

A Project Report On
“DIALECT INTERPRETER”
A Language Translating Application



Prepared By:

Afrozbanu Malek (20DCS048)

Shivangi Modi (20DCS051)

Disha Padshala (20DCS057)

Under The Guidance Of:

Prof. Ritiksha Modi

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Dist. Anand, Pin: 388 421, Gujarat.

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CERTIFICATE

This is to certify that the report entitled “DIALECT INTERPRETER: A Language Translating Application” is a Bonafide work carried out by

Miss Afrozbanu Malek (20DCS048)

Miss Shivangi Modi (20DCS051)

Miss Disha Padshala (20DCS057)

under the guidance and supervision of Assistant Prof. Ritiksha Modi for the subject CS445-Software Group Project of 3rd Semester of Bachelor of Technology in DEPSTAR at Faculty of Technology & Engineering – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate herself, has duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred to the examiner.

Dr. Amit Ganatra

Principal, DEPSTAR

Dean, FTE, CHARUSAT,

Changa, Gujarat.

Parth Goel

Head of Department, CSE

DEPSTAR, Changa,

Gujarat.

Ritiksha Modi

Assistant Professor, CSE

DEPSTAR, Changa,

Gujarat

Devang Patel Institute of Advance Technology and Research (DEPSTAR)

At: Changa, Ta. Petlad,

Dist. Anand, Pin: 388 421, Gujarat.

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We with immense pleasure and commitment would like to present the project assignment. The development of this project has given us wide opportunity to think, implement and interact with various aspects of management skills as well as the new emerging technologies.

Every work that one completes successfully stands on the constant encouragement, good will and support of the people around. We hereby avail this opportunity to express our gratitude to number of people who extended their valuable time, full support and cooperation in developing the project.

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Thankyou,

20DCS048 Afrozbanu Malek

20DCS051 Shivangi Modi

20DCS057 Disha Padshala

ABSTRACT

For the modern implementation of the education system, translation and language learning tools are needed. In information communication, language has been a significant barrier for centuries now, and human beings have always tried to provide a solution to the issues of language translation. Over the decade's humans have developed different ways of translating languages in other to solve the problems associated with language differences. The first approach which was implemented in solving this language problem was by using human translators that will be able to understand and translate both languages to the involved parties.

This method was the first method introduced and has been used for decades, which has proven not to be the most efficient and effective method of language translation proven over the years. This method involves the translator being able to comprehend and express the language being translated and also understand and talk about the language of the party in which the language is going to be traduced.

Translation of languages is useful in many aspects, such as education. It is challenging to teach in a specific language if the people being led do not understand the language of the tutor. For the students to have a complete understanding of what they are being taught, an interpreter will be needed. In tourism, tourists may not be able to communicate with people successfully in the tourist country he visited, thus hindering communication. In communicating in general language, differences could lead to hindrance inaccurate dissemination of information.

Keywords:

- Software Development Kit (SDK),
- Application Programming Interface (API),
- Extensible Markup Language (XML),
- Android Manifest (XML File),
- Firebase ML Kit,
- Java,
- Android Studio,
- App Development.



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CHAPTER 1: INTRODUCTION

1.1 Problem Summary

For the modern implementation of the education system, translation and language learning tools are needed. In information communication, language has been a significant barrier for centuries now, and human beings have always tried to provide a solution to the issues of language translation.

Over the decade's humans have developed different ways of translating languages in order to solve the problems associated with language differences.

1.2 Objective

- Translation of languages is useful in many aspects, such as education.
- It is challenging to teach in a specific language if the people being led do not understand the language of the tutor.
- For the students to have a complete understanding of what they are being taught, an interpreter will be needed.
- In tourism, tourists may not be able to communicate with people successfully in the tourist country he visited, thus hindering communication.
- In communicating in general language, differences could lead to hindrance in accurate dissemination of information.

1.3 Literature Review

- The first approach which was implemented in solving this language problem was by using human translators that will be able to understand and translate both languages to the involved parties.
- This method was the first method introduced and has been used for decades, which has proven not to be the most efficient and effective method of language translation proven over the years.
- This method involves the translator being able to comprehend and express the language being translated and also understand and talk about the language of the party in which the language is going to be translated.

1.4 Project Description

- ⇒ A Dialect interpreter is an online android mobile app that translates any sentence or phrase or word into the targeted language.
- ⇒ Interpreting is a translational activity in which one produces a first and final translation on the basis of a one-time exposure to an expression in a source language.
- ⇒ Translation apps are fairly important in daily life especially when you travel abroad. They help people communicate without a human translator or spending months learning a language.

CHAPTER 2: PROJECT DESCRIPTION

2.1 Approach and Justification

In recent days, trending technologies such as *Artificial Intelligence*, *Machine Learning* and so on are vibrant. That's probably making the Smartphone users look for smarter apps which makes their life simple.

A **Dialect Interpreter** supports voice and text translation in many languages. We can use it every day for business, travel, and education. This app provides many features like *text* and *voice translation*, *voice recognition* etc.

In this translator one can enter the text through text or voice. For the first time when you are translating one language into another it will download the model for that language first. Only for downloading the model for the first time you need internet connection after that it will directly translate the text. You can either write the text you want to translate or you can speak in mic and do the translation.

2.2 Consolidated List of Requirements

REQUIREMENTS	REMARKS
Text Input	User will enter the Source text, which is to be Translated.
Source Language	Select a Language from “From” dropdown list.
Output Language	Select a Language from “To” dropdown list.
“Translate”	Click on “Translate” to get Translated Text.

