

TRANSLATEHUB



Project Guide

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Course Outcomes :

CO1: Model and solve real world problems by applying knowledge across domains (Cognitive knowledge level: Apply).

CO2: Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: Apply).

CO3: Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: Apply).

CO4: Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply).

CO5: Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze).

CO6: Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply)

Problem Statement

- In a connected world, language barriers persist as a major challenge to communication.
- Addressing this, an innovative and user-friendly translator app is essential.
- The app facilitates instant translation of voice and text, promoting seamless communication.
- It breaks down language barriers with live voice translation, fostering meaningful interactions.
- Designed for efficiency, it ensures a seamless, immersive experience for diverse language speakers.

LITERATURE SURVEY

JOURNAL TITLE

FINDINGS

[1] ESPnet-ST: All-in-One Speech Translation Toolkit

Authors : Hirofumi Inaguma, Shun Kiyono, Kevin Duh, Shigeki Karita
Year : 2020

- ESPnet-ST is a toolkit for developing end-to-end and cascaded speech translation systems.
- It supports tasks such as ASR, MT, and TTS.
- The toolkit provides example scripts and models for training and inference.
- Multi-task learning and transfer learning from ASR and MT tasks are supported.

[2] Simultaneous Speech to Speech Translation System with Incremental Models

Authors : Elizabeth Salesky, Marcello Federico, Marine Carpuat
Year : 2023

- The SimulST system incorporates Inter-connection, which involves weighted integration of intermediate layers of a speech SSL model.
- Bilingual Prefix Alignment is used to mitigate over-translation issues in simultaneous translation.
- The system shows promising performance but has room for improvement in both the text-to-speech and automatic speech recognition components

[3] Language Converter Using Python

Authors : Najeema Afrin, G. Aditi Sai,
K. Gopi Krishna, K. Rathan
Year : 2022

- *Innovative Python-based language conversion enables broad vocabulary and covers all languages for audio output.

- * Effectively leveraging gtts and Python provides comprehensive language coverage surpassing systems supporting limited languages.

[4] Language Translation: Enhancing Bi-Lingual Machine Translation Approach Using Python

Author : Mohammad Atique
Year : 2019

- *It shows the development in a Language Translation using Python, which consist of predefined packages like TextBlob and Google-API.

- *The paper shows efficient result up to 94% accuracy

CONCLUSION FROM REFERENCES

Language converter using Python has been taken as the main source for our project. We got the following ideas from it.

- The "Language Converter using Python" system converts spoken language from one language to another.
- The system first enables the microphone to capture the voice input. – The voice input is recognized using the "recognizer.listen()" function and stored in a variable called "voice".
- The recognized input voice is then converted into text using the "recognizer.recognize_google()" function.
- The converted text is stored in a variable called "text". This process is known as the "Convert Speech to Text" block.
- Google Translate is used to convert the text into the desired output language. – The output text is then converted into speech form using the "gtts.gTTS()" function.
- The system uses a combination of voice recognition, text-to-speech technology, and machine translation to convert spoken language from one language to another.

