IAES International Journal of Artificial Intelligence (IJ-AI)
Vol. 14, No. 5, October 2025, pp. 4260~4270
ISSN: 2252-8938, DOI: 10.11591/ijai.v14.i5.pp4260-4270

Anisa: artificial intelligence companion for elderly care with empathetic conversations and health management

Shilpa Karegoudra[1], Pawan Hegde[1], Sinchana C. Poojary[1], Pranitha P. Shetty[1], Sahana M. Kotian[1], Saanvi Kallianpur[1], Veeresha R. Koti[2]
[1]Department of Computer Science and Engineering, Nitte (Deemed to be University), NMAM Institute of Technology, Udupi, India
[2]Department of Robotics and Artificial Intelligence Engineering, Nitte (Deemed to be University), NMAM Institute of Technology, Udupi, India

Article Info

Article history:

Received Jan 7, 2025
Revised Jul 16, 2025
Accepted Aug 6, 2025

Keywords:

AI companion
Caregiver support
Elderly care
Reminders
Safe environment

ABSTRACT

This study introduces Anisa, an advanced artificial intelligence (AI) companion designed to enhance elderly care by addressing the multifaceted needs and challenges of older adults. The system integrates the Llama 3.2 model, powered by Groq, to facilitate context-aware dialogues and empathetic interactions. This capability helps alleviate loneliness and provides essential companionship. Agenda.js is used for scheduling and managing reminders, ensuring timely notifications for medications and appointments. Additionally, Twilio enables emergency alerts when distress signals are detected. Anisa promotes physical activity, tracks daily routines, and generates activity reports shared with caregivers and healthcare providers. Expo CLI implements step-tracking and document-sharing features. By integrating these functionalities, Anisa improves the quality of life for seniors, eases caregiver responsibilities, and fosters a safer, more supportive environment.

Corresponding Author:

Veeresha R. Koti
Department of Robotics and Artificial Intelligence Engineering, Nitte (Deemed to be University)
NMAM Institute of Technology
Karkala Taluk, Udupi, Karnataka 574110, India
Email: veereshark@nitte.edu.in

1. INTRODUCTION

As societies worldwide face aging populations, innovative solutions for elderly support are essential. Loneliness and social isolation significantly impact seniors' mental and physical health, which traditional care models often fail to address adequately. Existing studies discuss voice assistants for accessibility [1], participatory design for virtual assistants [2], and smart home systems [3]. Bourouis *et al*. [4] propose a real-time health monitoring system using body area networks (BAN) and smartphones to track elderly users' vitals, mobility, and location, enabling remote caregiver intervention. Carthy *et al*. [5] introduce a storytelling-based mobile assistant that aids elderly users in memory recall through multimodal, personalized story presentation.

Matos *et al*. [6] propose a mobile-based support system that connects elderly and disabled individuals with nearby public agents or volunteers in real time, enhancing accessibility and emergency response in smart assistive cities. Bolaños *et al*. [7] evaluate elderly users' acceptance of voice-based virtual assistants like Alexa, highlighting their potential to reduce isolation and enhance medication adherence through recreational, voice-driven reminders. A unified system [8] that addresses the inefficiencies in large language model (LLM) serving by integrating both inter-request and intra-request optimizations. MemServe introduces MemPool, an elastic memory pool that manages distributed memory and key-value (KV) caches across multiple instances, enabling efficient context caching and disaggregated inference. Song *et al*. [9] propose a conceptual model combining technology adoption model (TAM) and senior technology acceptance model (STAM) to identify factors influencing older adults' acceptance of voice user interfaces, based on a survey of 420 elderly participants. Liu *et al.* [10] recognize and categorize key activities of daily livings (ADLs) in smart home environments to support elderly care, emphasizing their importance in designing responsive assistive technologies. Onthoni and Sahoo [11] potential of activity recognition (AR) to monitor elderly health conditions and share real-time data with caregivers, enhancing proactive care in smart home systems is highlighted. A preliminary interview and usability test for Canadian adults aged 65 or older is explored in [12], and how older adults evaluate and interpret the use of a voice assistant that retrieves real-time Twitter (now known as X) content in their everyday lives by demonstrating a custom prototype that lets participants access social media.