CHAPTER 3: SOFTWARE AND HARDWARE

SPECIFICATIONS

3.1 Hardware Specifications

➤ **Operating System:**

- ✓ There are some Minimum System Requirements for the development of this project.
 - Microsoft Windows 7/8/10 (32 or 64 bit).
 - Mac OS X 10.8.5.
 - 2GB RAM.
 - 4GB RAM recommended.
 - 500 MB disk space
 - 1 GB for Android SDK.
 - Java Development Kit (JDK) 7.
 - 1280x800 screen resolution.
 - A faster processor

➤ **Android Device:**

- ✓ There are some Minimum Device Requirements for Device.
 - Any Android Version
 - Internet Connection (for first time to download each language)

3.2 Software Specifications

➤ **Android studio:**

- ✓ Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA.
- ✓ On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as:
 - A flexible Gradle-based build system & a fast and feature-rich emulator
 - A unified environment where you can develop for all Android devices
 - Apply Changes to push code and resource changes to your running app without restarting your app
 - Code templates and GitHub integration to help you build common app features and import sample code
 - Extensive testing tools and frameworks
 - Lint tools to catch performance, usability, version compatibility, and other problems
 - C++ and NDK support
 - Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine.

➤ **ML Kit for firebase:**

- ✓ ML Kit is a mobile SDK that brings Google's machine learning expertise to Android and iOS apps in a powerful yet easy-to-use package.
- ✓ Whether you're new or experienced in machine learning, you can implement the functionality you need in just a few lines of code.
- ✓ There's no need to have deep knowledge of neural networks or model optimization to get started.
- ✓ On the other hand, if you are an experienced ML developer, ML Kit provides convenient APIs that help you use your custom TensorFlow Lite models in your mobile apps.

❖ **How does it work?**

- ML Kit makes it easy to apply ML techniques in your apps by bringing Google's ML technologies, such as the Google Cloud Vision API, TensorFlow Lite, and the Android Neural Networks API together in a single SDK.
- Whether you need the power of cloud-based processing, the real-time capabilities of mobile-optimized on-device models, or the flexibility of custom TensorFlow Lite models, ML Kit makes it possible with just a few lines of code.

3.3 Technology Specifications

➤ **Java & Android Features:**

- ✓ Java plays an important role in development of Android applications because business logic is written in Java. The knowledge of core Java is must for the development of android application.
- ✓ Knowledge of advance Java is a plus point for the development. With the knowledge of advance Java, we can add new features to the application. The role of Java in android development at the features of Java which makes it popular language for the Android development.

➤ **Firebase Models:**

- ✓ Firebase is a Backend-as-a-Service that started as a YC11 startup and grew up into a next-generation app-development platform on Google Cloud Platform.
- ✓ The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, Realtime events continue to fire, giving the end user a responsive experience.

➤ **Junit:**

- ✓ JUnit is an open-source framework designed for the purpose of writing and running tests in the Java programming language.



- ✓ JUnit allows the developer to incrementally build test suites to measure progress and detect unintended side effects. Tests can be run continuously. Results are provided immediately.

➤ **Espresso-Core:**

✓ ***Features of Espresso:***

Some of the salient features supported by Espresso are as follow,

- Very simple API and so, easy to learn.
- Highly scalable and flexible.
- Provides separate module to test Android WebView component.
- Provides separate module to validate as well as mock Android Intents.
- Provides automatic synchronization between your application and tests.

✓ ***Advantages of Espresso:***

Some of the benefits of Espresso are:

- Backward compatibility
- Easy to setup.
- Highly stable test cycle.
- Supports testing activities outside application as well.
- Supports JUnit4
- UI automation suitable for writing black box tests.



CHAPTER 4: MAJOR FUNCTIONALITY

4.1 Language Translation Through Text

- ✓ Here we can write the source text into the source text field.
- ✓ We have to select the source language from drop down menu.
- ✓ If you don't, it will show a message that "please select source language" and we have to select the language from which we want to make translation from "From" drop down menu.
- ✓ We have to select the output language from drop down menu.
- ✓ If you don't, it will show a message that "please select the language to make translation" and we have to select the language into which we want to make translation from "To" drop down menu.
- ✓ After clicking "Translate" button our source text will be translated into the language in which we want it.

4.2 Language Translation Through Voice

- ✓ There is a mic logo with "Say Something".
- ✓ After we speak in mic to enter the Source Text, it will recognize the statement and will auto convert it into the text form in the "Source Text Box" and then as before.
- ✓ After clicking "Translate" button, it will make the translation into your desired language the same way.

