. The main purpose of this application is:

I. Reducing Language barrier between different localities.

II. A user friendly and easy to use platform to make object recognition and translation very easy in different location by just capturing image or hover over text.

III. A Platform which tells you how to pronounce thing/object translated in different languages.

IV. There is 27 states and 7 union territories in INDIA so if we go to some other region then maybe we don't know how speak their native language and we don't understand what language they have used Also if we want to read their newspaper or go to shopping it's hard to recognize their language & whatever the language they used in newspaper or in shopping they don't know how to speak in some other language so language barrier hits them.

V. If foreigner comes to India to visit & shopping, the same scenario will occur as said in above point they also don't know how to speak their native language

VI. If we want to manage the business in some other locality that we don't know than language barrier is issue there. Unable to manage the client from different country or states if they speak some other language.

The application will work in following way:

I. User will open our application Things Translator, after giving permission like camera and Internet it will automatically open camera there on screen.

II. We have two feature into our application one is thing translator and other is text translation.

III. So for thing translation users need to click a photo from using our app of that particular thing, After getting image our app in backend do all the image processing work and give output to the user that what that thing is called into your desired language, also it will pronounce it out for you.

IV. For text translation user can hover over to the text our app will detect the text using OCR (Object Character Recognition) technique, than it will translate that text into your desired languages.

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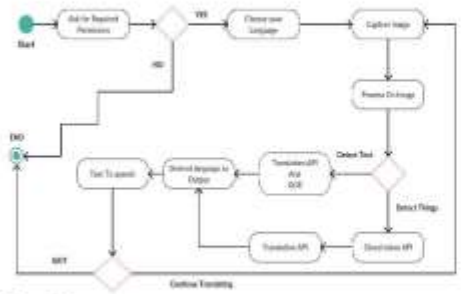
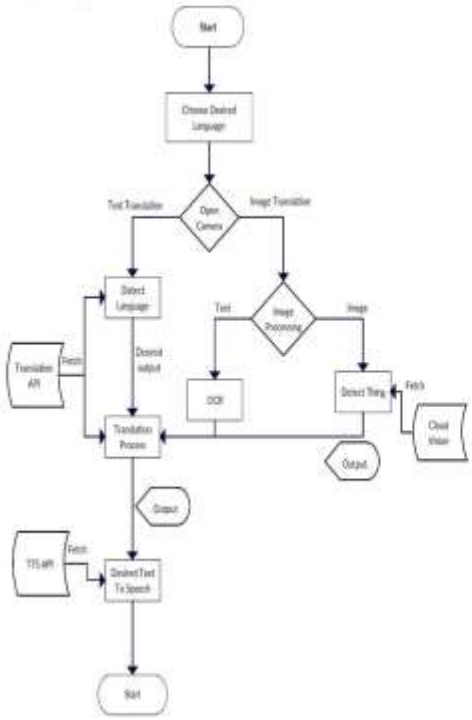


Activity Diagram



Flow Chart

VI. SPECIAL FEATURES

The idea of this application was inspired by Google translator and Google's AI experiments, which only does this image processing and translation task for English to other languages, there is nothing available on internet for our Indian Languages, also Google translator's process is you need type there which word you want to translate into other languages. So inspired by that we used that idea with our creative imagination and tried to build something for our India and also a very user friendly and easy to use system in which you no need any extra knowledge or no need to type anything for getting your desired output.

Also it will helpful for users to read newspapers books or getting name of things into their own local languages all our India. There is no such android application is available for this type of things translation as well as real time text translation anywhere.

We have included:

1. **Real Time Text Translation:** In this feature user just need to hover over any text our application will detect the language using Object character recognition and by using translation API it will translate that detected text into your desired language.

   API's we are used here are:
   Google Translation API: For real time text translation.

   TTS (Text-to-Speech) API: For proper pronunciation of translated text.

2. **Things Translation:** In this feature user just need to capture the image and our application will detect the object by using some image processing or using Vision API and after getting detecting object it will translate it into your desired language.

   API's we used here are:
   Google Vision API: For image processing and object detection.

   Google Translation API.
   TTS (Text-to-Speech) API.

VII. CONCLUSION

This how we think let's build at least something very useful for our Indians, this "Things translator" is made for Indians and made by Indians, so now no need to learn all the languages across India or no need to keep translator/assistant with you , just use this application and feel free to talk with anyone in any language, no worry about how to pronounce thing name if what a specific food just order it in their own native language now no need to worry about reading sign board, newspaper, books written in different languages, just use this application hover our text and you'll get accurate translation in second of times, no need to buy dictionary if you have

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smartphone you can go anywhere in India and can understand any language.