A rule-based chatbot for elderly mind monitoring using the LINE application programming interface (API) was developed in [13], while Cantone *et al.* [14] proposed an IoT-integrated robotic system using QTrobot for emotional and health monitoring. Chennuri and Rodda [15] aim to investigate the effectiveness of LLMs in understanding complex user queries and generating contextually relevant responses. Using conversations bidirectional encoder representations from transformers (CoBERT), a bidirectional encoder representations from transformers (BERT)-based response selection model, the study demonstrates that incorporating persona into conversations significantly enhances empathetic responses [16]. Here, the papers Rashkin *et al*. [17] and Chattaraman *et al*. [18] introduce the empathetic dialogue dataset to enhance empathetic dialogue generation, while Valtolina and Hu [19] review chatbot applications in mental healthcare, emphasizing their role in emotional support and behavior change through interactive voice communication. Alessa and Khalifa [20] aim at providing authenticated and secure conversations to senior citizens. Verma *et al*. [21] present an overview of groups of elders, aging disease, genetic disease, and preventive measures are presented. The common health issues and requirements of older persons were investigated in this study [22], [23] along with the primary criteria used to evaluate healthcare services for this demographic. The purpose of this systematic analysis was to assess the features, privacy, and security protocols of mobile applications for senior citizens available in the commercial app stores of Europe [24].

A smart elderly mobile app for the Chinese population has been developed by Zhu *et al*. [25] to be used by caretakers, elders, and dependents to monitor the health conditions of elders. The work underscores the potential of human-centered design (HCD) in crafting effective health solutions for older adults while highlighting the need for more robust research methodologies to validate these approaches [26]. This study explores the development of social robots capable of natural language communication and facial expressions to monitor the health and well-being of dementia patients. The robots provide daily health assessments and assist with medication management, aiming to reduce caregiver burden and support independent living [27]. A voice-interactive personal assistant (VIPA) tailored for mental health support among homebound seniors is designed in [28]. Adikari *et al*. [29] highlight the empathetic conversion in health monitoring and patient-centered systems. This study investigates the potential advantages, challenges, and requirements of implementing an AI-powered voice chatbot to assist older adults with medication information [30].

Anisa is motivated by the growing need for a holistic solution that addresses not only the physical but also the emotional and social challenges faced by seniors. The AI-driven platform offers a personalized approach to elderly care, combining companionship, health management, and physical activity encouragement in one comprehensive system. Through its advanced capabilities, Anisa seeks to fill the gap left by traditional care models, providing an accessible, continuous, and compassionate form of support that enhances the daily lives of seniors. However, Anisa stands out by integrating artificial intelligence (AI)-driven empathetic conversations, health tracking, and emergency support into one holistic platform. Unlike standard virtual assistants, Anisa prioritizes emotional well-being and personalized interactions through Llama 3.2 and Groq, offering more engaging and context-aware dialogues.

2. METHODOLOGY

The system was developed with a reliable, compatible technology stack to optimize performance and ease of use. Figure 1 shows the flow of each model of the proposed system.

- Frontend: developed using React Native to provide a responsive, mobile-friendly interface.
- Backend: built with Node.js and the Express.js framework for scalability and ease of development.
- Database: MongoDB was selected to store user data and reminders, allowing flexible, document-oriented storage.
- Messaging service: Twilio API was integrated to handle SMS notifications for reminders and emergency alerts.
- Real-time communication: Socket.io was implemented to facilitate real-time updates for notifications.

- Language model: the Llama 3.2 LLM was integrated to generate conversational responses, enhancing the interactive experience.
- The following technologies and tools were used in the development and deployment of the Anisa system, summarized in Table 1.

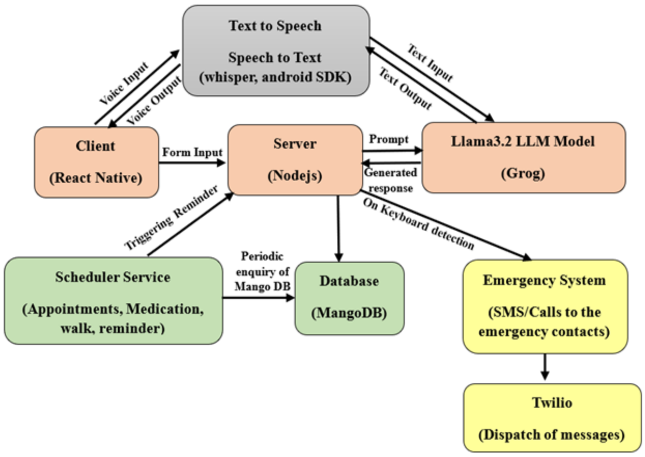


Figure 1. Flowchart of the proposed AI companion model and experimental methods applied

