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Multilingual Interpreter and Translator

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Abstract: ***Over the years, the issue of language differences has made it more difficult to communicate information effectively between countries and efficient information exchange has been hampered by the issue of linguistic differences. The conventional method employed to address linguistic barriers has not proven beneficial or effective. In the present, language interpreters need to be proficient in both the language they are translating into and the original language. The traditional methods of resolving language differences have not proven beneficial or productive. Additionally, language difference issues can make teaching foreign languages challenging. Multilingual Interpreters or Translators play a pivotal role in facilitating effective communication and understanding across languages. In order to simplify language learning and translation and promote stress-free communication, the study creates an Android language converter application, which can work more efficiently with an optimized code for the process of translation. Unlike traditional translation apps, our model leverages advanced natural language processing and machine learning algorithms to provide users with an intuitive and context-aware multilingual interpretation experience. In terms of communication, this application can help tourists integrate with the locals and obtain the necessary information.***

Keywords: Translator app, Global communication, **Natural Language Processing (NLP), Language, Barriers, Machine Learning**

I. INTRODUCTION

Language plays a key role in communication, but it's difficult to achieve tangible results when this is not the case. The translation of language into other languages is an important factor in society, regardless of the sector. Therefore, it is important to find a new way by using cellular phones, computers or machine translation in order to translate the world's main languages and thus be able to compete with mainstream human language translation. The android based system helps people who are incapable of reading languages, because they don't speak any common language or for another reason. The limitation of human translation in terms of cost, broader language options and efficiency will be overcome by this approach.

The language difference is a significant obstacle to globalization, international travel and linguistic divergences. Also, in the area of communication, languages have been a great barrier for centuries and people are still attempting to solve linguistic translation problems. Real time world contains different significant messages, labels and useful information but most of them are written in different official languages which depend on the host country. In addition, it is unpleasant for tourists to carry on their duties in another land if they don't understand the language used there. In order to read the message, they must have a pocket dictionary or an online translation service.

A Translator app helps people survive where a language is unknown by helping them translate. It is possible to input their message easily by means of text or speaking it in any language, and is easy to translate. With the help of speech recognition features, people with difficulty in writing may also be helped.

In order to deal with language differences, humans over the past decade have come up with various ways of translating languages. Our model goes beyond the conventional by offering real-time translation of both text and speech. With a user-friendly interface, it invites individuals of all technological proficiencies to effortlessly navigate the app's powerful features. Furthermore, our Interpreter Mode takes communication to the next level, breaking down spoken language barriers and enabling fluid dialogue in diverse linguistic contexts.

II. LITERATURE REVIEW

Olaide, Kayode, Sunday, and Olusola [**1**] have come up with a paper android platform for machine translation focusing on Yoruba Language. Which was developed to facilitate accessibility, convenience and portability on a mobile platform. RST (Rough Set Theory) is the mathematical tool used in decision support and data analysis of words or phrases to be translated [**2, 3**]. Comparisons between a query that is, word or phrase to be solved, are made with the created corpus, using RST.

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Hanuman, Debnath, Bhattacharjee, Tripathi, and Roy [**4**], suggested a Multilingual Voice Translator English Document Using Android; the paper aims to provide the design and development. The approach to an android framework, which aims at providing a solution for addressing language barriers through the integration of text into speech in different languages. The Android framework produced voice conversion software to enable the transformation of English language text through speech production in other languages. The report suggested several changes which could expand the scope of this programme to include a larger number of target audiences and increase its effectiveness and profitability. The new English Text to Multilingual Speech Translator using Android (T2MSTA) is designed to help people who lack the power to talk or non-native speakers and individuals who do not share a common dialectal.

A natural language processing system for translating English to Igbo was created by Evelyn, Bennett, and Taylor [**5**]. It is an Android application. The language translation system and training similar materials were built in the Android studio environment and accessed through Android applications on smartphones. The Design Word, Reference System, and Decoder were carried out in Microsoft Hub. Finite State Automata were used to generate the tokens for the English and Igbo languages; transitions within each state indicated which passes were valid and which did not. Attribute grammar was used to determine the semantics of the English and Igbo languages, and the results were further articulated in a parse tree that displayed the syntactic structure. The output displays word and phrase mappings from English to Igbo, both one to one and one to many.

Referencing [**6**], the author hopes to develop a mobile application for translators working in Madurese and Indonesian using a RESTful API and JSON data format. A web service needs to be developed in order to construct a translator system that works with all platforms, including Android. A standard and programming technique for data exchange across multiple apps is web services.