CHAPTER 5: SYSTEM FLOW CHART

5.1 Project Work Flow

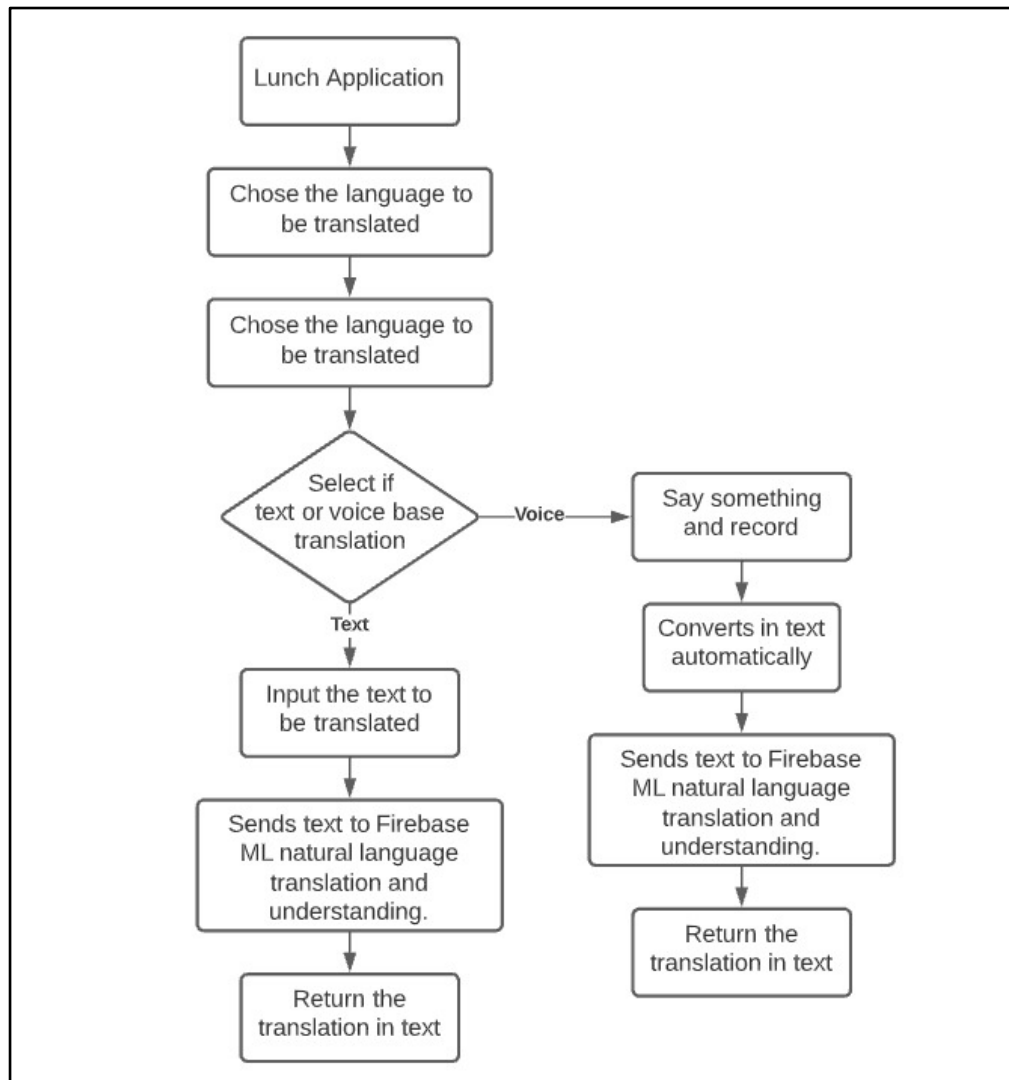
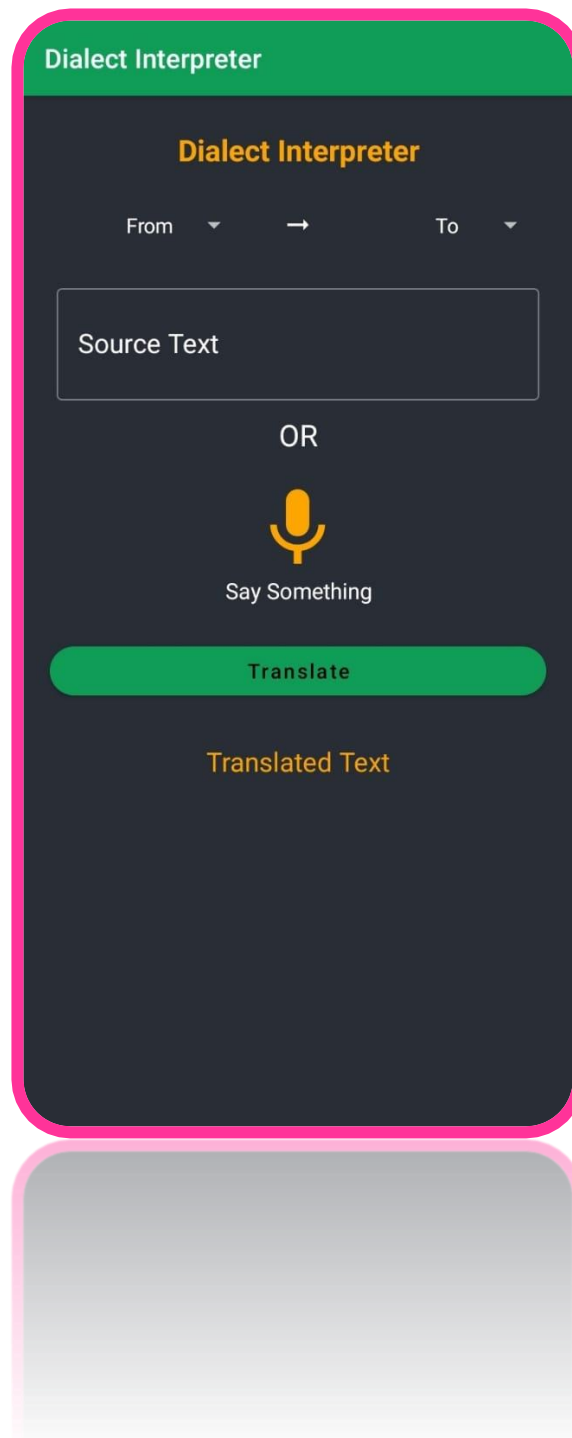


