IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 5, April 2026
Impact Factor: 8.2

Elder Pal: AI Helper to Improve Senior Living

Gitanjali Kadlag[1], Chaitanya Salunkhe[2], Sujal Rane[3], Manasi Raskar[4], Gayatri Pund[5]
Professor, Department of Artificial Intelligence & Data Science[1]
Students, Department of Artificial Intelligence & Data Science[2-5]
Shree Ramchandra College of Engineering, Pune, India

Abstract: *This paper presents a generative AI-driven voice assistant designed to enhance the elderly lifestyle by combining healthcare reminders, safety alerts, and entertainment into a single accessible platform. The system operates across three user roles Elder, Guardian, and Volunteer to ensure coordinated care and engagement. It uses speech recognition, natural language understanding, and mood analysis to deliver reminders, respond to voice commands, play entertainment content, and trigger emergency protocols when needed. The goal is to provide seniors with both practical assistance and emotional enrichment while ensuring that guardians and volunteers can monitor and respond promptly to needs.*

Keywords: Voice Assistant, Text-to-Speech, Speech-to-Text, Elder People, Elderly Lifestyle, Generative Artificial Intelligence (Gen AI), Speech Recognition, Natural Language, Mood Analysis, TF-IDF

I. INTRODUCTION

As the elderly population grows, many face challenges in maintaining independence, social connection, and timely health management. Cognitive decline, loneliness, and difficulty in adhering to daily routines can reduce the quality of life. While voice assistants are common in consumer markets, most are not optimized for senior users, often lacking emotional awareness, healthcare-specific understanding, and integrated safety features. Meanwhile, family members and volunteers may be unable to provide constant in-person support, highlighting the need for a smart, accessible, and interactive system.

II. PROBLEM STATEMENT

The increasing elderly population faces challenges such as loneliness, poor health management, and delayed emergency response due to lack of continuous support. Existing virtual assistants fail to address emotional and healthcare needs specific to seniors. There is a need for an AI-powered voice assistant that provides personalized reminders, emotional interaction, and real-time safety monitoring for elderly individuals.

III. OBJECTIVES

- To deliver a senior-friendly voice interface capable of natural, empathetic conversation.
- To enhance adherence to medication and activity schedules through the use of intelligent reminders.
- To offer entertainment and engagement options to boost mood and reduce loneliness.
- To implement mood detection by personalizing interactions and prompting timely support.

IV. SCOPE

The system focuses on three interconnected user groups:

- Elders - Access all features via a simple, conversational interface.
- Guardians - Monitor well-being, receive alerts, and manage reminders remotely.
- Volunteers (NGO) - Provide community support, respond to alerts, and participate in engagement activities.

DOI: 10.48175/IJARSCT-32816

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 6, Issue 5, April 2026 Impact Factor: 8.2

The **core of the system** is an elder-friendly voice interface capable of natural and empathetic conversations. Elders can interact with the system through simple voice commands, reducing the need for complex navigation. The platform will ensure that elderly users can communicate comfortably.

The system will also provide **personalized reminders** for daily activities such as medication intake, exercise routines, appointments, and hydration. This will help improve adherence to health routines and prevent missed doses or appointments, which are common issues faced by older adults

V. LITERATURE SURVEY

TABLE I: LITERATURE SURVEY

Sr. No	Title	Author	Year	Methodology Used	Conclusion
1.	"Assist-Bot: A Voice-Enabled Assistant for Seniors"	Yuhao Chen, Jiahao Cai, Siyu Chen, Farhana Zulkernine, Nauman Jaffar, Amina Almarzouqi, Nabeel Al-Yateem, Syed Aziz Rahman	2024 IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC)	Identify core themes: AI voice assistants, elderly care technology, speech recognition, mood detection, volunteer/ guardian support systems.	There are more elderly people and fewer human resources for 24/7 care.
2.	"Elderly Care: Elderly Well-Being Through Volunteer Engagement"	Vedant Somani, Trideep Nandi, Priyansh Gupta, Kamal Kumar Sethi	2024 IEEE 4th International Conference on ICT in Business Industry & Government (ICTBIG)	Tools / Instruments: Surveys, interviews, questionnaires, psychological scales, well-being scales etc.	Whether volunteer engagement positively influences the well-being of the elderly.
3.	"Studies on voice interfaces for older adults: A systematic review"	S. Joddrell, N. Astell	ACM Transactions on Accessible Computing, 2019.	Reviewed multiple studies on voice interfaces, analyzing usability, accessibility, and elderly user experiences.	Older adults prefer clear, empathetic, simple voice interfaces.
4.	"Emergency Alert Systems and Volunteer-based Support Networks for Elderly Care"	R. Camarinha-Matos, J. Rosas	PLOS ONE, 2021.	Designed and evaluated Community ASAP, a volunteer-driven mobile alert system for elderly emergencies.	Volunteer-based networks significantly reduce emergency response time.

