TEAM DECIPHERS

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EchoAssist

An Application that offers seamless real-time language translation for wide range of users

Problem Statement: <u>Real-time Language Translation:</u> "Create a real-time translation tool for impaired speakers of different languages, integrating speech recognition, synthesis, and blockchain for secure, decentralized management of multilingual data, ensuring privacy, transparency, and seamless communication."

Solution Overview

- A Web App that uses AI, ML and Blockchain concepts for **real-time** language translation, **hand sign** detection, and communication between speech and hearing-impaired users.

- The web-app converts different languages as well as **Speech** to **Text** and **vice versa**, offers the hand Sign overlays for sign language.

- The web-app enables seamless **interview communication** by translating between different languages, including for candidates with **impairments**.

- Also assists **Illiterate** users as they get AR display of described objects on call for better comprehension.

  Thereby focusing on wide range of users.

Seamless Features

of EchoAssist

◆ **Hand Sign Animated overlays for seamless Understanding :**

For Sign Language Users and illiterate Users.

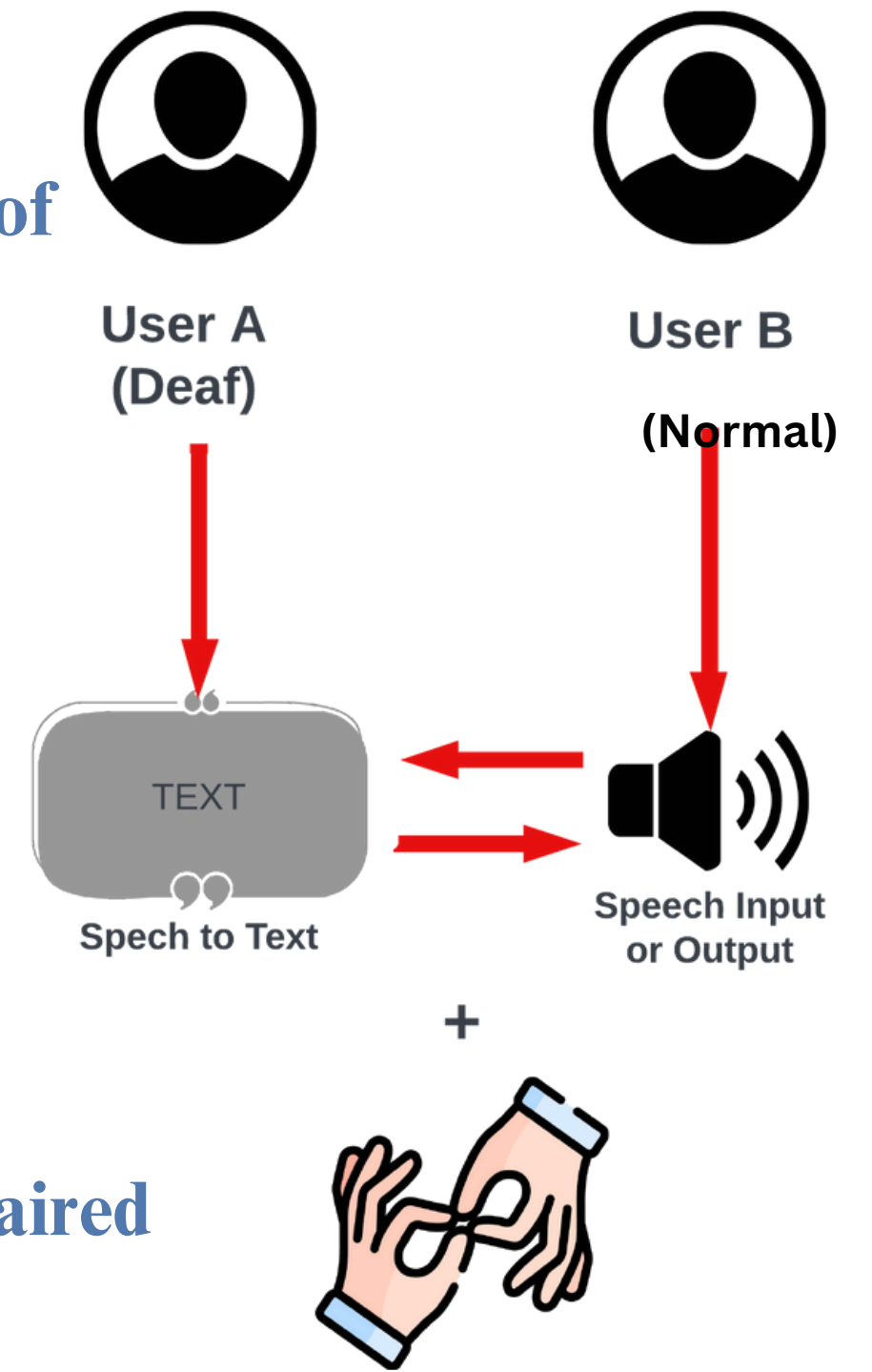◆ **Real-time translation between wide variety of languages**