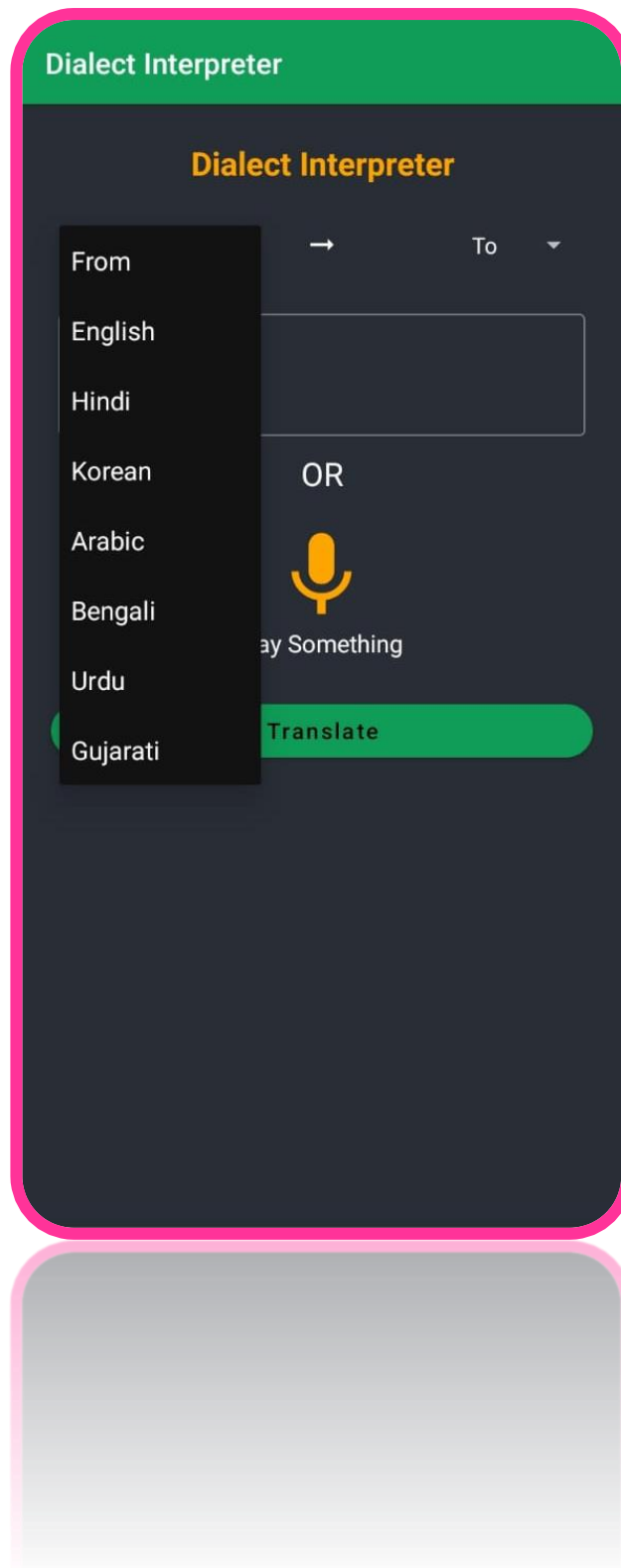
Fig:5.1 Project Work Flow

CHAPTER 6: SCREENSHOTS OF OUR PROJECT OUTPUT

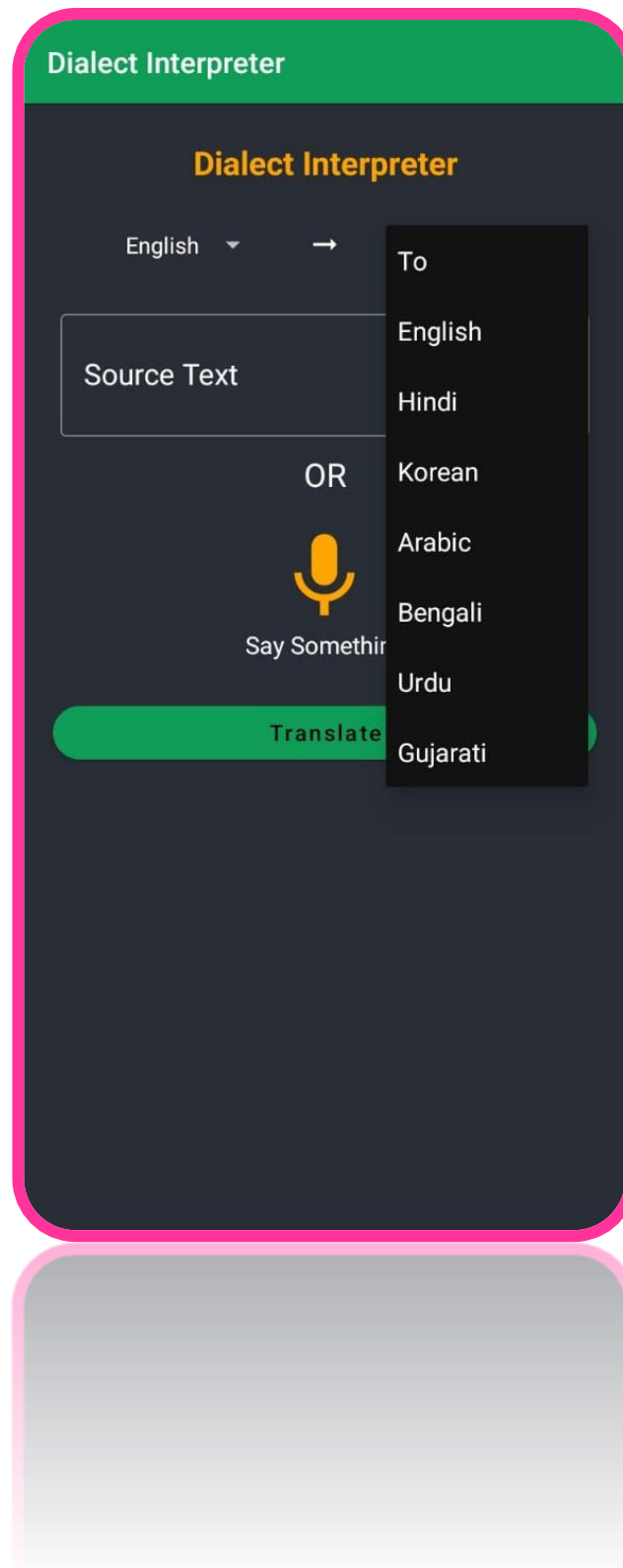
6.1 Initial Screen