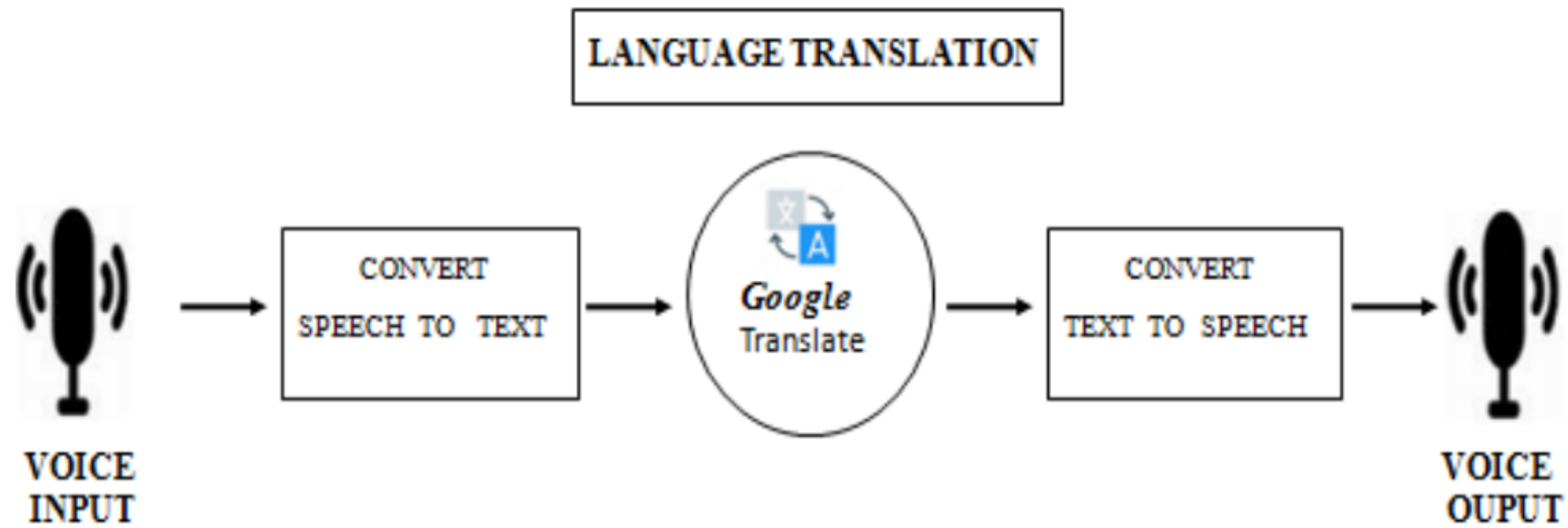


Figure 1: Project Architecture for Language convertor using python

Existing Systems

01

Google Translate

Google Translate is a popular online translation service that offers real-time translation for a wide range of languages. It supports text translation, voice input, and even image translation using your smartphone's camera. It's widely used for travel, communication, and language learning.

02

Microsoft Translator:

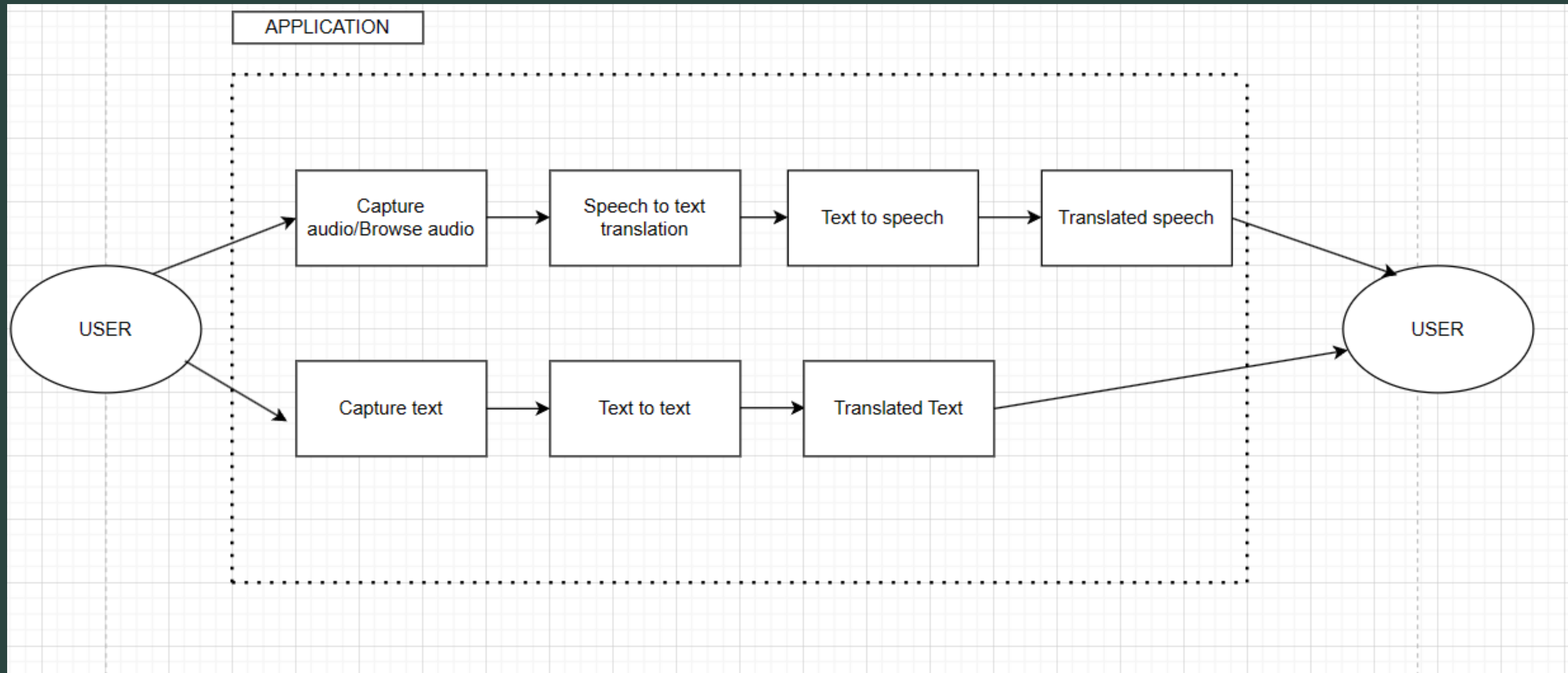
Microsoft Translator provides real-time translation services for text and speech. It's integrated into various Microsoft products, including Office, Skype, and Teams, making it a valuable tool for international collaboration and communication.

