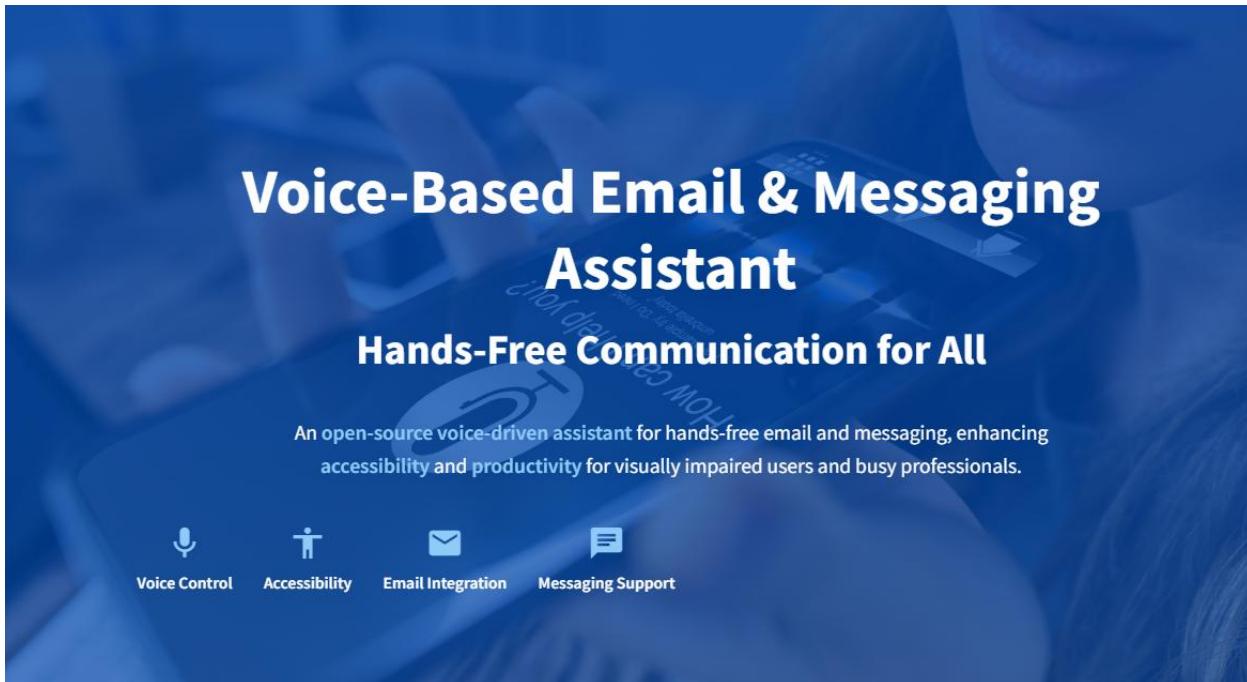


Voice-Based Email & Messaging Assistant – Hands-Free Communication for All



2. Project Statement

In today's fast-paced world, communication is essential, but typing and navigating traditional email/messaging apps can be challenging for **visually impaired users** and inconvenient for **busy professionals**. This project aims to develop an **open-source voice-driven assistant** that allows users to **send, read, and reply** to emails and messages entirely through speech.

By integrating **speech recognition (ASR)**, **natural language understanding (NLU)**, and **text-to-speech (TTS)** technologies, the assistant ensures seamless hands-free interaction. It will support multi-platform email (e.g., Gmail, Outlook) and popular messaging platforms (e.g., WhatsApp, Telegram) via available APIs, with strong focus on **accessibility, inclusivity, and productivity**.

3. Outcomes

- **Voice-Activated Email & Messaging:** Users can compose, read, and reply through voice commands.
- **Multi-Language Support:** Enable accessibility across diverse regions.
- **Smart Summarization:** Summarize long emails/messages into concise speech output.

