VoiceBook Project Phase 1 Proposal

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1 Introduction

The VoiceBook project aims to create an innovative audio playing device with cloud connectivity and efficient power consumption. This proposal outlines the activities and outcomes of the initial phase, including hardware selection, assembly, testing, and performance evaluation.

2 Hardware Components

The hardware components were carefully selected to meet project requirements:

- ESP32 DevKit V1 board: Chosen for its built-in WiFi capabilities, which are essential for cloud connectivity.
- MAX98357 audio amplifier board: Selected for its support of I2S, providing high-quality audio output.
- SD card reader module: Utilized for ample storage of audio files, allowing for a versatile audio playback system.
- Battery holder with 4 AA batteries: Provides a reliable power source for extended device operation.
- 0.5W speaker: Chosen to balance battery usage and deliver clear audio output.

3 Assembly and Testing

The hardware components were assembled on a prototype board for testing and prototyping purposes. SD card libraries were integrated into the system to facilitate the reading of audio files from the SD card to the ESP32. This setup allowed for the efficient storage and playback of audio content.

4 Performance Evaluation

The performance of the system was rigorously tested to assess its functionality and efficiency. The ESP32's power consumption was measured, showing an idle mode consumption of approximately 80mA. Battery life tests demonstrated continuous operation for 3 days, with the device playing 10-15 audio messages per day.

5 Design Considerations

The design of the system prioritized compactness, efficiency, and user-friendliness. The dimensions of the prototype may appear relatively larger due to the use of a breadboard, but the final design will be optimized for compactness and ease of use.

6 Next Steps

The next phase of the project will focus on optimizing power consumption by disabling onboard LEDs and implementing WiFi activation only when necessary. Additionally, the design will be finalized for PCB implementation to accommodate additional buttons and optimize component positions on the final phase.

7 Conclusion

The initial phase of the VoiceBook project successfully laid the foundation for a compact and efficient audio playing device. The next phase will build upon these achievements to further enhance functionality, optimize power consumption, and finalize the design for mass production.