03

iTranslate:

iTranslate is a mobile app that offers real-time translation of text and speech. It supports multiple languages and is great for travelers and language learners.

Proposed System



Objectives

01

Language
Accessibility

02

Real Time
Translation

03

User Friendly
Interface

04

Multilingual
Support

Requirement Analysis



Functional Requirements

Voice Chat

**Live Voice
Translation**

**Text
Translation**

**Audio
Browsing**

Non Functional Requirements

Performance

The app should provide low latency, ensuring that voice messages are transmitted with minimal delay.

Usability

It should be easy for users to use the features of the app

Scalability

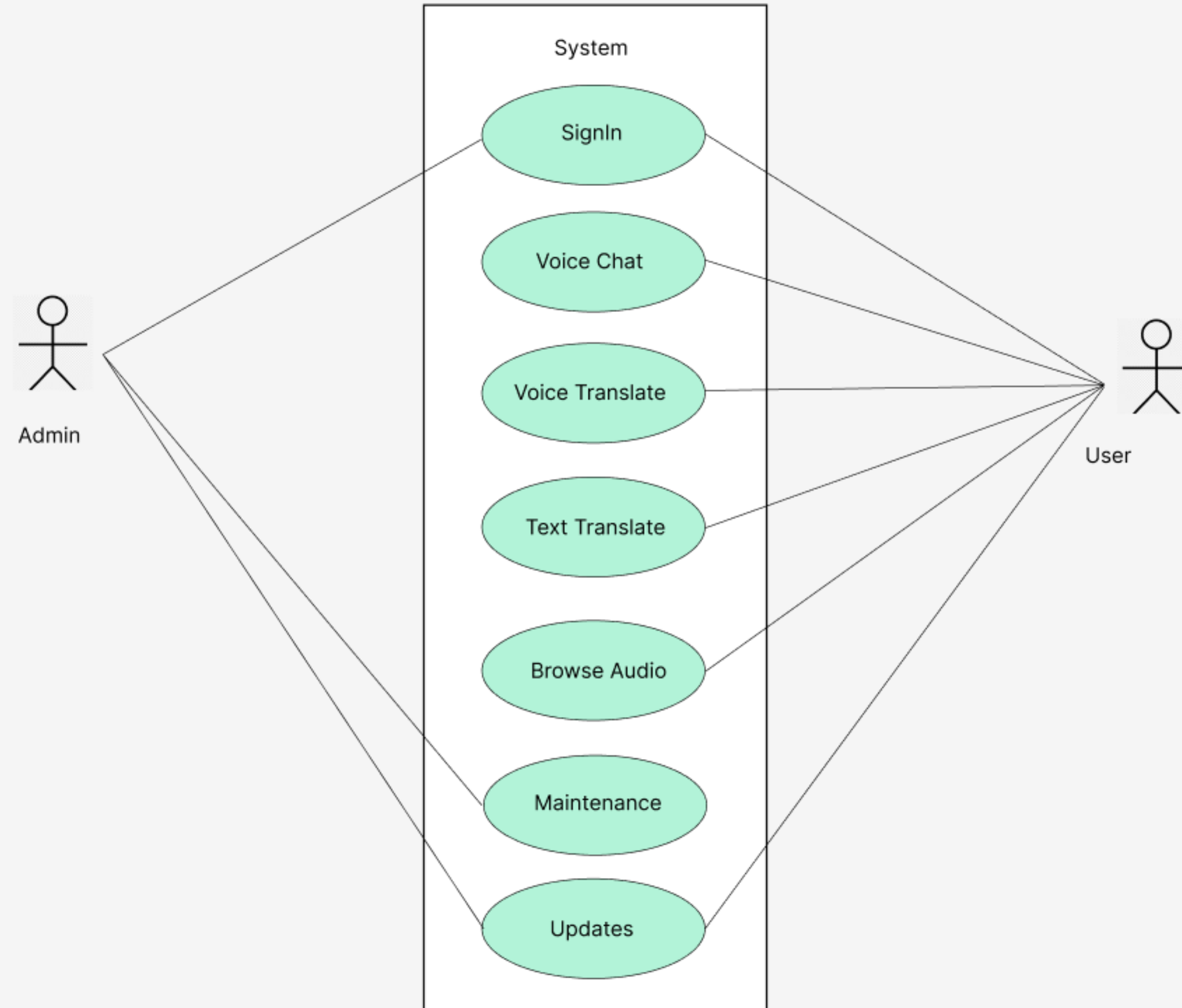
The app should be able to handle an increasing number of users, even during peak usage times without affecting the performance