- **Context-Aware Replies:** AI suggests quick responses based on conversation history.
- **Security & Privacy:** Authentication with voice PIN/biometric confirmation before sending.
- **Cross-Platform Integration:** Compatible with major email services and selected messaging apps.
- **Deployment:** Cloud-hosted (Dockerized) application with mobile/web interface.

4. Modules to be Implemented

1. User Authentication & Profile Management

- Email/password or OAuth login (Google, Microsoft).
- User preferences: language, voice speed, messaging platforms.
- Voice PIN or biometric authentication for extra security.

2. Speech Recognition & Command Processing

- Use **Whisper / Vosk / Google STT API** for speech-to-text.
- NLU (via Hugging Face Transformers or Rasa NLU) to interpret commands.

3. Messaging & Email API Integration

- Gmail/Outlook APIs for emails.
- WhatsApp/Telegram integration via official APIs or Twilio.
- Unified inbox for managing all communications.

4. Smart Reading & Summarization

- Long emails converted into short speech-friendly summaries using **transformer-based summarization models (BART, Pegasus)**.
- TTS (gTTS, Azure TTS, or Coqui TTS) for natural voice output.

5. Context-Aware Reply & Draft Suggestions

- AI suggests reply drafts based on conversation.
- User confirms via speech before sending.

6. Dashboard & Accessibility Features

- Simple web/mobile dashboard (Flask/Streamlit/React Native).
- Accessibility modes: larger fonts, high contrast UI.

7. Admin & Deployment Module

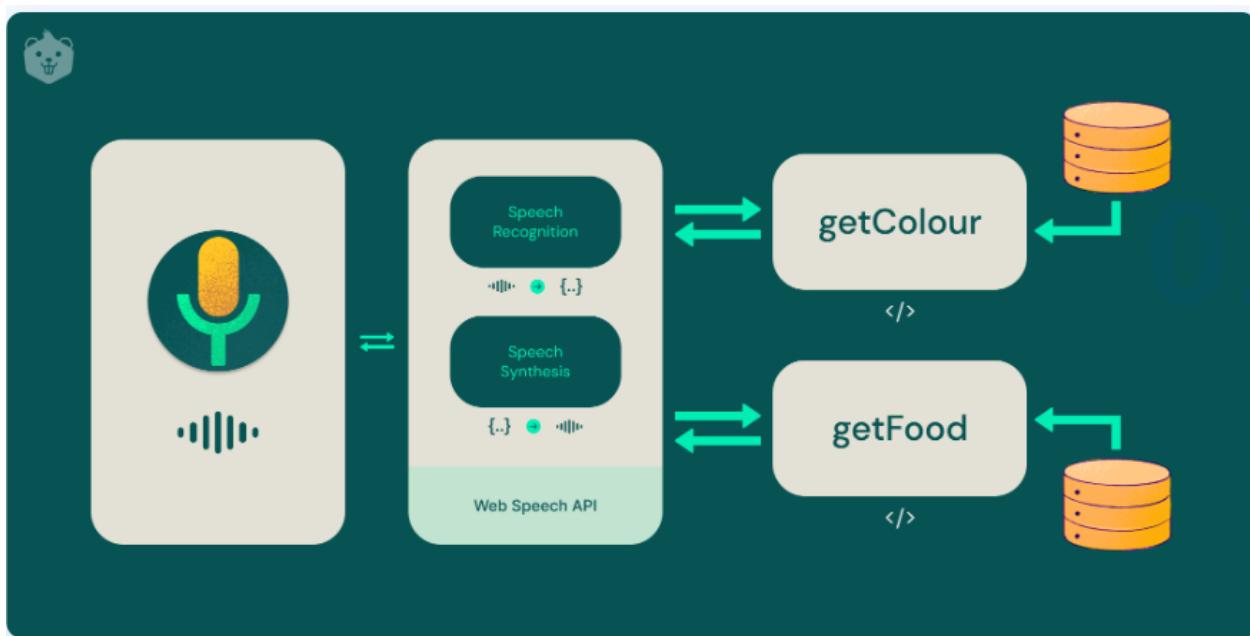
- Admin dashboard to manage connected APIs, monitor system logs.
- Containerization with **Docker**.
- Deployment on **Streamlit Cloud / Hugging Face Spaces / AWS Free Tier**.