Table 1. Technologies and frameworks used in the Anisa system and their respective roles

Technology/framework	Purpose/functionality
React Native	Frontend development for mobile user interface (UI) with responsive design
Node.js	Backend environment for API handling and server-side logic
Express.js	Web application framework for building REST APIs on Node.js
MongoDB	NoSQL database for storing user data, reminders, and interactions
Agenda.js	Task scheduler for managing timed medication and appointment reminders
Socket.io	Enables real-time communication for instant alerts and updates
Twilio API	Sends emergency SMS/WhatsApp messages to contacts upon distress
Llama 3.2 (LLM)	Generates context-aware, empathetic conversational responses
Groq	Hardware accelerator to enable low-latency AI model deployment
Python (Flask)	Backend microservice for processing chat and audio transcription
Whisper API	Transcribes voice inputs into text to enhance accessibility.
Expo CLI	Facilitates step-tracking (Pedometer), document printing, and sharing
Expo Go App	Enables real-time testing of the mobile app on physical devices
JSON web token (JWT)	Ensures secure user authentication and session management
bcrypt.js	Provides password hashing for secure registration/login

2.1. Llama 3.2 and Groq

Anisa's conversational abilities were powered by the Llama 3.2 model, using the Groq to generate real-time, natural language responses. The integration of Groq's AI models allowed Anisa to engage in meaningful and context-aware dialogues with elderly users, addressing loneliness and offering companionship. Figure 2 illustrates the internal architecture of the Llama model used in the Anisa system, which supports real-time, empathetic AI responses by using RMS normalization and Groq hardware acceleration.

The Llama architecture improves on traditional Transformers by changing how normalization is done. Instead of using layer normalization, which adjusts values to have zero mean and unit variance, it uses root mean square (RMS) normalization. RMS normalization simplifies things by only re-scaling the values based on their RMS. Groq's AI models are typically deployed in data centers, where their hardware accelerates tasks like image recognition, natural language processing, and other AI-driven applications. The Groq hardware is designed to achieve high performance with low latency, and its models are used in industries such as healthcare, autonomous driving, and cloud computing.

2.2. User authentication

Secure user access was ensured through robust registration and session management.

i) User registration: users register by providing their email, mobile number, and password, which is hashed using bcrypt for added security.
ii) User login: JSON web token is employed for secure session management, allowing users to access their data securely.

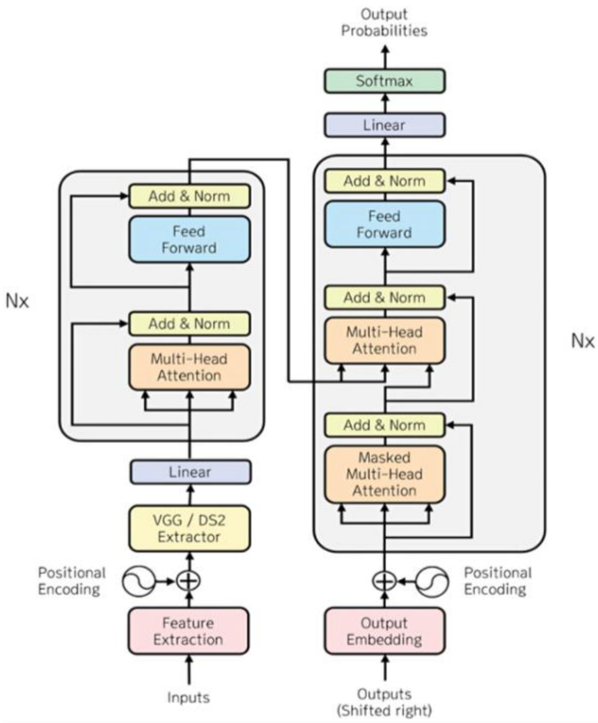


Figure 2. Llama model architecture

2.3. Medication reminder system

The medication reminder system was designed to support adherence by sending timely notifications.

i) Data structure: medication data is stored as an array of objects within the form model. Key fields include:
- Time: scheduled time for each medication.
- Date: date of medication intake.
- Start date and end date: range of the medication schedule.
- Reminder sent at: timestamp for when reminders are sent.

ii) Reminder logic: a scheduled job regularly checks the database for upcoming medication times and triggers notifications. Each reminder is sent once to prevent duplication.