Also Speech to Text and Vice-versa

◆ **Online functionality for live interaction**

For reliable and easy operation

◆ **Interview rounds for Normal & Speech-impaired candidates during Recruitment**

Will support wide range of candidates

User A
(Deaf)

User B

(Normal)

TEXT

Spech to Text
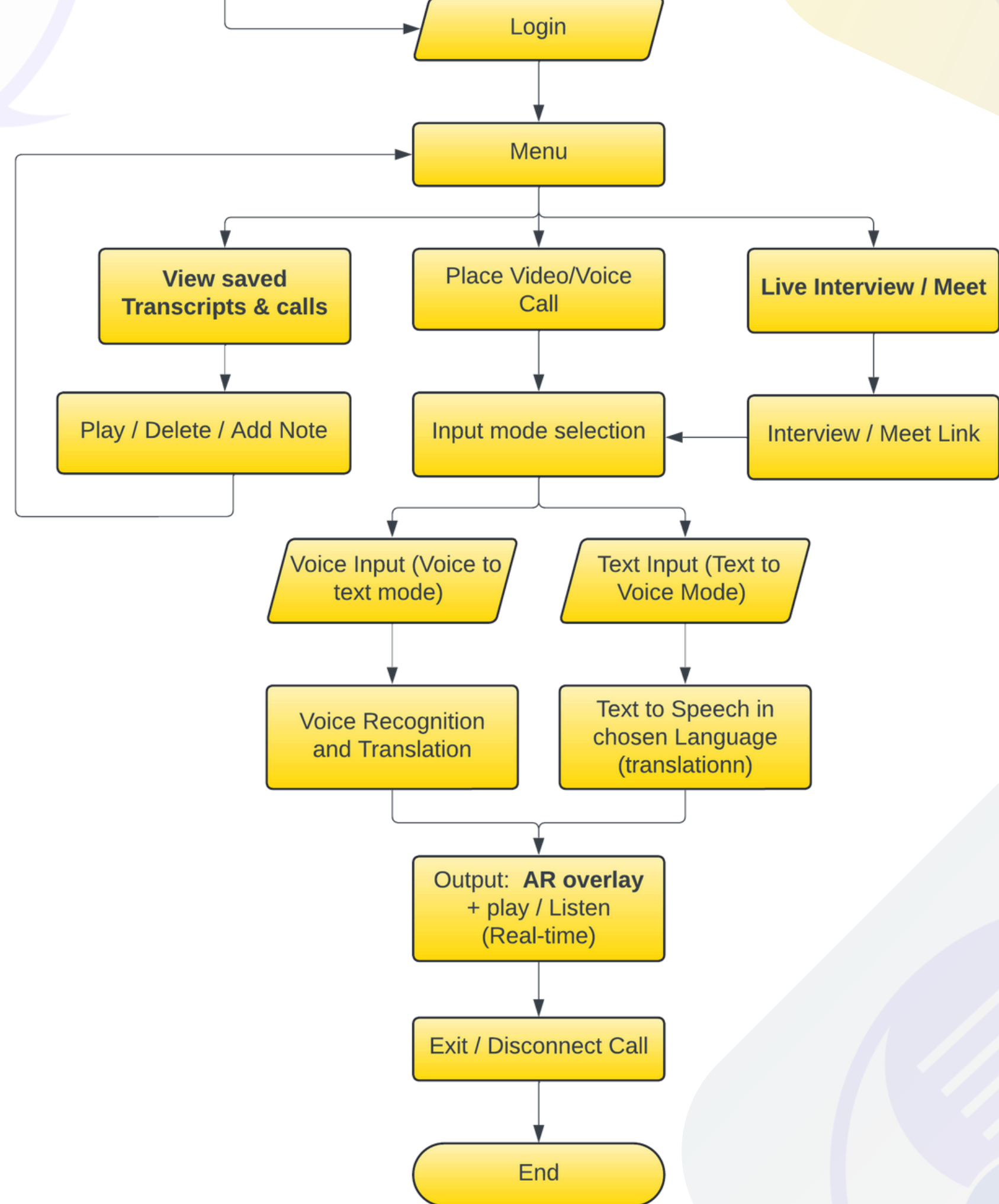
Speech Input
or Output

+

Process Flow

Fig : Flowchart

Methodology

- **Blockchain :** Securely store and manage audio data, ensuring privacy in the communication process by implementing **Proof of Work (PoW)**

- **AI Models:** Using AI image processing for translation and for transcribing video calls. **BERT** for Natural language processing in Multiple Languages.

- **Video/Voice call :** Integrating features with calling APIs like **WebRTC**.

- **Offline Functionality :** Pre-defined Datasets for basic conversations without internet.

- **Speech-Text Conversion:** Microsoft Azure or **Google Text to Speech APIs** as affordable options.