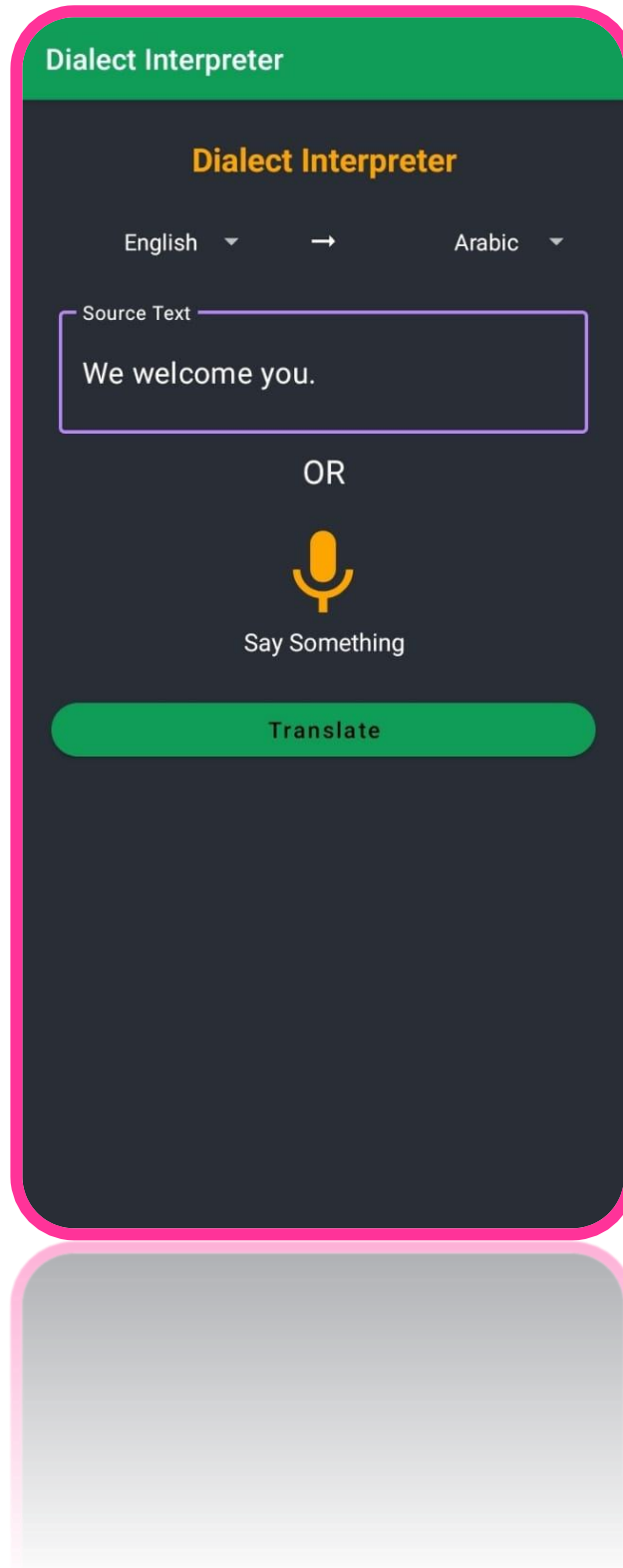
6.2 Selecting Language For “From” Drop-Down



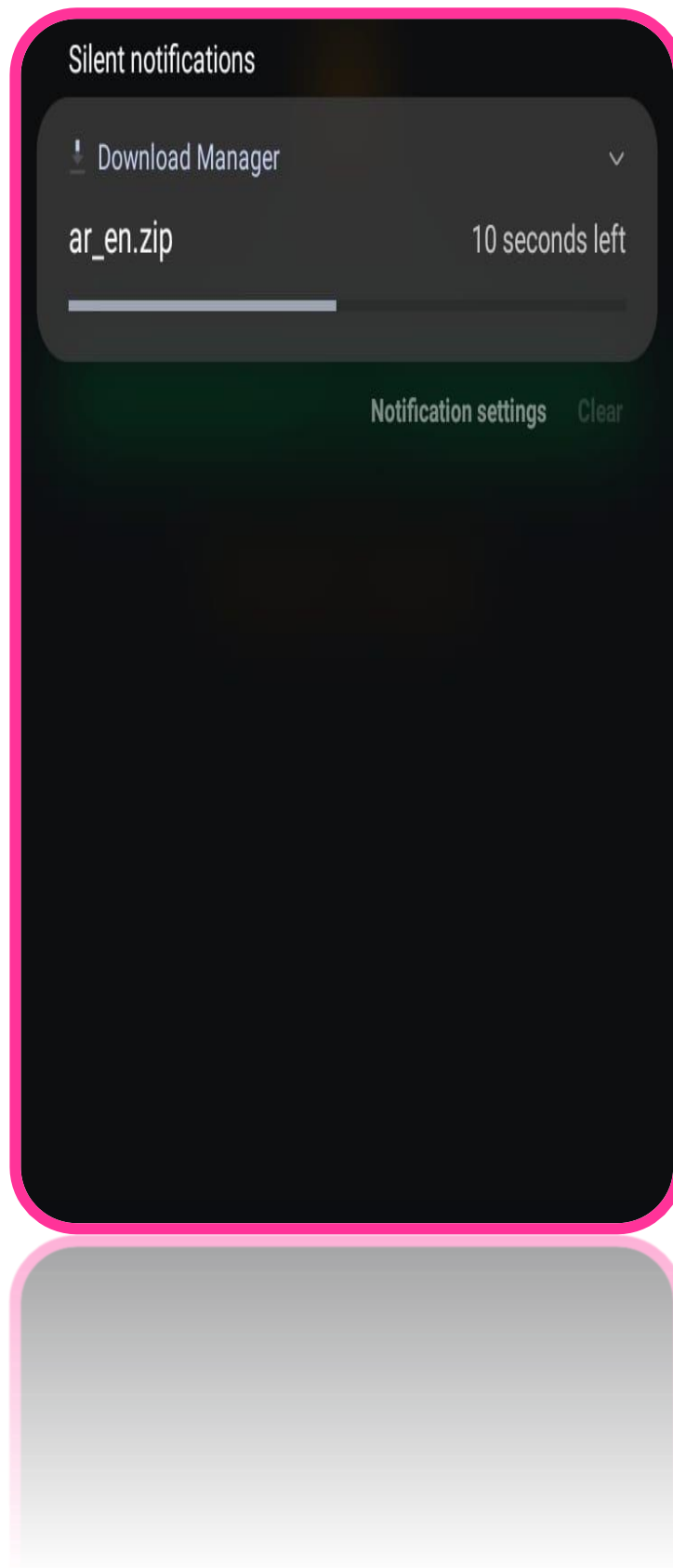
6.3 Selecting Language For “To” Drop-Down



