Sri Venkateswara College of Engineering

Smart India Hackathon 2023

INSTITUTION'S INNOVATION COUNCIL
(Ministry of Education Initiative)

IDEA SUBMISSION FOR SIH 2023 - INTERNAL HACKATHON

Domain Bucket : Smart Education

Category : Software

Organization : Ministry of Commerce and Industries

Problem Title: Developing a software for dubbing of video from English to other Indian regional languages

Problem Statement(PS) Number: 1386

OBJECTIVE

Our vision and mission is to bring the following through our product:-

- **Expand Audience Reach:** Make English-language content more accessible and appealing to a broader Indian audience by offering it in their native languages. This can help reach a wider demographic.
- **Cultural Localization**: Ensure that the dubbed content is culturally relevant and sensitive to the target audience's cultural norms, values, and preferences.
- **Improve Accessibility**: Make educational, informational, or entertainment content accessible to individuals who may not understand English well or at all, improving overall accessibility.
- **Content Preservation:** Preserve and promote regional languages and cultures by dubbing and preserving traditional and historical content.
- **Increase Engagement**: Enhance viewer engagement by providing content in languages that viewers are more comfortable with and can relate to.

ISSUES AND CHALLENGES

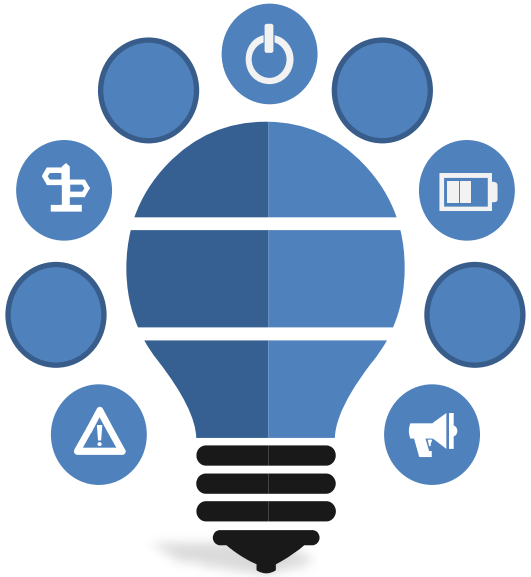
- **Language Diversity**: Each regional language has its unique phonetics, grammar, and cultural nuances, making it challenging to create accurate dubbing software for all languages.
- **Lip Sync:** Synchronizing the dubbed audio with the original video's lip movements is essential for a seamless viewing experience. Achieving this automatically can be technically demanding.
- **Cultural Sensitivity:** It's vital to consider cultural sensitivity when dubbing content, as different regions in India may interpret content differently based on cultural norms and context. An inappropriate translation or tone could lead to backlash.
- **Pronunciation and Accent:** Different regions within India have distinct accents and dialects, even for the same language. Ensuring that the dubbed content matches the specific regional accent can be a significant challenge
- **Naturalness and Emotional Expression:** Ensuring that the dubbed voice actors sound natural and expressive is essential for the success of the dubbing software.

SOLUTION

To solve these issues and challenges, we are coming up with a web application as an user interface which gets the video as input in real time and gives a dubbed video in regional languages required by the user with our process of ml models in the backend.

Voice Generation and Modulation

Translate the recognized text into the target language.