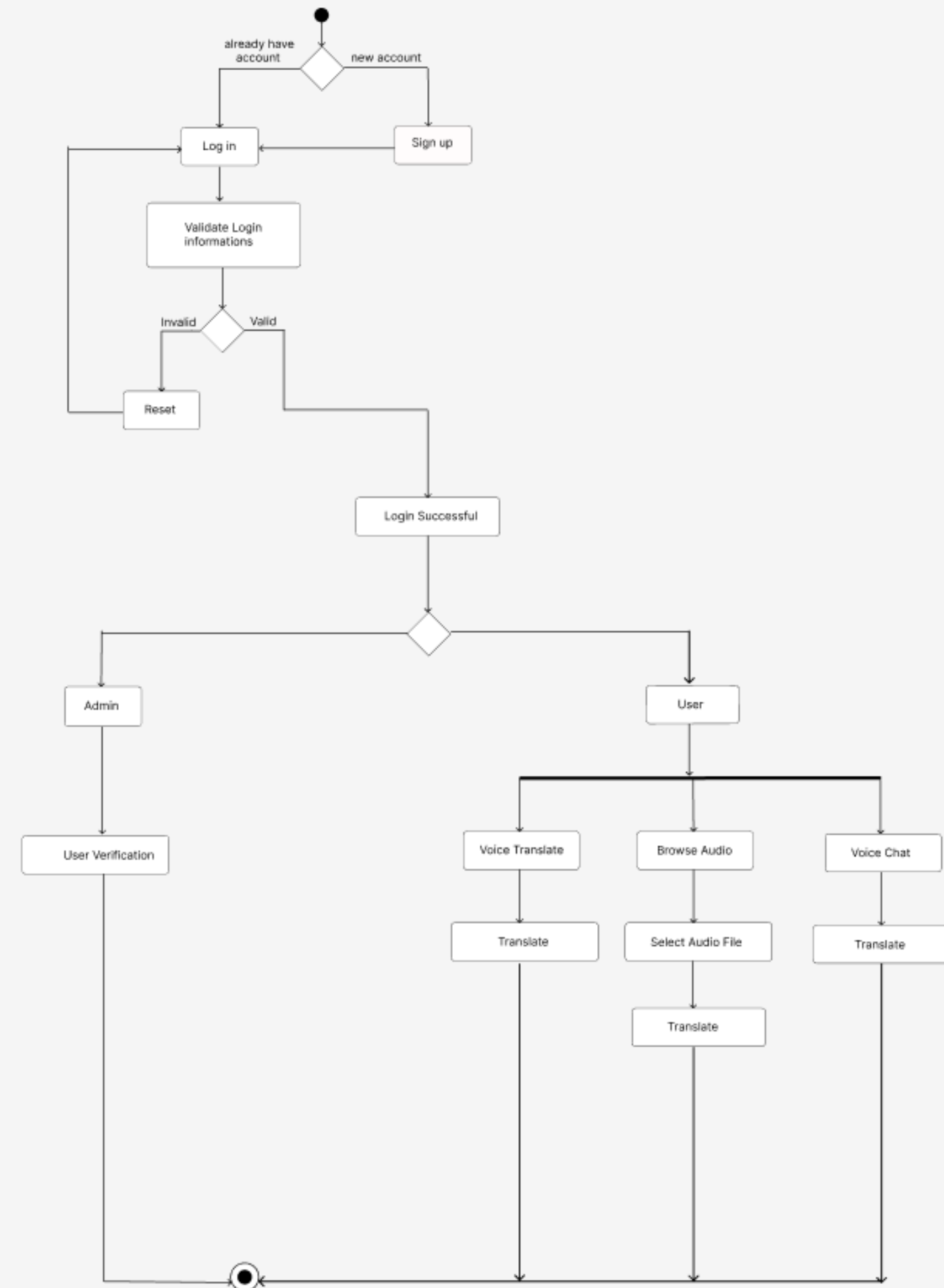
Security

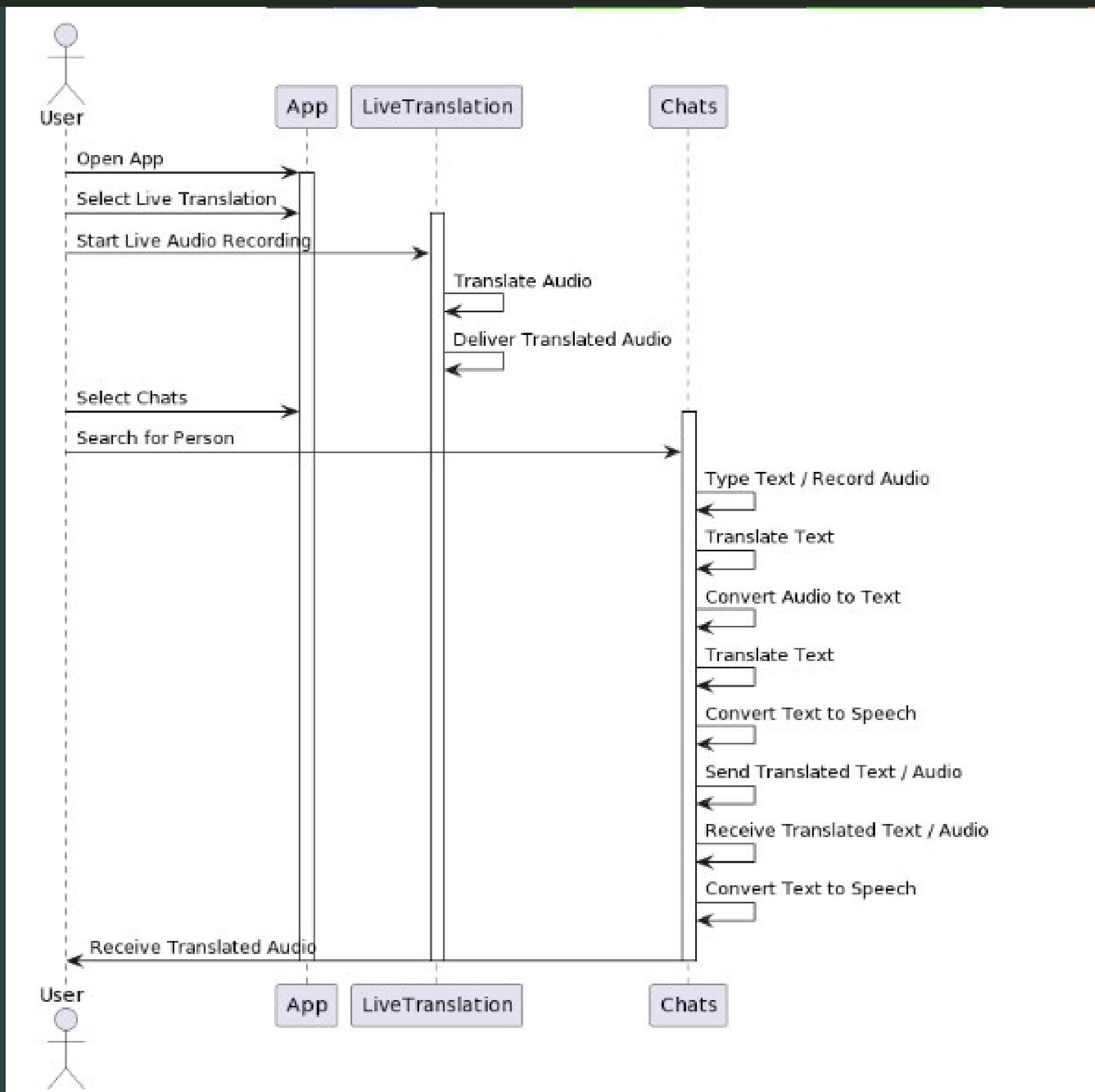
Ensure that the user data are protected from unauthorized access.