Ramiah, Liong, and Jayabalan [**7**] developed an Android application by mixing the Tesseract OCR engine, Bing translator, and phones' built-in dialogue. For the purpose of determining which types of end users are being targeted by this application delivery, it is examined against a range of different target user groups based on varying context dialects to be able to determine whether use will benefit several operators.

Tabel 1.1 Literature survey

	References taken from other researches/work		
Slno	Title	Author's	Work
1	Mobile language translator	Sim Liew Fong Abdelrahman Osman Elfaki Md Gapar bin Md Johar Kevin Loo Teow Aik	Aims to seamlessly integrate AWS technologies to facilitate language translation, offering a user-friendly and efficient solution for multilingual communication on mobile platforms.
2	Direct Speech to Speech Translation Using Machine Learning	Sireesh Haang Limbu	To develop a proof of concept to provide evidence supporting a unique translation system that might prove to be better and faster.
3	Indian and English Language to Sign Language Translator.	Priya L Sathya A. Raja S. K. S	An Automated Portable Two-Way Communicator for Bridging Normal and Deprived Ones
4	Multilingual Speech and Text Recognition and Translation using Image	Sagar Patil Mayuri Phonde Siddharth Prajapati	To combine all different tasks such as speech recognition, text translation, text synthesis and text extraction from image all embedded in one so that we get a user-friendly application
5	Approaches to Translation	Newmark P	Tells how translation works efficiently and guided to complete the app successfully

III. METHODOLOGY

A. Proposed System

1) *PARAGRAPH SLICING:* Here paragraph slicing is employed to separate a phrase or a sentence into words and then it'll be scanned by the scanner employed in the code in order that they'll be translated to required languages.
2) *FIREBASE ML KIT*: Firebase ML Kit allows you to experience the capabilities of Machine Learning such as face recognition, language translator, etc.

The Mobile Software Development Kit (SDK) can be easily integrated with android or iOS apps with a powerful yet easy to use package. The ML Kit brings Google's machine learning experience to iOS and android apps. It allows to import Google's machine learning technologies, like the Google Cloud Vision API, an API for networks, SDK, TensorFlow Light and also neural networks, into the app to make it easier to use Machine Learning techniques. Whether or not you would like the facility of cloud-based process, the period of time capabilities of mobile-optimized on-device models, or the pliability of custom TensorFlow Lite models, ML Kit makes it possible with simply less lines of code. The ML Kit enables to make this work with fewer lines of code, thanks to the reliability of custom TensorFlow Lite models.

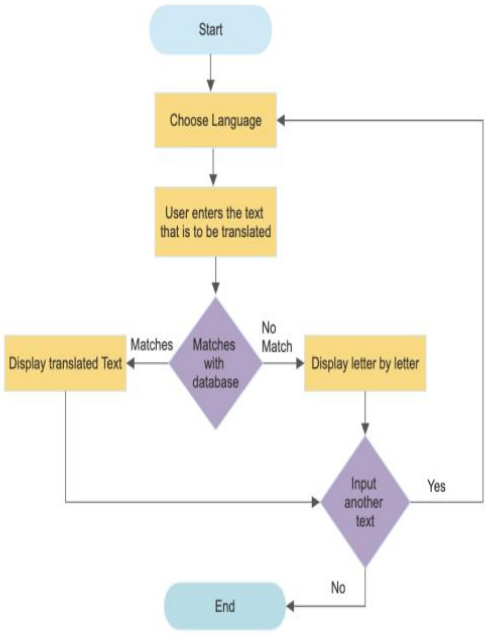


Fig.1 Flowchart of the application

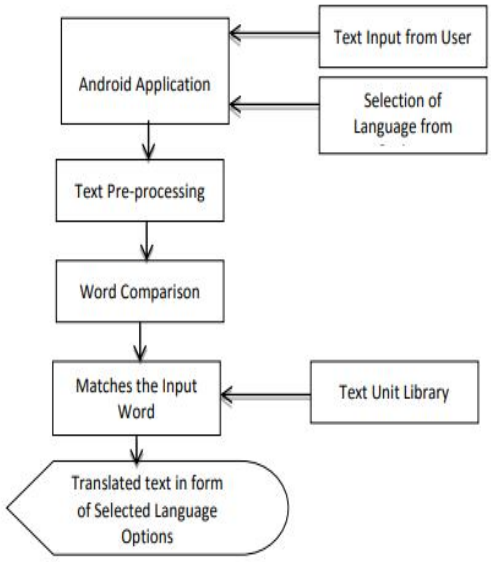


Fig.2 Architecture of the system

IV. CONCLUSION

Existing systems include Google Translate, which uses an internet connection, but the internet is not always available. Also, while there are many Android applications available, they may not support all features and these apply to certain limited languages. So, in the proposed system, we implement translation and support the features such as speech recognition, text translation, and popular both in our country and all languages around the world.

