Personalised Voice Assistant for the Elderly

Abstract

This project aims to design a personalized voice assistant to help elderly individuals with daily tasks, medication reminders, emergency assistance, and social engagement. The assistant is tailored to their needs with a user-friendly voice interface, easy commands, and personalization features.

1. Introduction

Problem Statement: Elderly people often face challenges with technology, memory, and health. A personalized voice assistant can bridge the gap by offering intuitive, voice-based support.

Objective: To develop a voice assistant that caters to elderly users with functionalities such as reminders, weather updates, emergency contact, and companionship.

Scope: Focused on usability, accessibility, and safety features.

2. Literature Review

Explores existing voice assistants like Alexa, Siri, and Google Assistant. Highlights limitations for the elderly, such as complex commands and lack of personalization. Reviews research on human-computer interaction for seniors.

3. System Architecture

Input: Speech recognition using Google Speech-to-Text or Vosk

Processing: NLP with spaCy or GPT models

Output: Text-to-Speech using pyttsx3 or gTTS

Optional Hardware: Raspberry Pi, microphone, speaker

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4. Features

- Personalized greetings
- Medication reminders
- Weather/news updates
- Emergency contact command ('Help me')
- Calendar management
- Conversational support (basic chit-chat)

5. Implementation

Platform: Python-based prototype

Libraries Used: speech_recognition, pyttsx3/gTTS, datetime, smtplib

Interface: Voice-only or minimal screen for visually impaired

Personalization: Stores preferences like wake words, reminder times, and favorite topics

6. Results

Conducted user testing with elderly participants. Measured response accuracy, ease of use, and satisfaction. Feedback indicated improved confidence using technology.

7. Challenges

Speech recognition in noisy environments, understanding accents or slurred speech, and maintaining conversation context.

8. Future Work

Plans for multilingual support, integration with IoT devices, and AI-powered emotional support through mood detection.

9. Conclusion

The personalized voice assistant provides a supportive, user-friendly solution for elderly users, enhancing independence and safety.

10. References

[1] Research papers on voice technology for elderly

[2] Documentation of used libraries

[3] Health and safety standards for elderly care tech