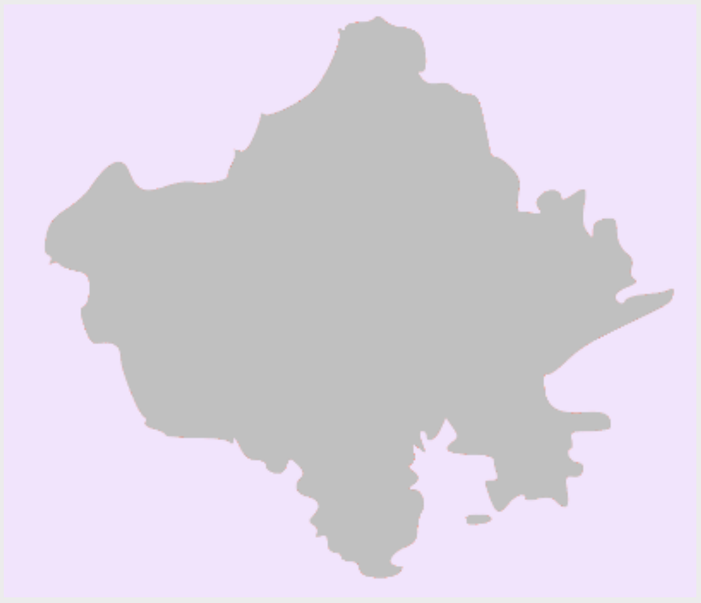
RAJASTHAN HACKATHON

RAJASTHAN DIGIFEST KOTA
17-18 AUGUST 2017



Team Name : My_Hacks

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My_Hacks presents :

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-The speech translation device

Vaishvik Bhaasha

Aim

To provide an affordable, reliable, and easy-to-use device that offers ***real-time speech translation*** *between multiple languages – both regional and foreign. We've aptly named it -* ***Vaishvik Bhaasha*** *(Universal Language)*

Description

Vaishvik Bhaasha is a device that offers two-way communication between people who don't speak a common language. The underlying software would be **Google's Speech and Translation API**s and by seamlessly integrating these, we hope to achieve natural speech-like fluidity in conversations.

Vaishvik Bhaasha

What it does :

Vaishvik Bhaasha

The need for Vaishvik Bhaasha ?

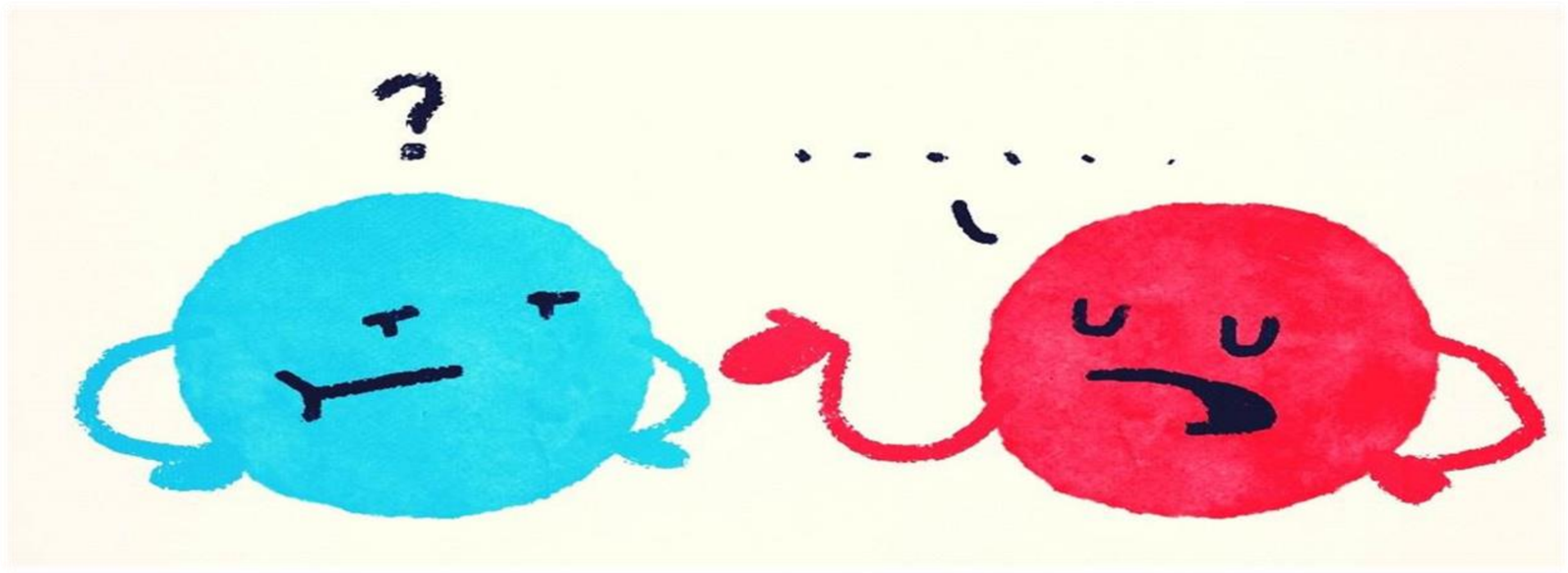
Let's play a game of Have You Ever?