5. Milestones & Deliverables (8 Weeks Plan for 25 Interns)

Milestone 1 (Weeks 1-2): Setup & Authentication

- User registration/login with OAuth (Google/Microsoft).
- Profile management (language, preferences).
- Initial voice command recognition (basic hello/test commands).

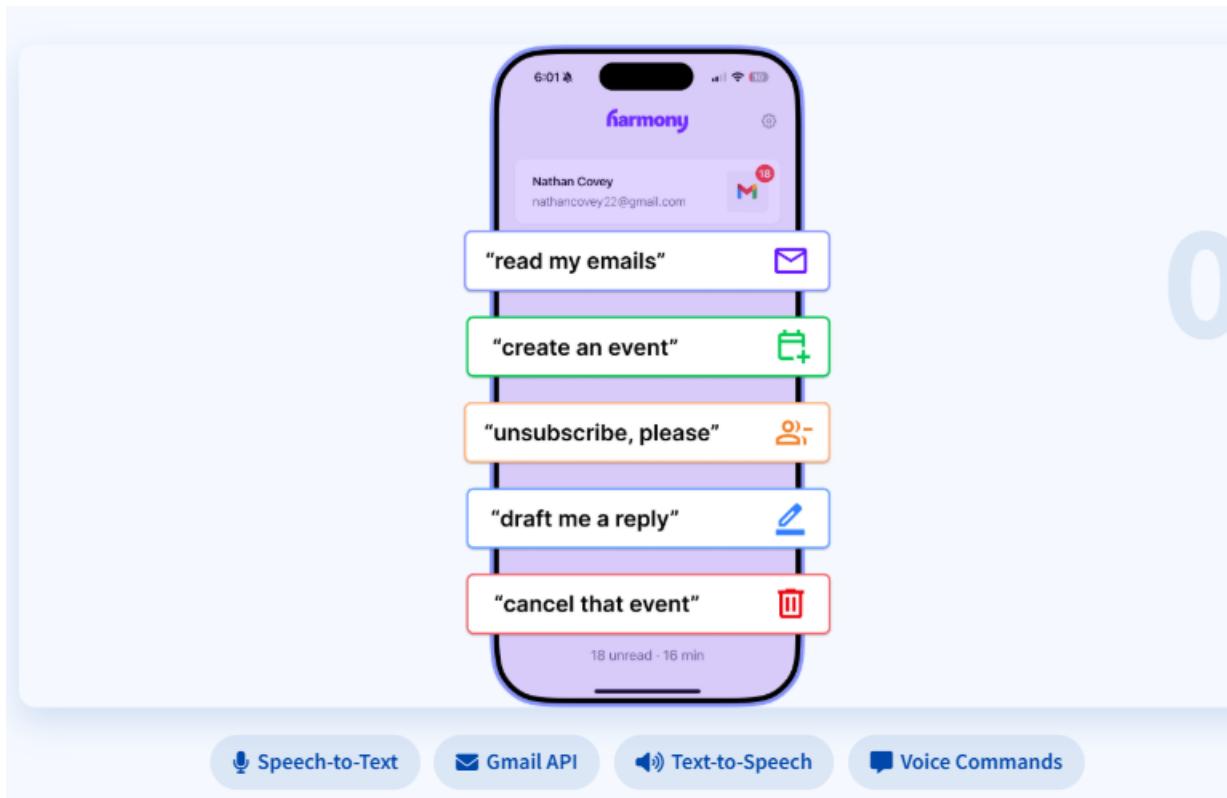
Deliverable: Functional login + speech-to-text prototype.



Milestone 2 (Weeks 3-4): Core Speech & Email Integration

- Speech-to-text pipeline (Whisper/Vosk).
- Connect Gmail API (send, read, reply).
- Basic TTS for reading emails aloud.

