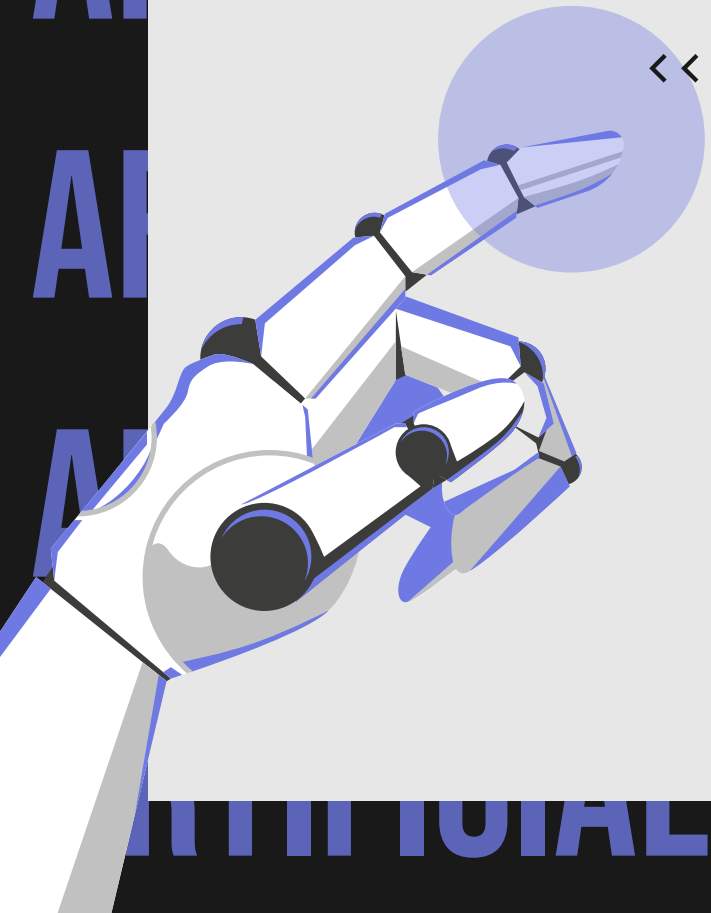

SMART SPEAKER

Powered by FAM

By Akshat Singh Kushwaha (a3ro-dev)

OVERVIEW

Fam Assistant is a voice [disabled] and gesture-activated AI assistant for devices like the Raspberry Pi Zero 2W. It handles music playback, task management, Bluetooth control, news updates, and gaming, providing a helpful assistant for low-end hardware.

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Light on license situation and future development.

ARTIFICIAL INTELLIGENCE (AI)

THE PROBLEM THAT I SOLVED INITIALLY

ARTIFI
INTELI
(AI)

My mother loves listening to music while working but hates having to stop for calls or web searches. She also prefers a low-volume speaker. So, I designed Fam Assistant with a 5W speaker, allowing music playback and web searches without touching her phone. Despite many challenges, I'm excited to present the stable version 4, completed in August 2024, to our esteemed faculty.