- **Interviewing Platform :** Unique codes for encryption, easy communication for speech/ hearing impaired candidates through video calls that will display **AR** hand signs overlays.
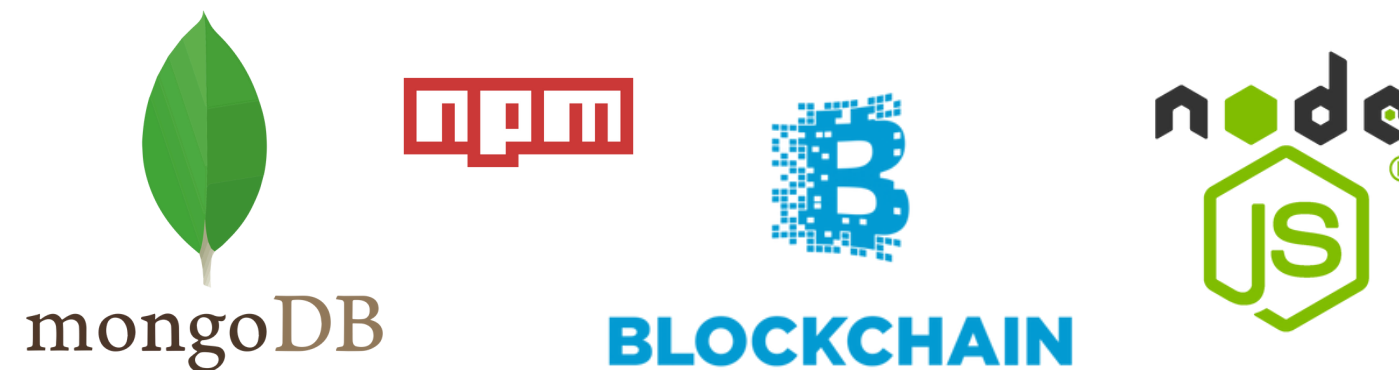
Core Technologies	
HTML5, CSS3, JavaScript	Web-Application Developement
WebRTC, Google APIs	Translation & Video Streaming
mongoDB, npm, BLOCKCHAIN, node JS	Authentication & Real-time Dataset retrieval
Keras, PyTorch, TensorFlow	Image Processing (Future Aim)
unity, ARCore	AR Overlays & Animation (Future Aim)

Impact and Benefits on Users

- Facilitation of **Employment** Opportunities.

- Support for **Sign Language** users as well as Normal Users can benefit wide range of people.

- Reduction of Communication **Barriers** as it supports **multiple language** translation.

- Increased **Social Inclusion**.

- **Psychological Benefits** like Confidence boosting and reduction in anxiety.

- Aids the complex **recruitment** process easier for Normal and even impaired candidates.