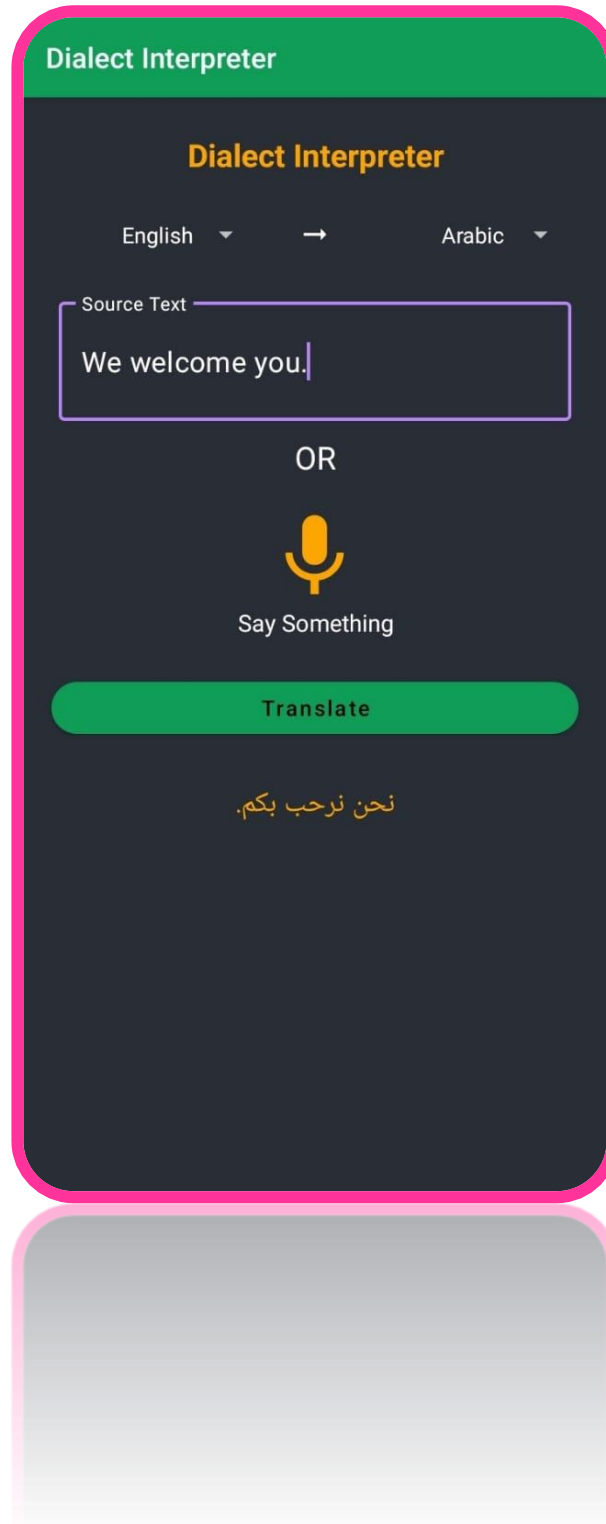
6.4 Entering the “Source Text” In the Text Box Through Keyboard



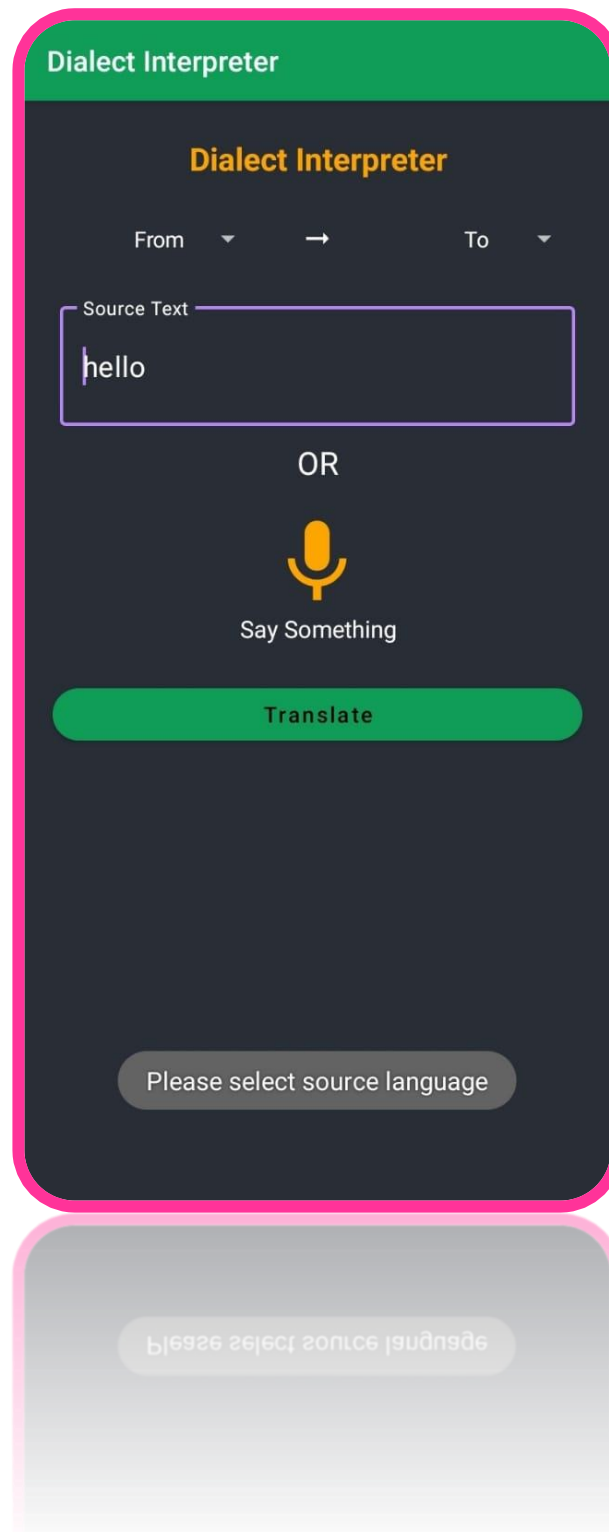
6.5 Downloading The Model for The First Time