<<<<

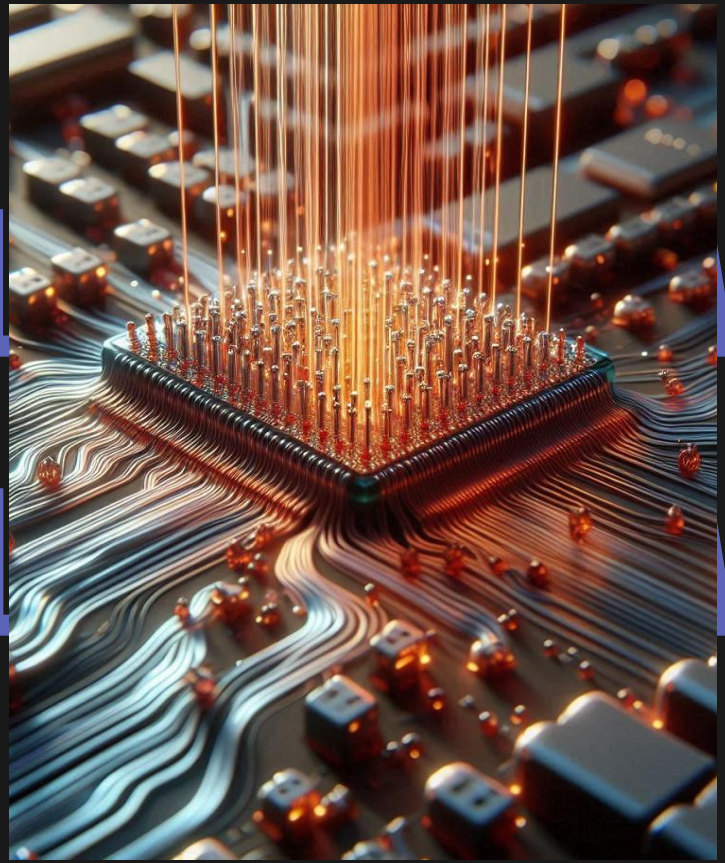
01.

FEATURES

Because Your Phone Deserves a Break Too!

VOICE RECOGNITION

•**Wake Word Detection** (deprecated): Previously used Porcupine for wake word detection.
•**Command Processing:** Handles various voice commands like music control, task management, and Bluetooth operations.
•**GPT Integration:** Uses GPT for unknown command responses.



GESTURE CONTROL

HAND GESTURE DETECTION

Uses ultrasonic sensors to detect hand gestures within 2-5cm.

DEBOUNCE MECHANISM

Ensures accurate gesture recognition and prevents false triggers.

ADDITIONAL GESTURES

Detects long holds and double taps. [in development phase]

TASK MANAGEMENT

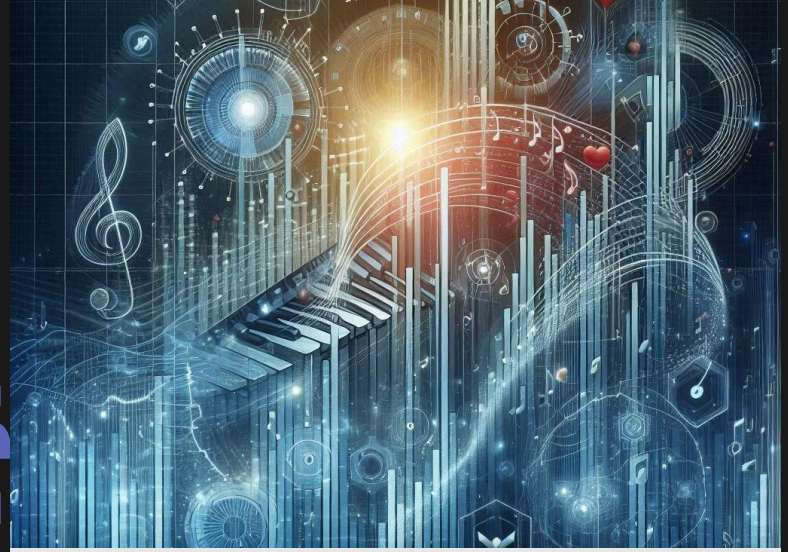
TASK MANAGER APP

I developed a task manager app in C-Python for the assistant to manage user-added tasks.

UNDERLYING TECHNOLOGY

I use difflib for precise task matching and double linked list for reliable task storage.

ARTIFICIAL INTELLIGENCE (AI)



MUSIC PLAYBACK

The **Music Playback** feature is a music app written in C-Python that operates on a separate thread to ensure smooth performance. This is the most polished feature of Fam Assistant, offering users a seamless and reliable music experience.