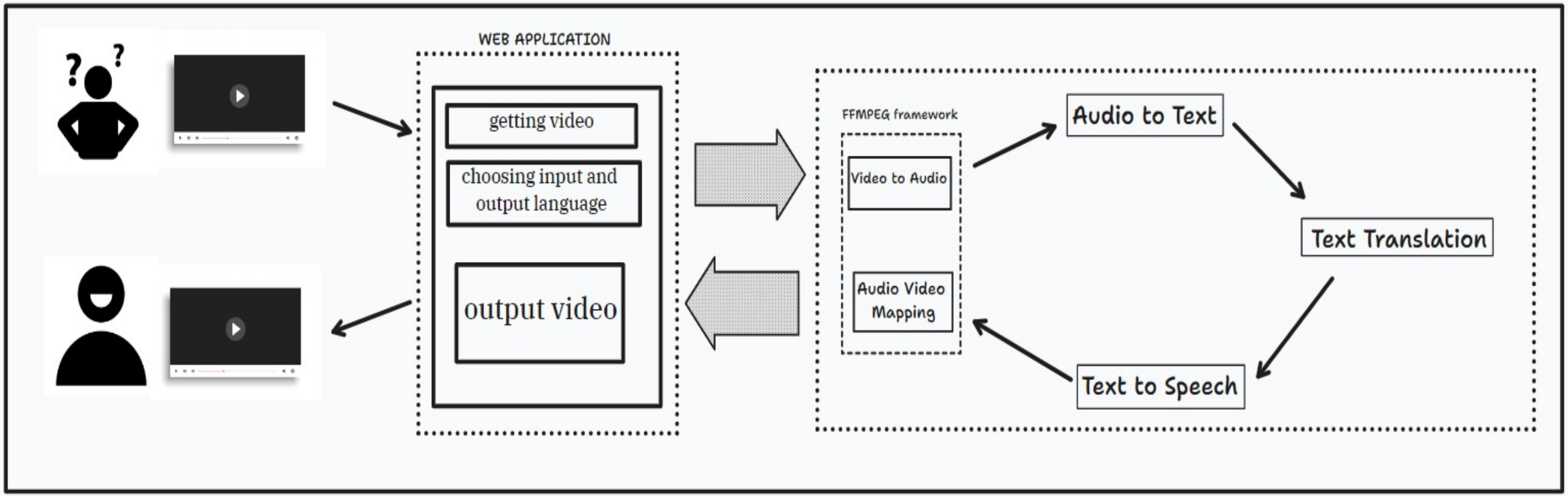
Redefine audio quality in post-processing

Ensure lip-syncing with the original video.