- Patients can communicate with **Doctors** in mother tongue which system translates in user specified language.

- **Government** can use this as a platform to connect with speech and hearing impaired laborers and farmers to address their problems online.
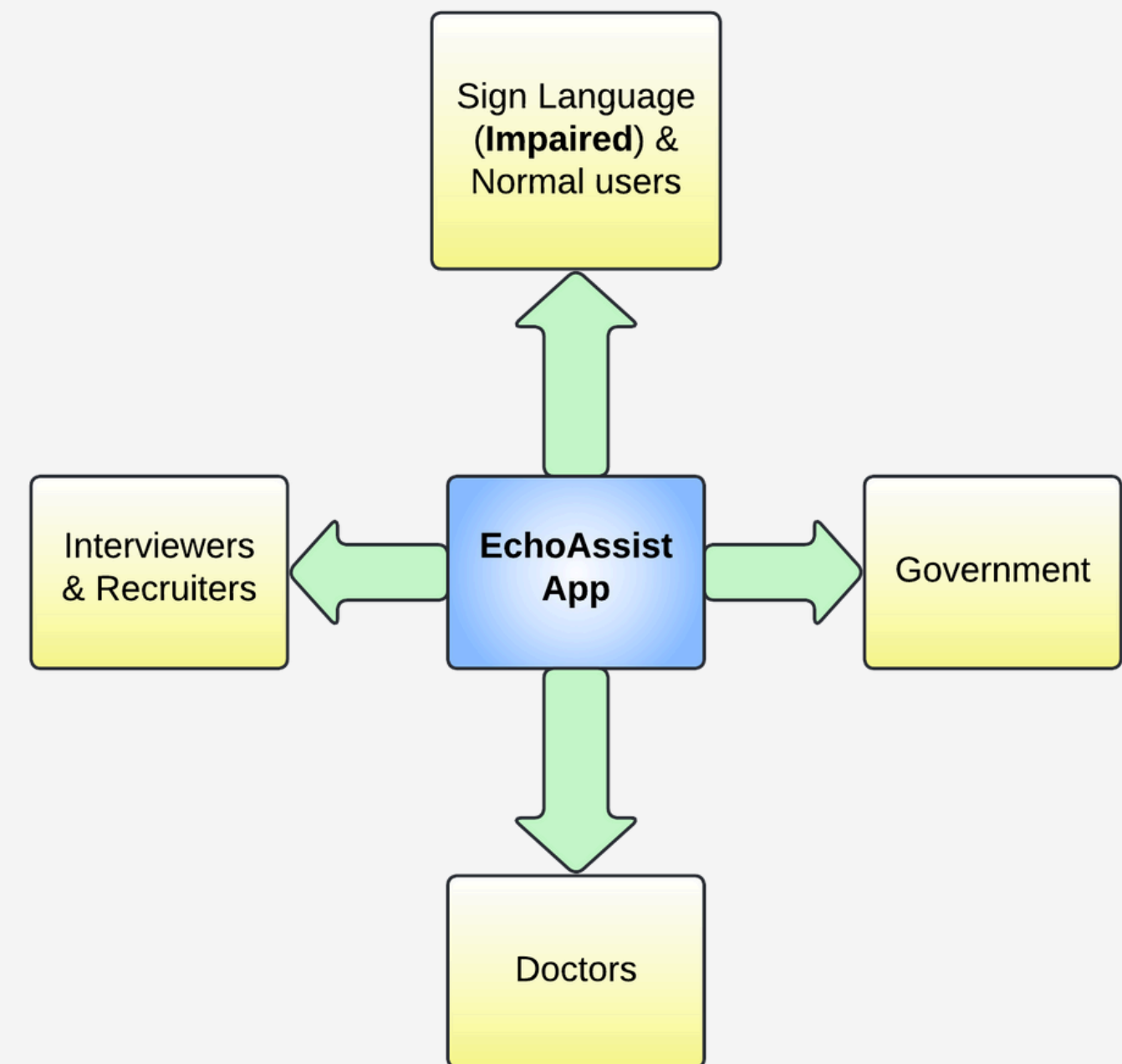

Fig : Applications

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Thank You!