6.6 Getting the Translated Text (Through Text Input)



6.7 Displaying Message for “No Source Language”



6.8 Displaying Message for “No Output Language”


Dialect Interpreter

Dialect Interpreter

English → To

Source Text
hello

OR

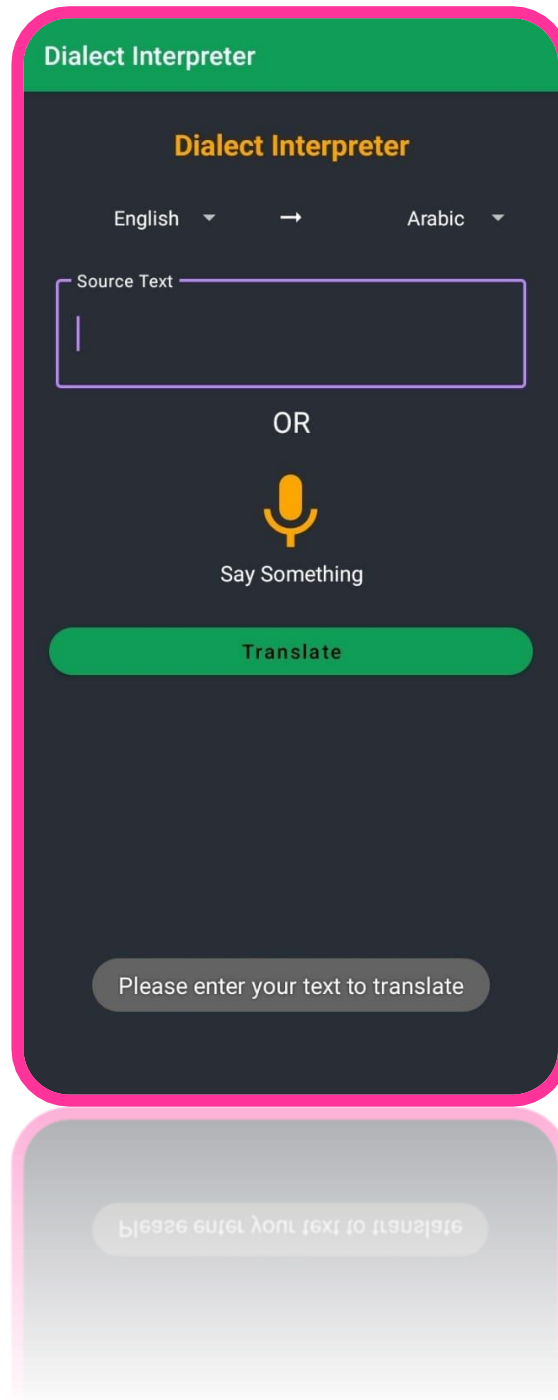

Say Something

Translate

Please select the language to make translation

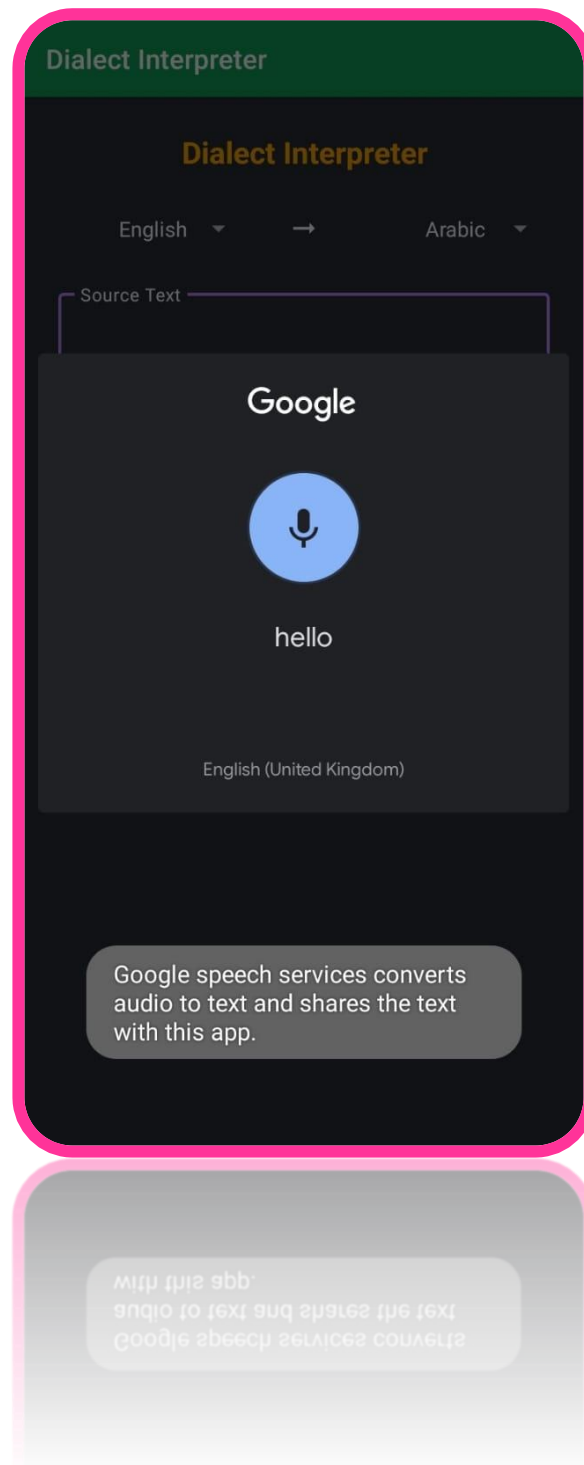
translation
Please select the language to make

