

FORUM INTEGRATED WITH REAL-TIME TRANSLATION

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Abstract. Communication is a way to share information among people. People in the same area use verbal communication. People from different regions communicated among themselves using Digital communication. The First Digital Communication Service was the Telegraph. The Telegraph Service was started in 1851. At first, Telegraph used the Flag Semaphore methodology After that the methodology evolved to the use of Morse Code. As an important advancement, Telecommunication was started in 1881. It establishes a direct connection between two people from different regions at any time. It used different methodologies for transferring information such as Phase-Shift Keying (PSK), Frequency-Shift Keying (FSK), Amplitude-Shift Keying (ASK). To accommodate many users, it used different methodologies such as Frequency-Division Multiplexing (FDM), Wavelength-Division Multiplexing (WDM), Time-Division Multiplexing (TDM). At last, a decade ago The Internet Service got more attention in communication. The emergence of the internet introduced Communication over the Internet using Text, Voice, and Video. Nowadays, Most people use text-based communication. But in this text-based communication methodology, the information shared must be in a common language in which both the users could understand the information. So, Forums are the best way to share thoughts, ideas, information, etc. Most of the people such as Russians, Chinese, Japanese speak only one language. So it is hard for the people who speak only one language to communicate with people speaking other languages. This restricts communication in the native language. So there is a need for intermediate Translation Services in between them for developing communication in the native language.

keyword. Forum with Translation, Real-Time Translation chat, Chat service with Translation using Google Translate API

1. Introduction

1.1. Introduction To Form:

A forum is a place to share knowledge, thoughts, ideas, etc. This app creates a forum for a group of people for any particular purpose and makes it a flexible and free space to share their ideas. This forum will be called a community. A user can be in any number of forums. This community provides flexibility to users by offering a feature of creating separate channels for different categories. This will be helpful for the categorization of messages based on their content. There is no connection between two communities even if a user is in both communities. (i.e., The data in a community is isolated within that Community). The user can also chat personally with any individual within a community. (i.e., If a user needs to chat with any other user, both of them must be in the same community). To use a forum around all over the world, people need a common language to communicate with people speaking different languages. At this time English is used as a common language and used for communication between people speaking different languages. The need for a common language for communication restricts the sharing of information in a full-fledged way. So, the solution to this problem is to create a forum that will translate the information into their native language. That information is also shared without any categorization. (i.e.,) The information shared was mixed and the responses for that information also shared in the same place. So, the later use of that information was mostly avoided. When needed, the information was shared once again which leads to duplication of the same information. So, along with the translation, the information shared was also categorized for efficient access.

1.2. Introduction To Translation API:

Translation API Basic instantly translates texts into more than one hundred languages for websites and apps. In our project, we're using Google Translate API which is the most popular translation service provider by Google. The Google Translate service works by uploading a language pair into the machine and then the AutoML, which is a Google's Machine Learning Service, will train a custom model with the uploaded language pairs. So that translation will become more and more accurate. The Google Translation API's pre-trained model supports more than one hundred languages. AutoML Translation helps to build custom models in more than 50 language pairs. When the user doesn't know the source text language, Google Translation API will automatically identify languages with high accuracy.

2. Problem Statement

Nowadays, many people are communicating with other people all over the world. Most of them are communicating in a common language which is mostly English. But for some people, it is difficult to communicate in other languages. Most people prefer to communicate in their native language as it is very easy for them to communicate and to share their thoughts and ideas effectively. Due to the language barrier, the messages thought, ideas, and feelings are not properly communicated most of the time. At some time, it leads to misinterpretation of messages causing some misunderstanding among the people. One of the top social media apps for communication between people is WhatsApp which is a simple peer-to-peer and group chat application. More than individuals, nowadays, it is used by most of the Educational Institutions for online classes and to share information related to Academics, Jobs, etc. But the problem here is, all the information is mixed together (i.e., All the academics, jobs-related information, and announcements are 3 shared through the same WhatsApp Group and the replies for those messages too). In WhatsApp, the important messages were

starred for later use, But the problem here is all the starred messages were also mixed in one commonplace. If there are more numbers of messages being starred, then accessing the important starred messages will also become inefficient. So the starred messages also should be categorized.