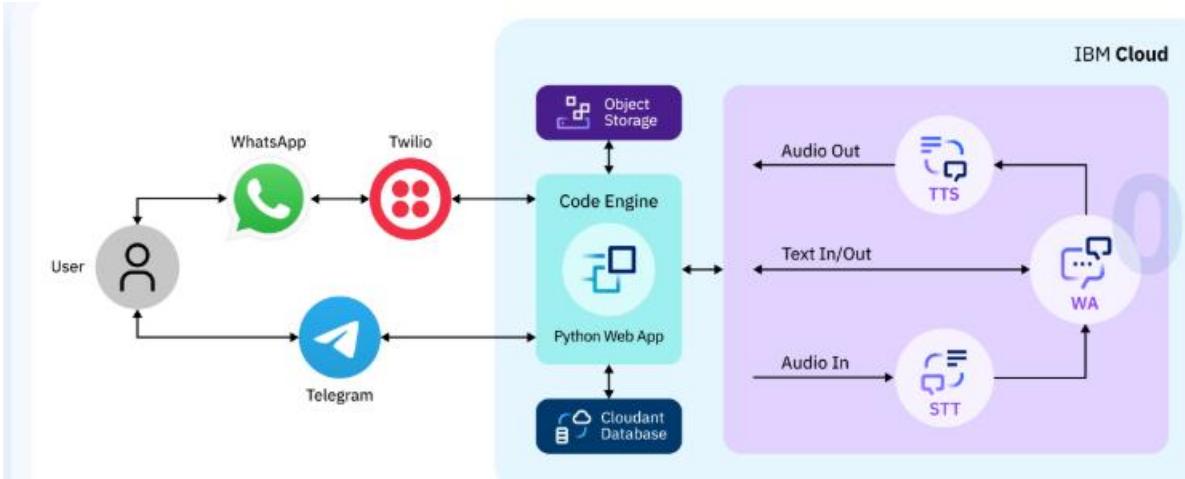
Deliverable: Voice-controlled Gmail assistant (MVP).



Milestone 3 (Weeks 5-6): Messaging, Summarization & AI Replies

- WhatsApp/Telegram integration.
- Summarization of long messages/emails.
- AI-powered suggested replies.
- Improved multi-language support.

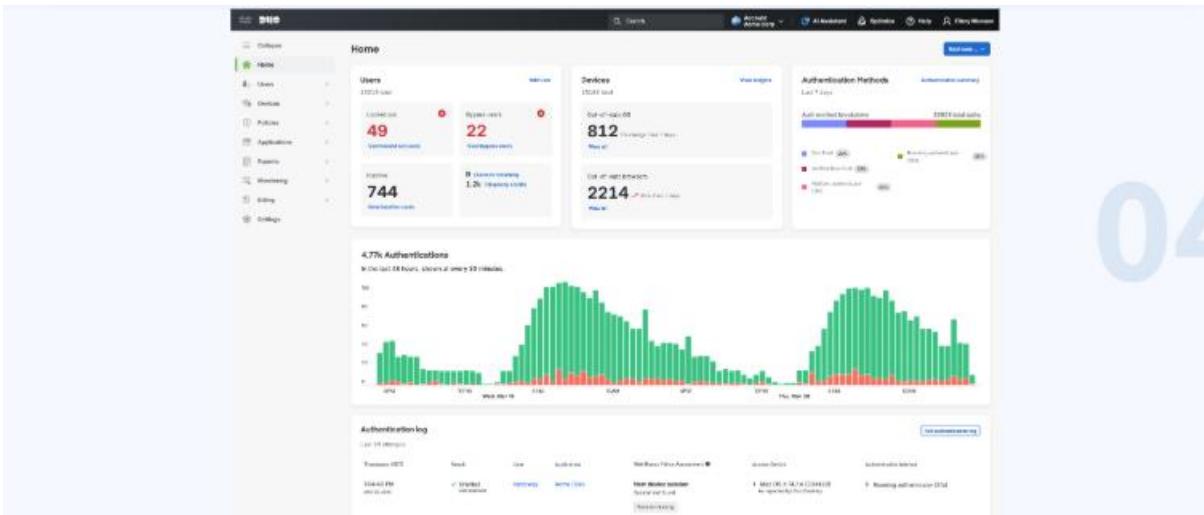
Deliverable: Multi-platform assistant with smart summarization.