FAM GAMES HUB

Fam Games Hub lets you install any game written in vanilla HTML, CSS, and JS. Just say "start game," and the speaker becomes a gaming console, streaming your favorite games to up to 3 devices over local WIFI

/[AI]

02.

INSTALLATION

Yes, You Can Do It Yourself!

INSTALLATION

HARDWARE

You need a single board computer with speaker and microphone setup.

₹4000/$48

>>>>

SOFTWARE

Install Debian distro of GNU/Linux and Python 3.11.x. An active internet connection is also required

₹0/$0

>>>>

APIS

OpenWeather api, News Api, Groq Cloud Api and Openai Platform Api

₹674/$8

>>>>

03.

CONFIGURATION

So It Becomes Fully Yours.

CONFIGURATION

REFER TO CONFIG.EXAMPLE

All the configuration stays private on your hardware and is not shared or stored anywhere

[AI]

04.

USAGE

Incase I forgot to mention, You can use it too.

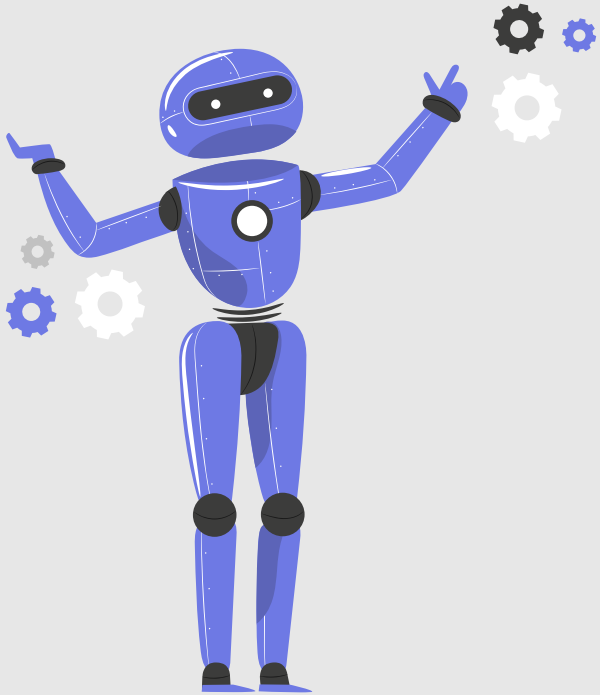
USAGE

STEP 1
Install GNU/Linux Debian Distribution and Setup Your Computer.