- ✓ Been ripped off as a tourist in another country or state?
- ✓ Been stranded in a place without knowing a route to your destination?
- ✓ Saw a hot girl on the train but felt helpless because she didn't speak your language?

Language has been the biggest barrier to globalization. The discomfort of being in a foreign land is mostly caused by the differences in language.

Vaishvik Bhaasha

Eliminating the need for a human interpreter



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Miscommunication and Misinterpretation can be a nightmare !

When the US President Carter travelled to Poland in 1977, the State Department hired a Russian interpreter who knew Polish, but was not used to interpreting professionally in that language. Through the interpreter, Carter ended up saying things in Polish like "*when I abandoned the United States*" (for "*when I left the United States*") and "*your lusts for the future*" (for "*your desires for the future*"), mistakes that the media in both countries very much enjoyed.

Vaishvik Bhaasha

Sci-fi but not Hi-fi

“**Vaishvik Bhaasha** is not an extravagant device for the affluent, but an essential whose practicality can be seen in fields like Tourism, Education, Business, Culture and more.
The device, unlike a smartphone is not meant exclusively for a single user. Hence, one device can be of service to a family or even a group of tourists. The device is re-usable and can even be provided on a rental basis.”

Vaishvik Bhaasha

Potential Market Impact

Tourism:

Perhaps the biggest market for this device, tourism accounts for 10.2% of the global GDP and this number can be substantially increased.

Culture:

Vaishvik Bhaasha would help people learn about different cultures, religions.

Education:

This device would be beneficial to foreign exchange students or students who are driven by consequences to study in a foreign land.

International Summits:

Vaishvik Bhaasha could replace interpreters in meetings between global leaders. (E.g. UN, SAARC, BRICS summits)

Others:

Peacekeeping, WHO, UNICEF, CRY missions

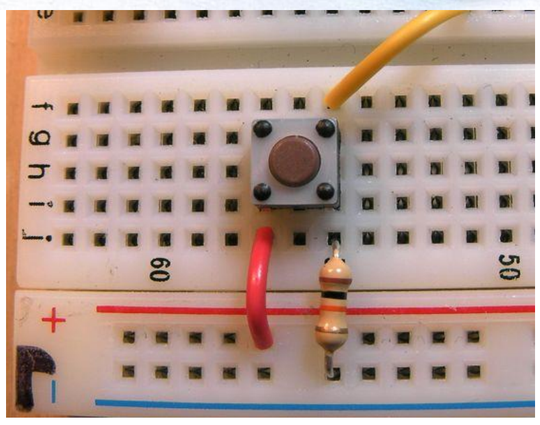
Vaishvik Bhaasha

Let's get technical shall we?

The Hardware Architecture :

Bluetooth speaker with mic

Control button (for mic)
Switch (for switching language)



Raspberry Pi

Vaishvik Bhaasha

The 3-step process:

Step 1: **Speech-to-Text**

User 1 speaks in his preferred language through the device. A FLAC audio file with the speech input of the person is created temporarily and encoded in “base64” format. This file is then sent as a “json” request to the Google cloud engine and through Google’s **Cloud Speech API**, the conversion takes place. The response is a “json” response file with the transcript of the speech input in user1’s language.

Features: Noise cancellation, Word Hints, Continuous real-time recognition, Profanity Filter.

Step 2: **Text –Text Translation**

The transcript is again packed in a json request along with the target language and sent to Google’s **Translation API**.
Google recently introduced the **Google Neural Machine Translation (GNMT)** – An Artificial Intelligence based translation software that replaces the existing phrase-by-phrase translation with sentence-by-sentence translation. It claims to achieve 0.2 sec/sentence speed by using **Tensor Flow** (Google’s open-source Machine Learning) to eliminate the need for an intermediate language (like English) to translate between two languages for which the system isn't programmed.

Features: Supports over 100 languages, Auto-language detection

Step 3: **Text-to-Speech**

This is a fairly simple process where a HTTP-curl request with the sentence is sent to the Google Cloud that returns an audio file with the spoken sentence.

Vaishvik Bhaasha

The road ahead

- Translation for indigenous languages.

- Miniaturizing the hardware and making design improvements to produce a wholesome and marketable device.

- Upgrading Google licenses to accommodate large volumes of requests.

- Offline support

Vaishvik Bhaasha

“We hope to break the language barriers around the world to bring people together. For peace, for sharing ideas, visions and for learning each other’s cultures.

Forget hiring guides, carrying a dictionary or smartphone apps. This is the future.

Be multilingual. Be global.”

This device(Vaishvik Bhaasha) would act as the stepping stone for the further improvements of Google’s translation attainments by providing the adaptability for devices through its unique integration with the translation.