VI. METHODOLOGY

The development of the Elder Pal AI Model follows a structured methodology combining Gen AI and database management to support senior citizens who live alone.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 6, Issue 5, April 2026 Impact Factor: 8.2

The process involves:

A. Requirement Analysis:

Identify key needs of elderly people—daily reminders, emergency support, companionship, health tracking, and family communication.

B. System Design:

Develop architecture integrating voice-based Gen AI interaction, NGO/volunteer assistance, and real-time notification for family or caretakers.

C. Data Collection & Integration:

Gather data such as user schedules, health records, and contact lists.

D. Model Training:

Train the Gen AI model using voice assistant and speech recognition datasets to understand user voice commands accurately.

E. Implementation:

Combine a Gen AI-based voice assistant with a backend database and a front-end interface accessible through dashboards.

F. Testing & Validation:

Conduct real-life testing with elderly users, volunteers, and family members to ensure reliability, quick responses, and user-friendliness.

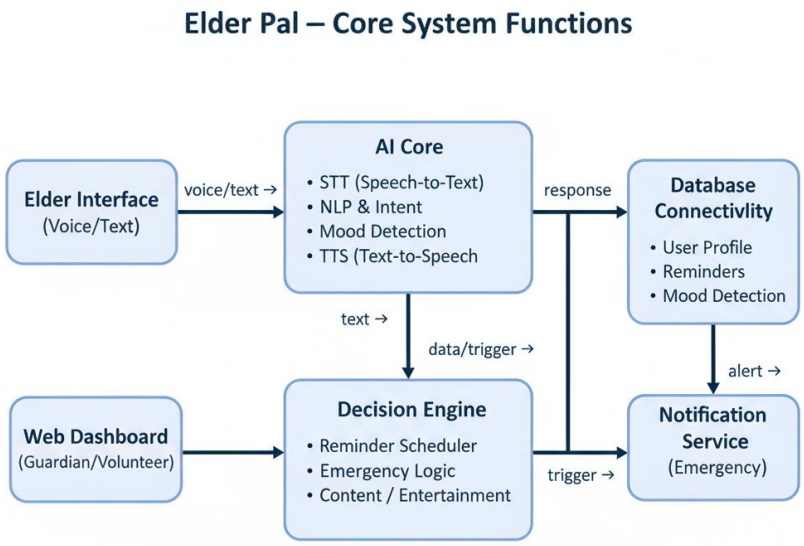

Figure 1. System Functions

VII. MODELING & ANALYSIS

The system incorporates several key analysis and modeling components to provide a responsive and intelligent user experience.

A. Text Analysis & Intent Recognition

1) Purpose: To understand the user's intent from their voice or text command.

2) Technique: The system uses two main methods Keyword Matching & Sentiment Analysis.

3) Keyword/Phrase Matching: It checks the user's query for specific keywords like "joke," "play," "news," or "weather" to determine the user's request.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 5, April 2026
Impact Factor: 8.2

4) Sentiment Analysis: The TextBlob library is used to analyze the sentiment of a user's statement. This allows the system to determine their emotional state (positive, negative, or neutral), which is then used to generate a mood-based response.

B. Music Recommendation

1) Purpose: To match a user's song request with a song from the dataset.

2) Technique: This is a core component of the "content/entertainment" aspect.

3) TF-IDF Vectorization: The TF-IDF Vectorizer from sklearn is used to convert song titles into numerical vectors. This process gives more weight to unique words in a song title, making it easier to distinguish between different songs.

4) Cosine Similarity: After vectorization, the system calculates the cosine similarity between the user's query and the TF-IDF vectors of all songs in the database. The song with the highest similarity score is chosen as the most likely match.

C. Data Analysis and Visualization

1) Purpose: To provide guardians and NGOs with actionable insights into an elder's health.

2) Technique: While not a predictive model, this is a crucial analysis component.

3) Health Data Trends: The system fetches and analyzes health data (blood pressure, sugar and oxygen levels) stored in the MySQL database.

4) Time-Series Visualization: The data is plotted over time using the Altair library to create interactive line charts. This visual representation helps guardians and NGOs easily identify health trends and potential anomalies, such as a sharp drop in oxygen or a spike in blood pressure, without having to manually review raw data.