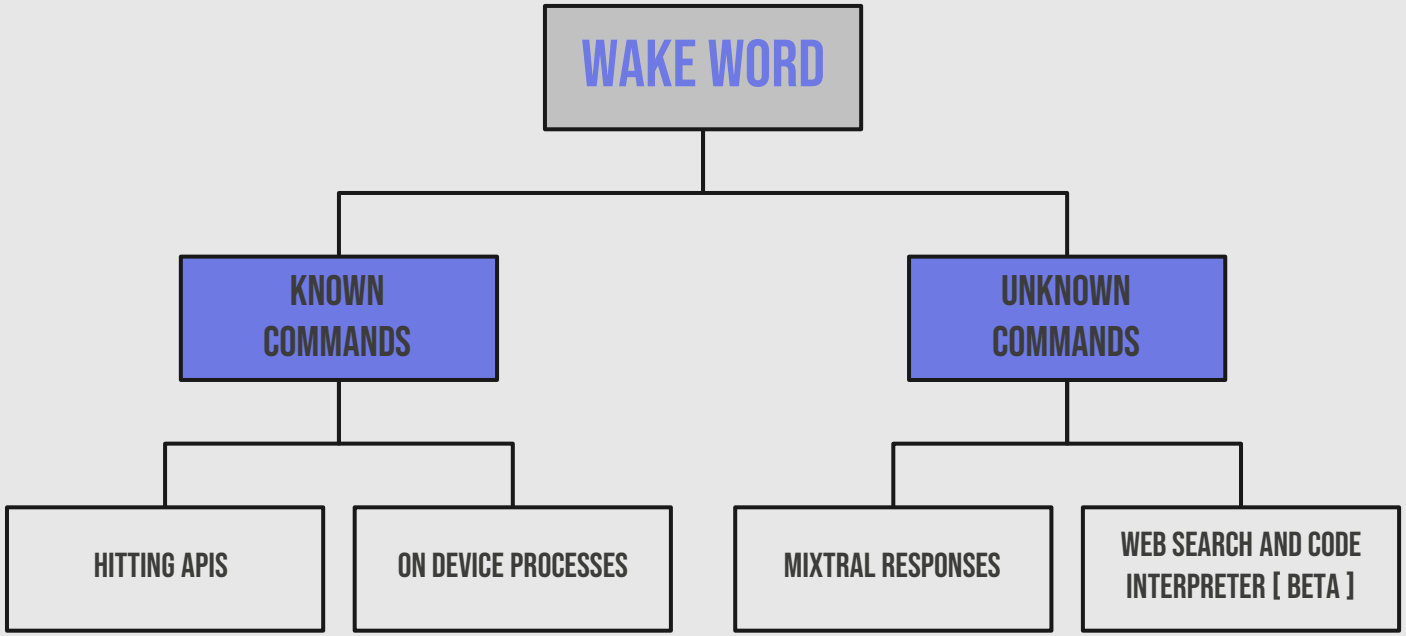
STEP 2
Setup auto-connect on boot and other system configurations.

STEP 3
Install the project files and then execute them.

STEP 4
Wait for a success chime to confirm completion.



USAGE FLOW CHART



05.

PROJECT STRUCTURE

PROJECT STRUCTURE

```
FamAssistant/
├── main.py                    # Main assistant implementation
├── _fam_assistant.py          # Core assistant logic
├── libs/                      # Directory for library modules
│   ├── bluetooth_manager.py   # Bluetooth functionality
│   ├── clock.py               # Time and task management
│   ├── games.py               # Games management
│   ├── gpt.py                 # GPT integration
│   ├── music.py               # Music player implementation
│   ├── music_search.py        # Music search and download
│   └── utilities.py           # Utility functions
├── assets/                    # Directory for static assets
│   └──                        # Different temporary and permanent media storage
├── conf/                      # Configuration files
│   ├── config.example.yaml    # Example configuration file
│   └── config.yaml            # User configuration file
├── misc/                      # Placeholder for miscellaneous files
├── model/                     # Placeholder for model files
├── music/                     # Placeholder for music files
├── tests/                     # Placeholder for test files
├── downloads/                 # Placeholder for downloaded files
├── README.md                  # Project documentation
└── requirements.txt           # Python dependencies
```

[AI]

06.

LICENSE AND SUPPORT

OPEN-SOURCE

By August 2025, the project will transition to open-source, welcoming contributions from the community. Until then, it's staying private as I refine it into a polished open-source offering. I'm focusing on expanding language support and adapting the code to run in various environments, including a browser-based version in JavaScript. With these upcoming developments, I'm ensuring the project will be versatile and accessible for a wide range of users and contributors.

AP
IN
(AI

“Innovation distinguishes between a leader and a follower.”

—STEVE JOBS

ACKNOWLEDGEMENT

I am deeply grateful to my parents for their unwavering support and financial assistance throughout this project. Their encouragement has been essential. I also thank my RAI faculty for their help in debugging and presenting this project. Special thanks to Mr. D.A. Luke, our principal, for the opportunity to showcase this project. Thank you for your support.

THANKS

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Fonts & colors used

This presentation has been made using the following fonts:

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(https://fonts.google.com/specimen/Raleway)

Nerd Font Mono
(https://github.com/ryanoasis/nerd-fonts/releases/download/v3.2.1/0xProto.zip)