

Live Caption Device for hearing impaired



Introduction



In our increasingly connected world, clear communication is crucial.

However, for those with hearing impairments, engaging in conversations or events can be a challenge.

Introducing wearable live caption devices – revolutionary technology that transcribes spoken words into real-time text captions, displayed directly on eyeglasses.

Problem statement

Individuals with hearing impairments and those in noisy environments often face significant challenges understanding spoken conversations.

This can lead to social isolation, difficulty following lectures or meetings, and reduced job opportunities.

Traditional solutions like hearing aids or sign language interpreters may not be suitable for all situations or user preference.



Research Survey

Comparative Analysis of Existing Solutions

TranscribeGlasses

Xander

Google Glass

Research Survey

Comparative Analysis of Existing Solutions

TranscribeGlasses:

Offers a user-friendly experience but lacks Arabic language support and not available for purchase.



Research Survey

Comparative Analysis of Existing Solutions

Xander:

Provides real-time accuracy but is expensive and internet-dependent.



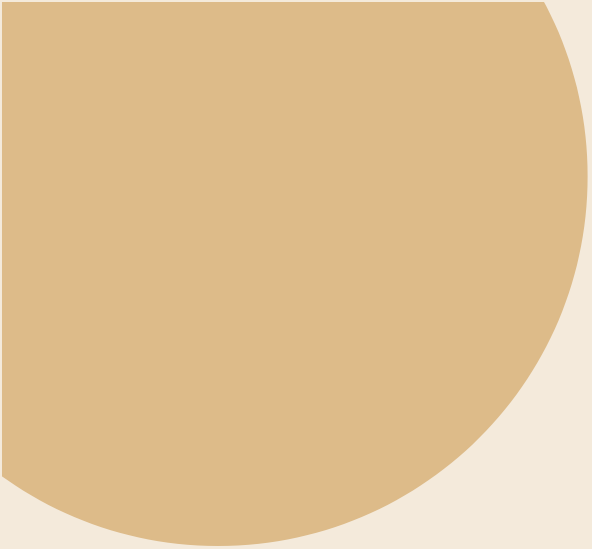
Research Survey

Comparative Analysis of Existing Solutions

Google Glass:

Solution Versatile with multiple functionalities but also shows cost and speed limitations.





Hardware components

Microcontroller

Raspberry Pi Pico w



LCD

OLED



Speech-to-Text Models that we used in this project



Whisper Ai



Vosk via Wifi



Vosk via Bluetooth



Whisper Ai

Whisper AI refers to **OpenAI's Whisper**, an open-source automatic speech recognition (ASR) system.

It is designed to transcribe speech into text and works across multiple languages.

Vosk



Vosk via Wifi



Vosk via Bluetooth



Vosk

Vosk is an open-source speech recognition toolkit designed for offline speech-to-text conversion. It is lightweight, fast, and can be used on various platforms, including mobile devices, edge devices, and servers.



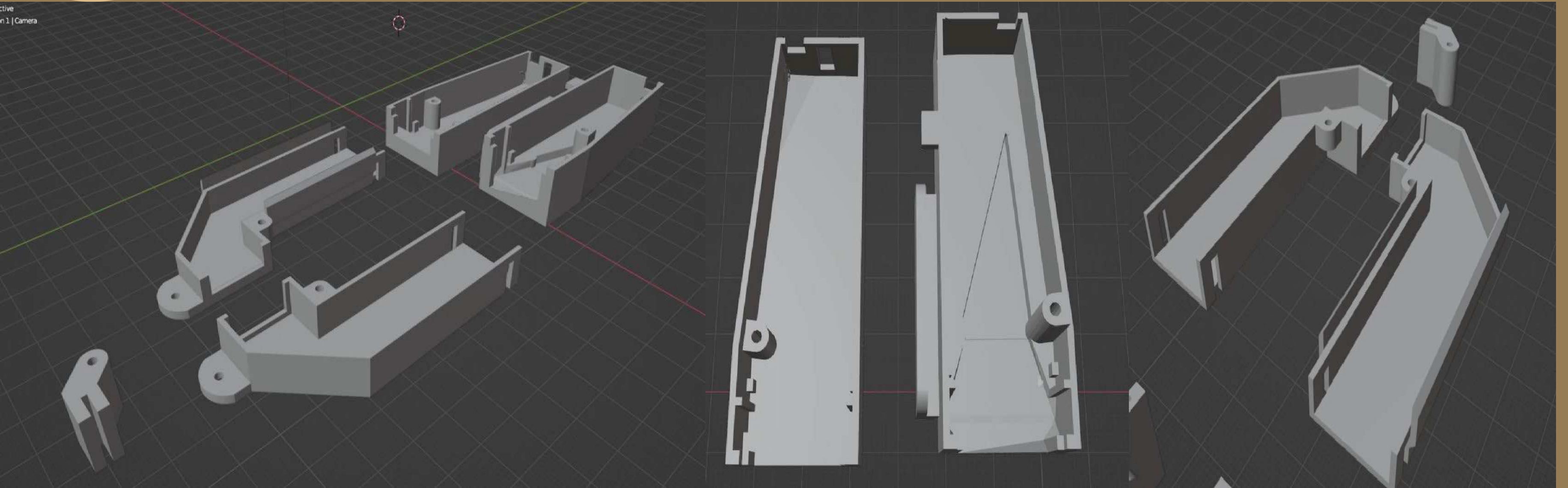
Vosk via Wifi

The issue we face with Vosk over Wi-Fi is that sometimes the connection becomes slow, causing the code to take too long to execute.