2.4. Appointment management

The appointment management feature enables users to schedule and receive reminders for appointments. Users create and manage appointments, with reminders scheduled similarly to medication reminders, helping users stay organized with their appointments. The detailed procedure of the appointment management module is outlined in Algorithm 1.

Algorithm 1. Steps involved in the appointment management module
```
Input: appointment data from the database, current date, and time.
Output: appointment reminder notifications to users.
Steps:
i)   Connect to the MongoDB database.
ii)  Define the task of sending appointment reminders.
iii) Retrieve the next day's date using the getNextDayDate function.
iv)  Query the database for forms with appointments scheduled for the next day.
v)   For each form retrieved, for each appointment:
-    Check if a reminder was already sent today by comparing reminderSentAt with the current
     date.
-    If no reminder has been sent:
i)   Construct a personalized reminder message.
ii)  Emit the message using the Socket.io instance.
iii) Update the reminderSentAt field to the current timestamp.
iv)  Log the status of sent reminders or skipped reminders.
v)   Repeat every minute for testing (can be adjusted to a practical interval in
     production).
```

2.5. Walk reminders

The walk reminders support physical activity by encouraging daily exercise. Daily walk reminders are set up as local time strings in the database, triggering notifications at specified times. The process of generating and sending walk reminders is described in Algorithm 2.

Algorithm 2. Walk reminder generation and notification process

```
Input: walk reminder times from the database, current time.
Output: walk reminder notifications to users.
Steps:
i)   Connect to the MongoDB database.
ii)  Define the task to send walk reminders.
iii) Query the database for all user forms.
iv)  For each form, if the user has walk reminders, for each reminder:
-    Parse the reminder time into hours and minutes.
-    Calculate the time 5 minutes before the reminder as the due time.
-    Check if the current time is within the reminder window.
-    If the reminder window matches and a reminder has not been sent today:
i)   Construct a personalized reminder message.
ii)  Emit the message using the Socket.io instance.
iii) Update the reminderSentAt field to the current timestamp.
iv)  Log the status of sent reminders or skipped reminders.
v)   Repeat every minute for testing (can be adjusted to a practical interval in production)
```

2.6. Medication reminder module

The medication reminder module helps users adhere to prescribed treatment schedules by sending timely notifications. The detailed procedure for generating and delivering these reminders is presented in Algorithm 3.

Algorithm 3. Medication reminder generation and notification process

```
Input: medication schedules from the database, current date, and time.
Output: medication reminder notifications to users.
Steps:
i)   Connect to the MongoDB database.
ii)  Define the task of sending medication reminders.
iii) Query the database for all user forms.
iv)  For each form, if the user has medications, for each medication:
-    Parse the medication's start and end dates.
-    Check if today falls within the medication date range.
-    Parse the medication reminder time into hours and minutes.
-    Calculate the time 5 minutes before the reminder as the due time.
-    Check if the current time is within the reminder window.
-    If the reminder window matches and a reminder has not been sent today:
i)   Construct a personalized reminder message.
ii)  Emit the message using the Socket.io instance.
iii) Update the reminderSentAt field to the current timestamp.
iv)  Log the status of sent reminders or skipped reminders.
v)   Repeat every minute for testing (can be adjusted to a practical interval in
     production).
```

2.7. Emergency control feature

The emergency control feature enables the system to detect urgent situations based on user input and immediately notify caregivers or predefined contacts. The operational workflow of this feature is summarized in Algorithm 4.

Algorithm 4. Emergency control workflow for detecting user distress and triggering alerts