Most of foreigners hesitate to talk with native peoples in India and same Indian people as well because of language barrier or I say don't know how to pronounce words or name in Indian language, but with this application now everything is easy for them too they can talk with anyone can read newspaper can learn new stuff in native language. Because of India have so many languages and no one can understand all the languages here so we need an assistant who can support us to do thing translation or language translations stuff for us, so for that Thing translator is a perfect solution. No need to buy anything, this android based application is very easy to use easy to understand, easy to operate and very user-friendly. Just need android phone with OS version higher than 4, and camera access permission and all setup done, now you have all language stored in into your pocket. Our main purpose is to break this language barrier between people so they can talk with each either very easily and don't feel hesitate while talking with new person from different locality.

FUTURE IMPLIMANTATION

This application for now need internet connection to use it in future we will add an offline portion so that users also can able to use some features of application when they are in offline mode.

Because this application is based on Image processing and OCR technology we can add an extra and government helpful feature too if government help us in this applications next version than we able to add a new feature, by that any traffic police inspector can able to find detail of about any vehicles using just its number plate.

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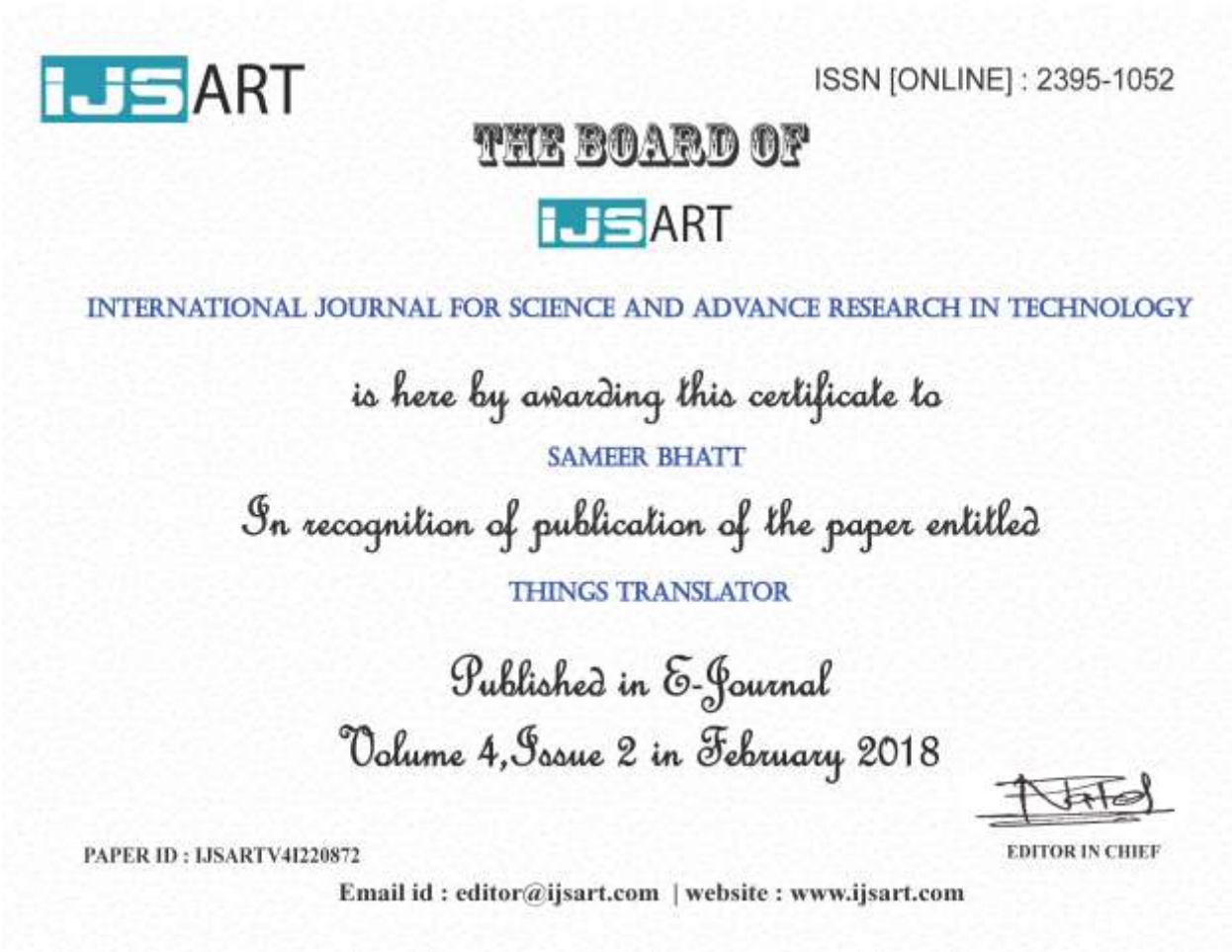

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