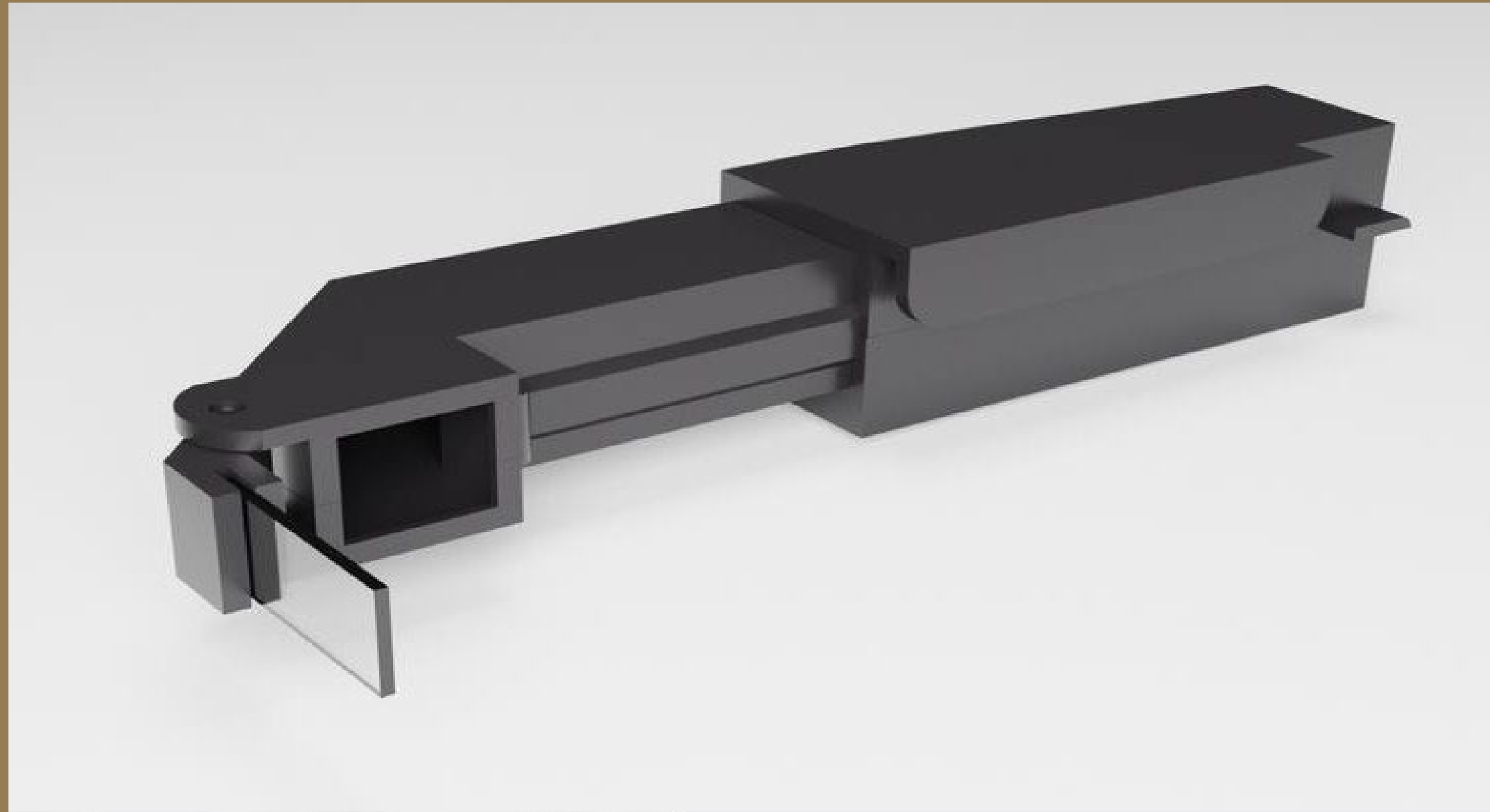


Vosk via Bluetooth

3D Design



3D Design



Conclusion

AR The Live Caption Device provides a valuable solution to enhance communication for individuals with hearing impairments. By converting spoken language into real-time captions, the device makes it easier for people with hearing challenges to engage in conversations and access information, regardless of language barriers.