6.9 Displaying Message for “No Source Text”



The screenshot displays the 'Dialect Interpreter' application interface. At the top, a green header bar contains the text 'Dialect Interpreter'. Below this, the title 'Dialect Interpreter' is repeated in orange. The interface features two dropdown menus for language selection, currently set to 'English' and 'Arabic', separated by a right-pointing arrow. A text input field labeled 'Source Text' is present but empty. Below the input field, the word 'OR' is centered, followed by a yellow microphone icon and the text 'Say Something'. A prominent green 'Translate' button is located below these elements. At the bottom of the screen, a grey rounded rectangle contains the message 'Please enter your text to translate' in a light grey font. A faint, semi-transparent duplicate of this entire interface is visible behind the main one.

6.10 Speaking the “Source Voice” In the Mic Through Audio Function



6.11 Getting the Translated Text (Through Voice Input)

Dialect Interpreter


Dialect Interpreter

English → Arabic

Source Text

hello

OR



Say Something

Translate

مرحبا

Dialect Interpreter


Dialect Interpreter

English → Gujarati

Source Text

hello

OR



Say Something

Translate

હેલો



CHAPTER 7: LIMITATIONS OF THE PROJECT

7.1 Time Delay

When you are using the app for the first time. It will take some time because it will download the modal in the background. For each language we have to download the language conversion model so it will make the app heavier and language translation will take time.

7.2 Image Text Unrecognizable

Right now, the app is only capable of making translation through text or voice. Translating through image or other mediums is yet not possible.

CHAPTER 8: PROJECT OUTCOMES

There are many areas where this Application can play an important role in real time applications.

8.1 Language Translation In Technical Area

If businesses want to access the global audience, they must translate all their technical documents into the languages of their target areas. This is when the technical translation services are required.

Technical translation involves translating documents produced by technical writers, or any other content related to scientific and technological subjects.

To avoid any errors, companies must take the help of professional translators who have the required expertise and knowledge of different technical terms, both in the source and target languages. In doing so, this reduces any misunderstanding with respect to the documents and the subsequent effects associated with them. The type of material that requires technical translation includes articles from scientific and technical journals, patents, computer product spec sheets, and user manuals.

8.2 Language Translation In Healthcare

If you're in the healthcare industry, the need for language translation is even higher because of the involvement of human beings. Any minor error can be a threat to their lives.

Therefore, hiring a professional and experienced translator is exceptionally crucial for effective communication between the doctor, nurses, and patients.

Translation experts should be medical and science graduates.

Moreover, they should be well-versed with medical concepts and terminologies. The most vital medical documents that need translation include discharge instructions, complaint forms, intake forms that have clinical consequences, and informed consent documents.

8.3 Language Translation In Travel & Tourism Industry

In the travel and tourism sector, language translation is required for a variety of things. For example, the translation of travel documents, brochures, and terms and conditions documents is crucial for interacting with people of different regions.

Hence, if the companies want to attract and retain tourists, it is essential to hire a translator who is fluent in both the original and the target language. If done right, translation can prove to be a vital factor in the growth of international tourism and the economy on the whole.

While dealing with global clients and other staff members, you have no time for language barriers to get in the way. Sure, Google Translator can be useful to some extent, but it is often misleading. Therefore, choosing a professional translator for your business can help break down such barriers and ensure that your message is communicable to a worldwide audience.

CHAPTER 9: FUTURE ENHANCEMENTS

9.1 Translation Through Writing

There will be an option to write something on screen. As you type or write characters on the screen, the app tries to predict what you plan to write in full by displaying possible word and letter combinations. Continue writing or select one of the suggested words if it matches what you intended to enter. At some point, the app may suggest the entire phrase you want to enter.

9.2 Translation Through Images

To translate text in an image via your phone's camera, choose the source and target languages, then tap the camera icon. Aim your device's camera at the sign, menu, or document written in the source language. This is how you can translate the text on image and you can also translate a word file or pdf through images.

9.3 Real-Time Conversations

The app will allow you to carry on a back-and-forth conversation with someone, even if you don't speak the same language. Choose the two languages, then tap the Conversation icon. You can carry on the conversation manually or automatically.

9.4 Live Translation

At international level, when you are attending a live conference or having a live business meeting, you need a human translator who can immediately translate for you but sometimes when the context of meeting is supposed be confidential then you can't share the information with human translator at these times machine-based translator is more helpful and secure.

While attending a live conference or some kind of live stream there won't be any subtitles available because it's live at these times, we want to make our translator capable of recognizing the live audio from the stream and translate it immediately with accuracy.

CHAPTER 10: REFERENCES

10.1 For Downloading Android Studio

- ✓ <https://youtu.be/4NDwINudmDk>
- ✓ <https://developer.android.com/studio/install>

10.2 How to Create Application in Android using Firebase ML Kit?

- ✓ <https://www.geeksforgeeks.org/how-to-create-language-translator-in-android-using-firebase-ml-kit/amp/>

10.3 Firebase ML Kit

- ✓ <https://firebase.google.com/docs/ml-kit>

10.4 Downloading App Icon

- ✓ <https://www.flaticon.com/free-icons/app-logo>

10.5 Data Collection for Some Features

- ✓ https://www.tutorialspoint.com/espresso_testing/espresso_testing_quick_guide.htm