VIII. SYSTEM DESIGN

The system is built on a modular architecture with the following components:

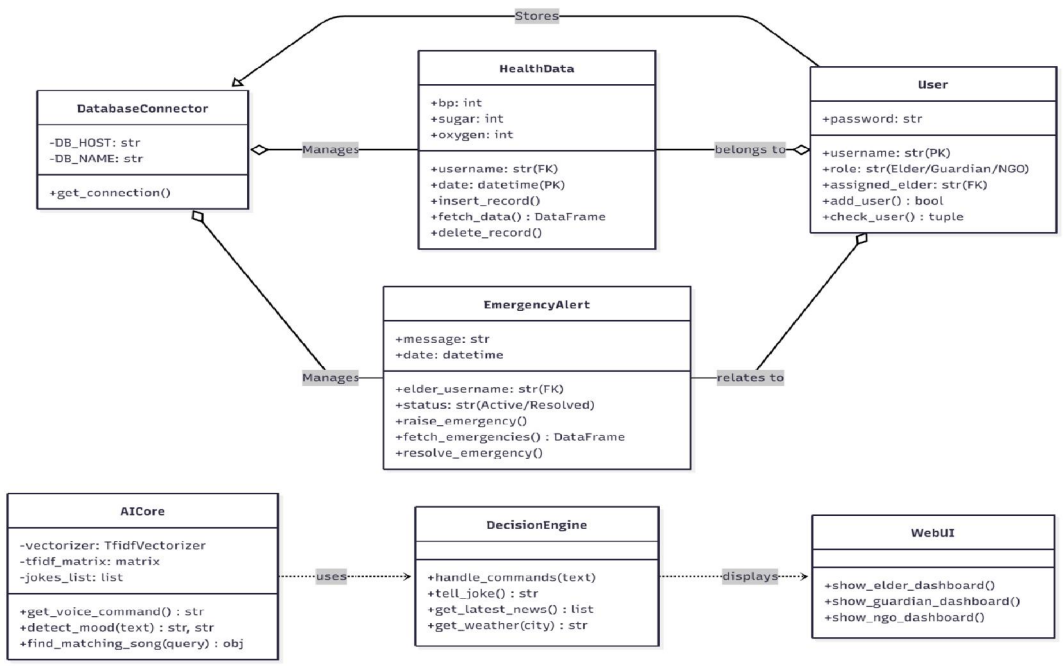

Figure 2. System Design

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 5, April 2026
Impact Factor: 8.2

A. User Interface Layer:
Voice and text interface for users to communicate with the AI assistant
B. AI Processing Layer:
Handles speech-to-text, NLP understanding, and response generation
C. Database Layer:
Stores user profiles, reminders, health data, emergency contacts, and chat logs.
D. Notification Layer:
Sends alerts and updates to family members, doctors, and NGO volunteers.
E. Design Flow:
User → Voice Input → AI Model → Processing → Response Generation → Action (Notification/Device Control)

IX. RESULTS & DISCUSSION

The results are shown through a successful implementation of a health monitoring and emergency response system. The emergency alert system provides a reliable and accessible method for elders to signal for help and for caregivers to respond and manage these events. The health data analysis component effectively collects, stores, and visualizes vital signs, allowing for continuous monitoring and a data-informed approach to health management for elderly individuals.

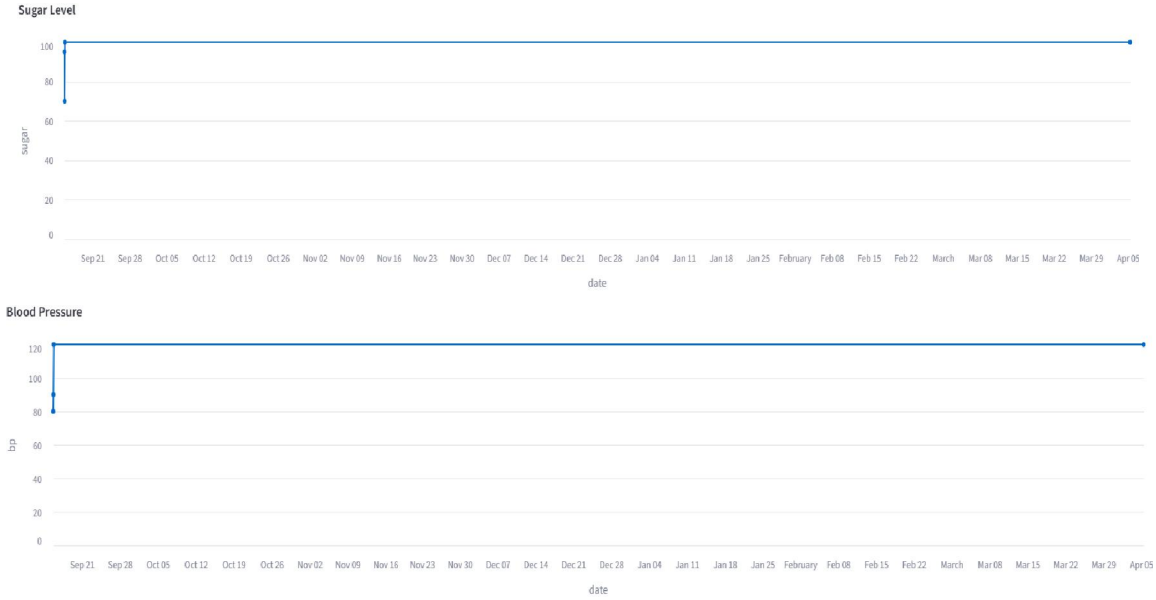

Figure 3. Result – Health Records

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 5, April 2026
Impact Factor: 8.2