The development of the application results in the following conclusions:

1) Provide information in a variety of languages
2) Make it easier to communicate in multiple languages
3) Increase human translation productivity
4) Develop and manage an enterprise language as a corporate asset
5) Integrate with enterprise applications
6) Help people with disabilities communicate
7) There is no need for internet connectivity

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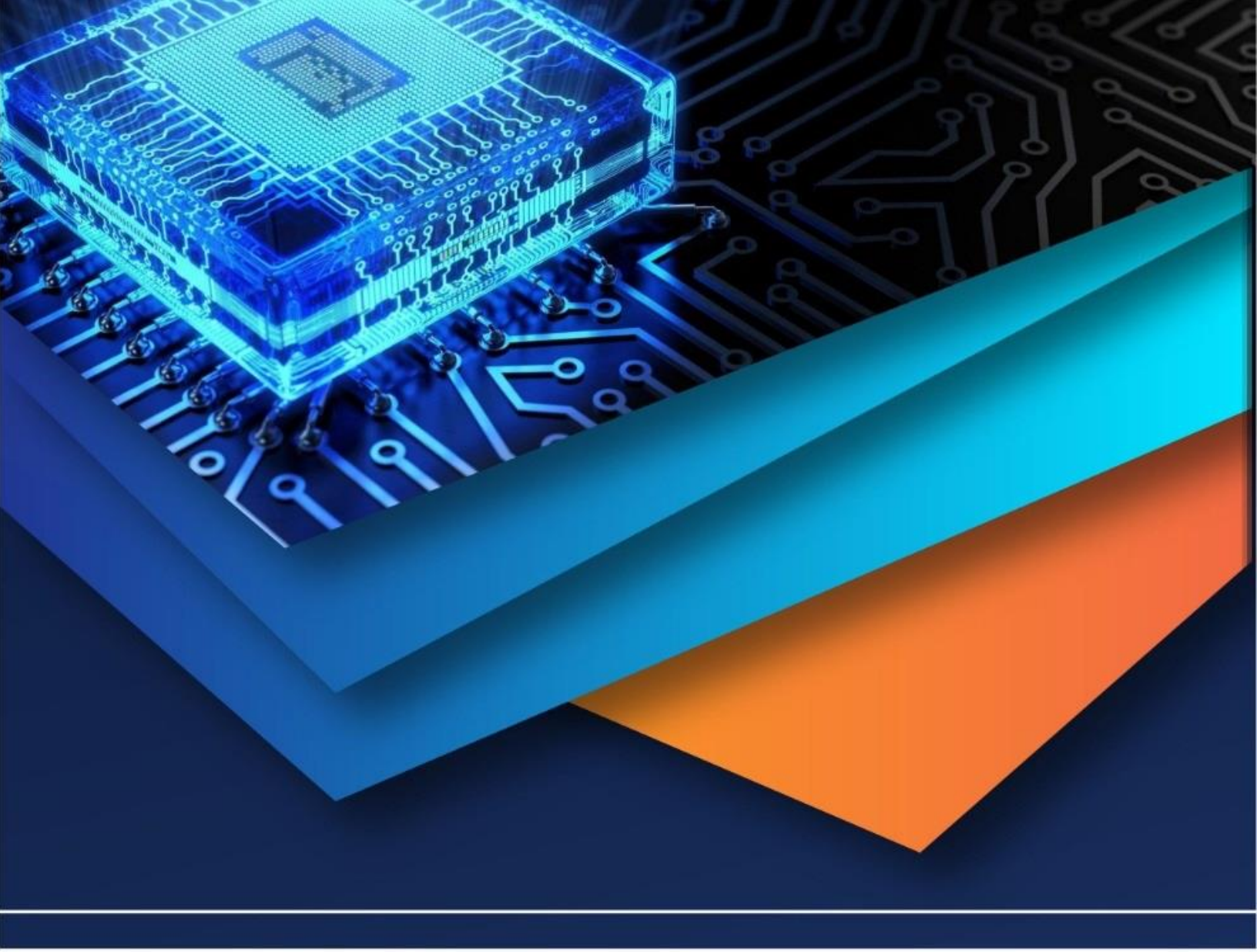
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