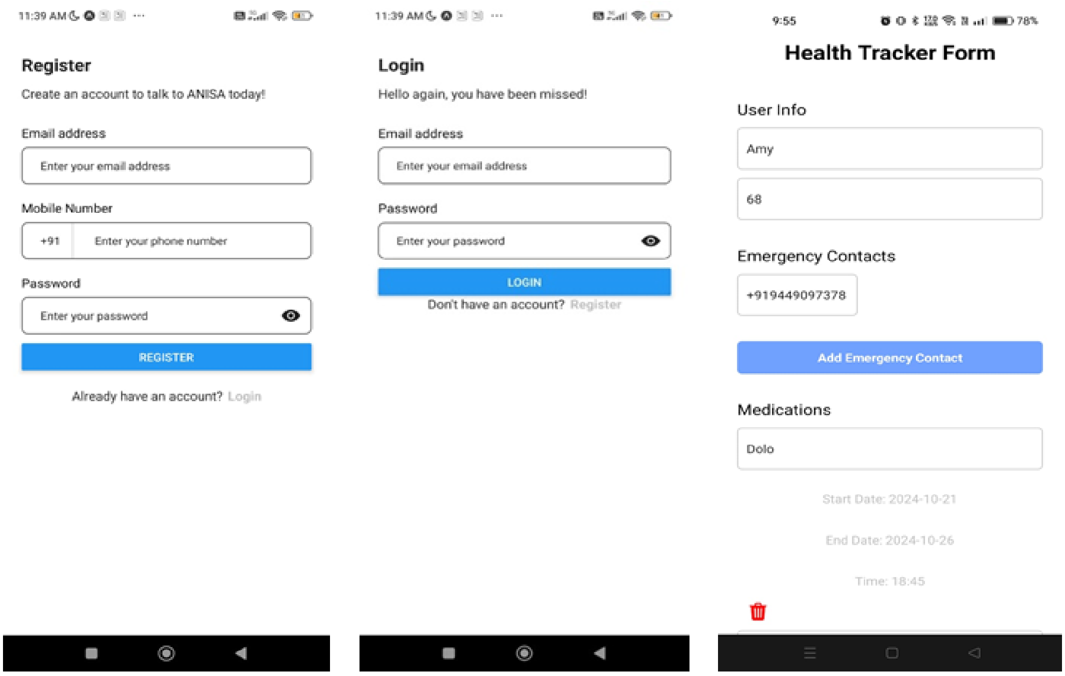
```
Input: real-time user input (text or voice), predefined emergency keywords (e.g., "help",
"I am suffocating").
Output: immediate alerts (via SMS and calls) sent to emergency contacts.
Steps:
i)   Initialization:
-    Establish a connection to the database to retrieve user forms and emergency contacts.
-    Initialize the LlamaService or equivalent AI model to process user input.
ii)  Real-time user input monitoring:
-    Continuously listen to user inputs using the LlamaService or another input monitoring
     system.
-    For voice inputs:
-    Convert speech to text using a transcription service (e.g., Whisper).
-    For text inputs:
```

```
-    Directly process the received input.
iii) Keyword detection:
-    Check if the processed input contains any predefined emergency keywords.
-    If an emergency keyword is detected:
-    Retrieve the corresponding user form from the database.
-    Fetch the list of emergency contacts for the user.
iv)  Send emergency alerts:
-    For each emergency contact in the list:
-    Use Twilio (or the configured SMS/Call API) to send an emergency alert SMS. The message
     should contain the user's name and a predefined distress message (e.g., "Hi, [username]
     has triggered an emergency alert. Please check on them immediately").
-    Optionally, initiate a phone call to the emergency contact for critical alerts.
v)   Log and notify:
-    Log the details of the alert (time, user ID, and emergency contact) in the database for
     audit purposes.
-    Emit a notification to the front end using Socket.io to display the emergency status to
     logged-in caregivers or family members.
vi)  Error handling:
-    If the alert fails to send to any contact:
-    Retry the message delivery up to a defined limit.
-    Log any failures for further troubleshooting.
```

3. RESULTS AND DISCUSSION

Anisa's interface was designed with elderly users in mind, emphasizing simplicity, and accessibility. Key design elements include large fonts, high-contrast colors, and well-placed buttons to facilitate ease of navigation. User testing showed positive feedback, particularly for the intuitive design, enabling users to set reminders, access emergency contacts, and receive information easily. Anisa's voice recognition capabilities allow users to communicate with the AI assistant through spoken commands. Testing demonstrated high accuracy in speech-to-text conversion, handling a variety of inputs, from reminders to health inquiries. Users found this feature highly beneficial, especially those with physical or visual limitations.