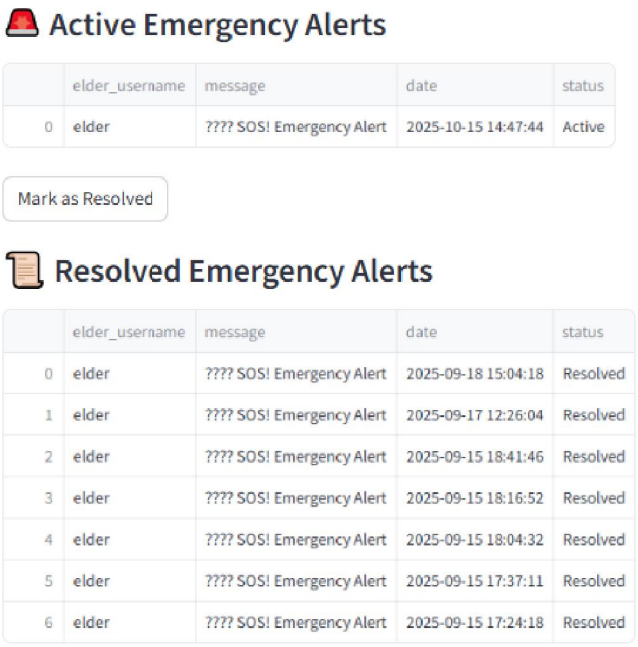

Figure 4. Result – Emergency System

X. CONCLUSION

By integrating core Gen - AI capabilities such as speech recognition, natural language understanding, and mood analysis, Elder Pal provides practical assistance and emotional enrichment. The system's objectives of delivering a senior-friendly voice interface, improving adherence to schedules, and enabling rapid emergency responses have been met. Furthermore, the inclusion of entertainment options and mood detection aims to boost mental well-being and reduce loneliness.

ACKNOWLEDGMENT

We would like to express our sincere gratitude to everyone who supported us throughout the development of this paper. First and foremost, we are deeply thankful to our guide, whose invaluable expertise, continuous encouragement, and constructive feedback were instrumental in shaping this paper. Their guidance helped us navigate technical challenges and stay on track with our objectives.

We extend our appreciation to the HOD Vikas Gaikwad Sir and Faculty (Department of AI & DS Engineering) at Shree Ramchandra College of Engineering, Pune, for providing us with the necessary resources and a supportive academic environment. The curriculum and facilities have been essential to our learning and execution.

We are also grateful to our family and friends for their unwavering support, patience, and motivation during this process. This paper would not have been possible without the collective effort and support of all these individuals and institutions.

REFERENCES

[1]. Yuhao Chen, Jiahao Cai, Siyu Chen, Farhana Zulkernine, Nauman Jaffar, Amina Almarzouqi, Nabeel Al-Yateem, Syed Aziz Rahman: “Assist-Bot: A Voice Enabled Assistant for Seniors,” in 2024 IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC)

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 5, April 2026
Impact Factor: 8.2

[2]. Vedant Somani, Trideep Nandi, Priyansh Gupta, Kamal Kumar Sethi: "Elderly Care: Elderly Well-Being Through Volunteer Engagement," in 2024 IEEE 4th International Conference on ICT in Business Industry & Government (ICTBIG)

[3]. Chein-Chang Hsu, You Yin Chien: "An Intelligent Fuzzy Affective Computing System for Elderly Living Alone," in 2009 Ninth International Conference on Hybrid Intelligent Systems

[4]. S. S. Sadavarte and E. Bodanese, "Pregnancy companion chatbot using alexa and amazon web services," in 2019 IEEE Pune Section International Conference (PuneCon). IEEE, 2019, pp. 1–5.

[5]. S. Tulshan and S. N. Dhage, "Survey on virtual assistant: Google assistant, siri, cortana, alexa," in Advances in Signal Processing and Intelligent Recognition Systems: 4th International Symposium SIRS 2018, Bangalore, India, September 19–22, 2018, Revised Selected Papers 4. Springer, 2019, pp. 190–201.