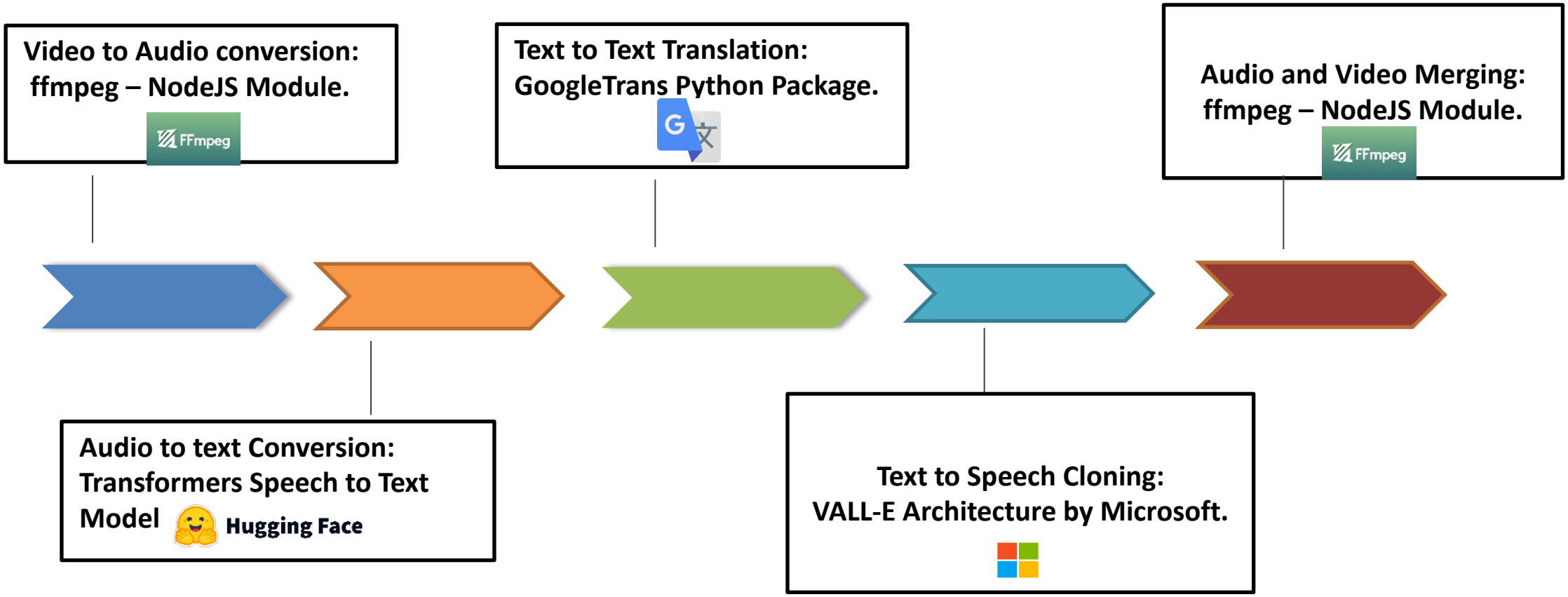
Speech recognition

Voice cloning

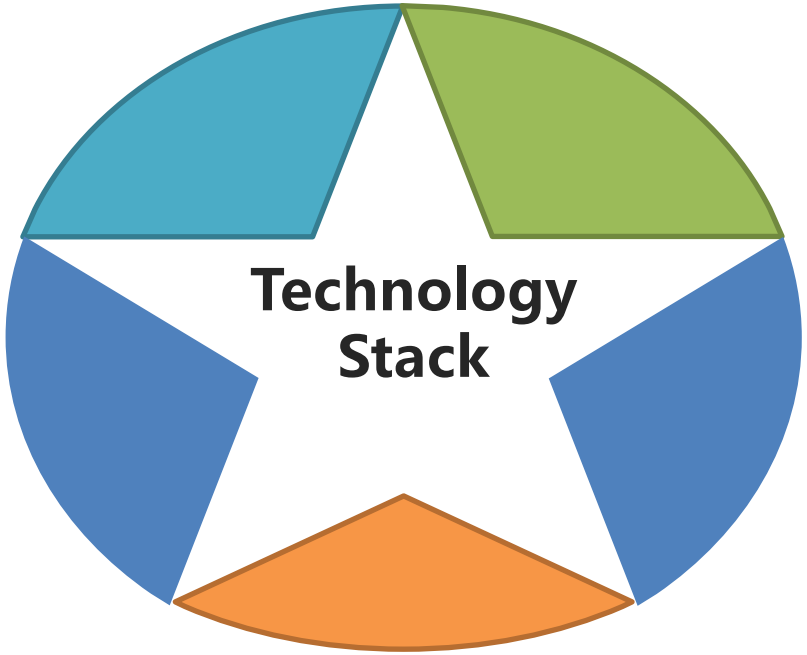
ARCHITECTURE/WORKFLOW DIAGRAM



MODULES / DEVELOPMENT PIPELINE



TECHNOLOGY STACK



Python

- Backend

ReactJs

- Frontend

Flask

- Interface for backend(python)

NodeJs

- Backend

Frameworks

- Hugging face
- Vall-E from Microsoft
- ffmpeg

Metrics

Novelty

Our project stands out by automating voice cloning and real-time dubbing into diverse Indian regional languages. Using cutting-edge AI, it ensures precise lip sync and cultural authenticity, setting a new standard in video localization

Scale of Impact

In a nation where languages are as diverse as its people, we're set to democratize access to videos, fostering cultural exchange, education, entertainment, business growth, and empowering creators, all while simultaneously meeting the needs of millions eagerly seeking content in their native language

Use cases

Our solution finds applications across diverse sectors: enhancing e-learning accessibility, expanding entertainment reach, enabling multilingual corporate training, improving government communication, empowering content creators on social media, and facilitating cross-cultural exchanges

User Experience

Our platform, accessible through a user-friendly and responsive website, offers a seamless experience with an intuitive interface for video uploads. Real-time lip-sync preview ensures quality, while enhanced workflow features make dubbing efficient, secure, and user-friendly, ensuring maximum engagement.