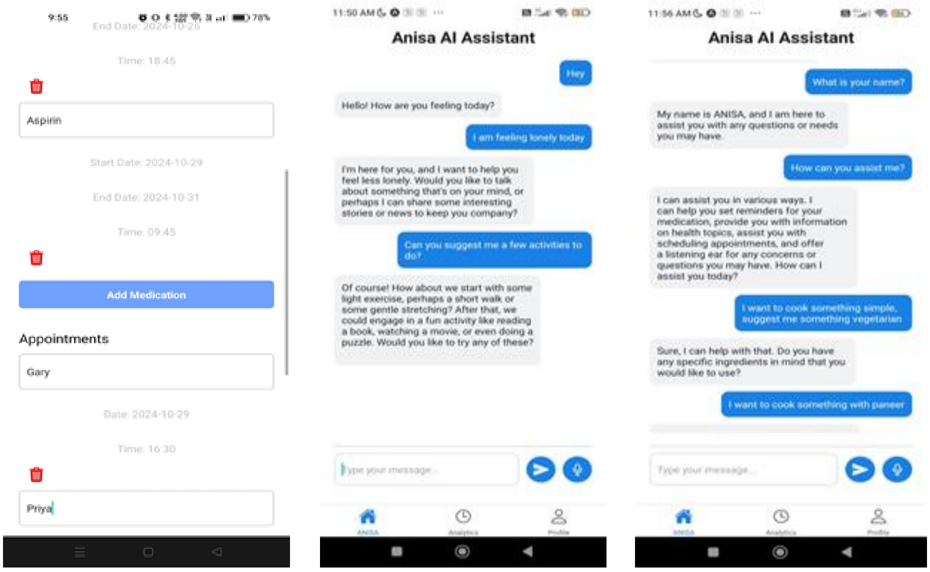
Figure 3 shows the registration and login screens of Anisa. Figure 3(a) shows the user registration screen, where new users can sign up using their details. Figure 3(b) displays the login interface, allowing registered users to securely access their profiles. Figure 3(c) captures the basic form details screen, used to set up initial health and contact information.



(a) (b) (c)

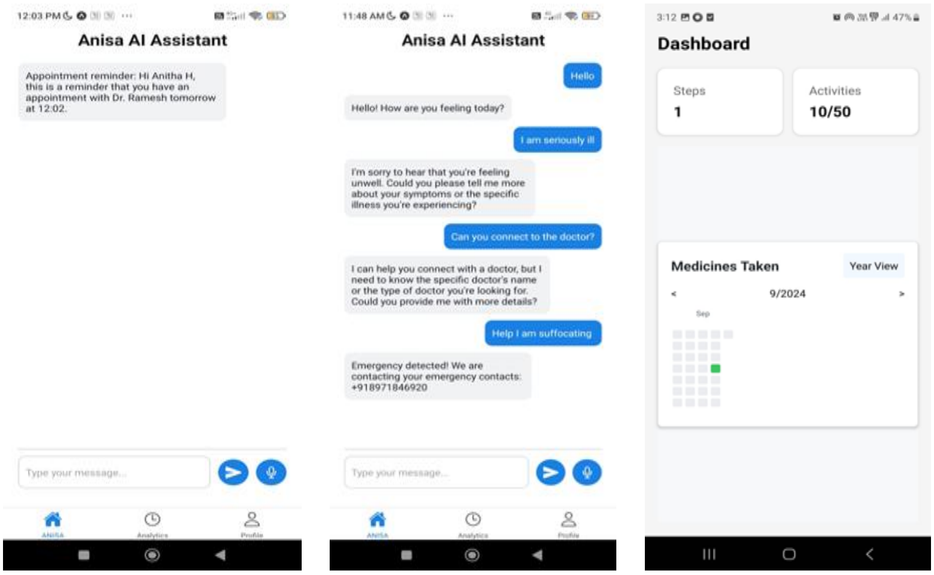
Figure 3. User authentication and profile setup in Anisa of (a) registration screen, (b) login screen, and (c) basic form details

Anisa's ability to manage appointments, engage in emotional conversations, and facilitate general interactions is shown in Figure 4. Figure 4(a) shows the appointment entry screen for scheduling user visits and events. Figure 4(b) shows an emotional dialogue interface showcasing an empathetic conversation. Figure 4(c) shows basic chat interface for general user interactions with Anisa. These features enhance elderly users' experience by providing both practical support and social engagement. Figure 5 illustrates critical operational functionalities of Anisa designed for real-time safety and health monitoring. Figure 5(a) shows an appointment reminder notification, which helps users stay on schedule with healthcare tasks and visits. Figure 5(b) captures the emergency alert system, where the app detects distress messages and immediately notifies designated emergency contacts via SMS or call. Figure 5(c) displays the daily activity dashboard, summarizing step counts, missed medications, and appointments valuable for caregivers to monitor elderly health conditions.