Milestone 4 (Weeks 7-8): Admin, Security & Deployment

- Voice PIN/biometric confirmation before sending.
- Admin dashboard for monitoring APIs.
- Dockerization & deployment on cloud (Streamlit Cloud/HF Spaces).
- Final documentation & presentation.

Deliverable: Fully functional, cloud-deployed assistant.

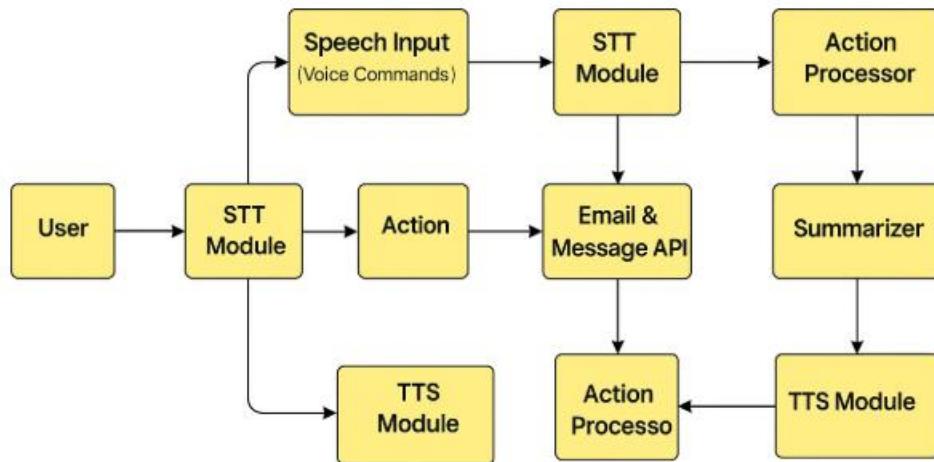


6. Evaluation Criteria

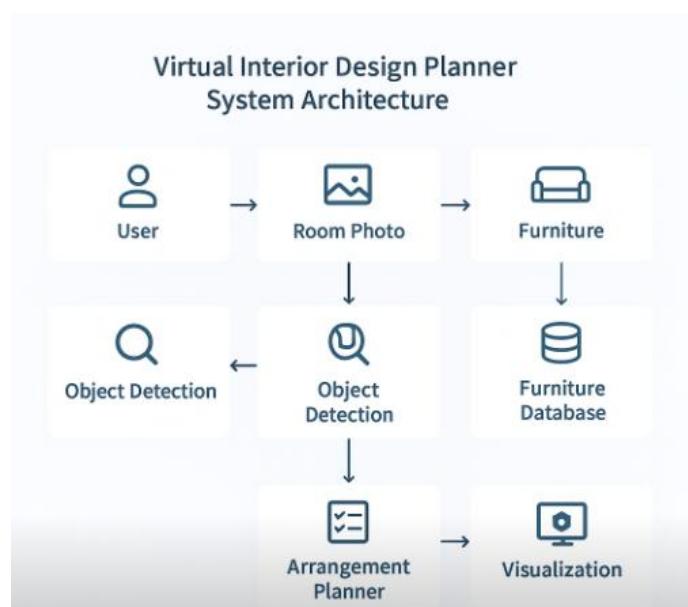
- **Week 2:** Authentication + STT works.
- **Week 4:** Gmail voice assistant MVP ready.

- **Week 6:** Multi-platform with summarization + AI replies.
- **Week 8:** Cloud deployment + complete documentation.

Work Flow Diagram



Architecture Diagram :



Schema Diagram