3. Problem System

Our idea is to create a forum app that will rectify the problem of language and the problem of uncategorized messages which causes inefficient access to older messages. When a person sends a message, the message will be translated to the user's native language, and the user will receive both the translated and the non translated versions of the message. This will reduce the language problem. Currently in WhatsApp which is a popular social media app, currently used by most Educational Institutions, creating a group is a way to share information for a group of people. Since all the messages are shared through one common group, and since they aren't categorized, their accessibility becomes lesser. So, in our app, all have a community for a group of people and all have different channels for different categories. So that the messages were shared for the group of people in the appropriate channels, based on their categories.

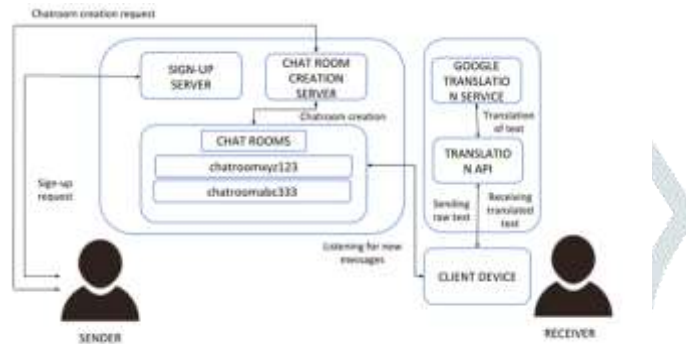


Fig 1 Block Diagram

Users can also communicate with individuals within the same Community. Like that, a person can be in more than one community such as Web, Android, iOS, etc. In that Community, they can have any number of channels such as Angular, React, Vue, etc. The information will be shared in appropriate channels so that the information didn't get lost or unnoticed. This information comes in two versions,

- Raw version - (message sender's language)
- Translated version - (based on the receiver's language)

All the members in the forum will get the message in both versions (based on their native language). So that even people speaking different languages will have the information in their language.

4. Result and Analysis

The users can use the Fortran application by signing in with their Google Account. This can be done by Google's Firebase Authentication Service. After signing-in to the application, the users can create and join Community, send and receive messages to and from the Community, by calling the APIs from the Node.js server which is hosted on Heroku. The default language is English. The user can change the default language to their preferred language.

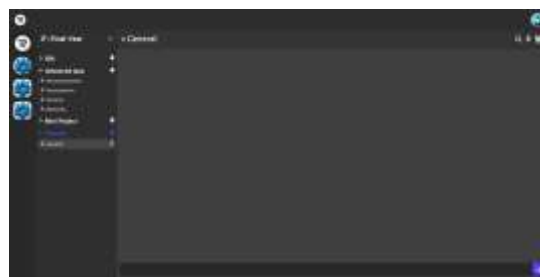


Fig 2 Fortran Chatspace

When a user sends any message to a community, the client application sends the message to the Node.js server using WebSocket Protocol, The Node.js server then communicates with the Firebase and stores the message in Firebase Real-Time

Database. In parallel, the server will emit a broadcast signal to the other members of the community, with the message data. Other members of the Community will receive the message on listening to the broadcast signal which the server emits. On receiving the message, the client will call the Google Translation API through the node.js server with the message data and their preferred language. The Google Translation API then translates the message and sends it back to the server. The server then sends the translated data back to the user.



Fig 3 Fortran Chatspace with translated messages

5. Conclusions

The chat messages were segregated into different categories named as channels under different groups called communities. The messages were sent and received through firebase realtime-database. The translation was done by using the Google Translation API. The voice translation service needs to be added to the application and android and ios version of the application needs to be developed.

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