Design Diagrams









Modern Technology Tools



Figma design is for people to create, share, and test designs for websites, mobile apps, and other digital products and experiences



Firebase is an app development platform that helps you build and grow apps and games users love



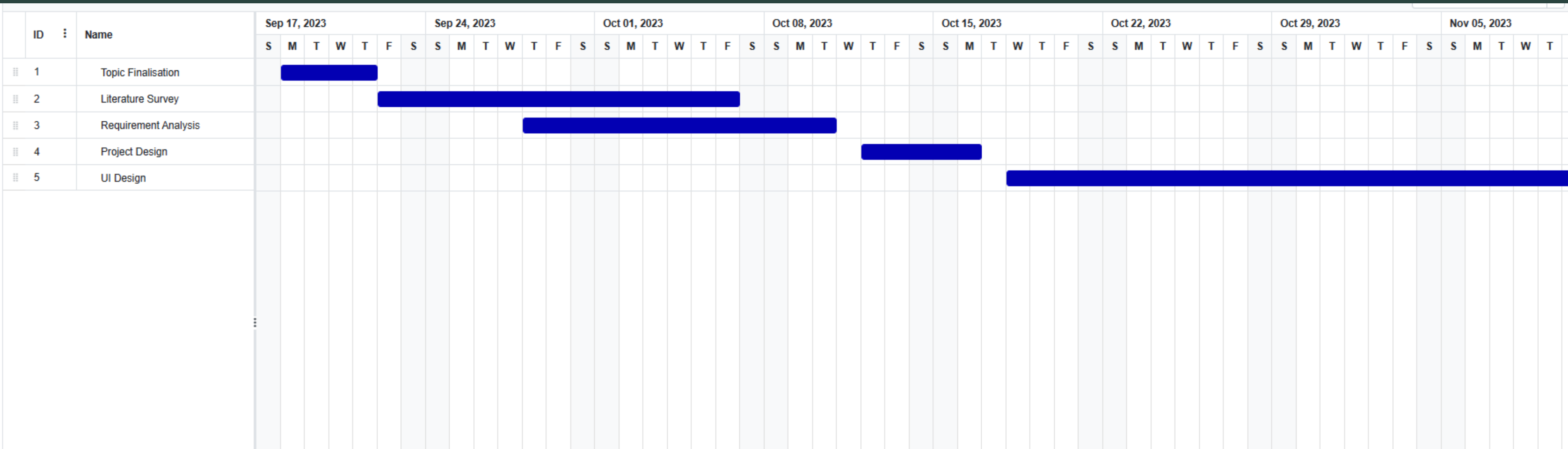
Flutter is an open source framework developed and supported by Google.



https://github.com/MeghaRajesh/Translate_Hub

Gantt Chart

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Conclusions

- The app features two icons—Live Translation and Chats—enabling seamless communication.
- Live Translation transforms spoken words in real-time, bridging language gaps effortlessly.
- Chats facilitate text and audio conversations, enhancing user interaction and connection.
- Text messages are translated for the receiver, ensuring clear cross-language communication.
- The app's innovative approach promises to break down linguistic barriers, fostering global connectivity and meaningful exchanges.

References

- 01 <https://chat.openai.com>
- 02 **KIT's Multilingual Speech Translation System for IWSLT 2023**
- 03 <https://www.youtube.com/watch?v=x5An6oo2nI0>
- 03 <https://arxiv.org/pdf/2004.10234.pdf>
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- 05 <https://aclanthology.org/2023.iwslt-1.31.pdf>

THANK YOU!