(a) (b) (c)

Figure 4. Anisa's key interaction features of (a) appointment entry, (b) emotional chat, and (c) basic user communication



(a) (b) (c)

Figure 5. Screens for (a) reminders, (b) emergency alerts, and (c) activity tracking dashboard

The report summarizes step counts, missed medications, and appointments, helping caregivers monitor health and intervene as needed. Reports are available in PDF format, providing a comprehensive overview of the elderly user's well-being. Daily activities report, as shown in Figure 6, will be sent to the caregivers on every day basis.

Figure 6. Daily activity dashboard, PDF of the generated report

4. CONCLUSION

The proposed system aims at the development of an AI assistant tailored to support elderly users, integrating key features such as an AI chat interface, medication management, reminders, and a comprehensive report generator. By leveraging an LLM, the application facilitates accessible communication and provides personalized assistance for managing health-related tasks. The medication page enables users to input prescriptions and set reminders, supporting adherence to treatment plans, while the dashboard offers a clear daily overview of medications, empowering users to monitor their health independently. This innovative solution addresses the unique challenges faced by elderly individuals, promoting both independence and well-being. Testing demonstrated high accuracy in speech-to-text conversion, handling a variety of inputs, from reminders to health inquiries. Users found this feature highly beneficial, especially those with physical or visual limitations. User testing showed positive feedback, particularly for the intuitive design, enabling users to set reminders, access emergency contacts, and receive information easily. Ongoing improvements and user feedback will be essential in refining the app, ultimately aiming to create an increasingly supportive and user-friendly experience for elderly users. Future research may explore the integration of wearable health sensors and IoT devices for real-time physiological monitoring. Emotion recognition using facial expressions and voice sentiment analysis could further enhance empathetic interaction. Additionally, incorporating multilingual support and region-specific healthcare guidance would broaden accessibility. Longitudinal user studies are also recommended to evaluate long-term usability, health impact, and caregiver burden reduction in diverse demographic settings.

FUNDING INFORMATION

Authors state no funding involved.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Shilpa Karegoudra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
Pawan Hegde		✓			✓	✓		✓		✓	✓	✓	✓	
Sinchana C. Poojary		✓	✓	✓	✓			✓		✓				
Pranitha P. Shetty		✓	✓	✓	✓			✓		✓				
Sahana M. Kotian		✓	✓	✓	✓			✓		✓				
Saanvi Kallianpur		✓	✓	✓	✓			✓		✓				
Veeresha R. Koti		✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	

C	: **C**onceptualization	I	: **I**nvestigation	Vi	: **Vi**sualization
M	: **M**ethodology	R	: **R**esources	Su	: **Su**pervision
So	: **So**ftware	D	: **D**ata Curation	P	: **P**roject administration
Va	: **Va**lidation	O	: Writing - **O**riginal Draft	Fu	: **Fu**nding acquisition
Fo	: **Fo**rmal analysis	E	: Writing - Review & **E**diting		

CONFLICT OF INTEREST STATEMENT
Authors state no conflict of interest.

INFORMED CONSENT
All authors are informed and taken consent from the all the authors.

DATA AVAILABILITY
Derived data supporting the findings of this study are available from the corresponding author [SK] on request.

REFERENCES

[1] P. G., A. K., T. S., and V. D. A., "Voice assistant using artificial intelligence," *International Journal of Engineering Research & Technology (IJERT)*, vol. 11, no. 5, 2022, doi: 10.17577/IJERTV11IS050242.

[2] R. Yaghoubzadeh, M. Kramer, K. Pitsch, and S. Kopp, "Virtual agents as daily assistants for elderly or cognitively impaired people," in *Intelligent Virtual Agents*, pp. 79–91, 2013, doi: 10.1007/978-3-642-40415-3_7.

[3] Y. Huang, "Research on the development of voice assistants in the era of artificial intelligence," *SHS Web of Conferences*, vol. 155, Jan. 2023, doi: 10.1051/shsconf/202315503019.

[4] A. Bourouis, M. Feham, and H. Bouchachia, "Ubiquitous mobile health monitoring system for elderly (UMHMSE)," *International Journal of Computer Science and Information Technology*, vol. 3, no. 3, pp. 74–82, Jun. 2011, doi: 10.5121/ijcsit.2011.3306.

[5] S. M. Carthy, P. M. Kevitt, M. McTear, and H. Sayers, *MemoryLane: an intelligent mobile companion for elderly users*. Unknown Host Publication, 2007. [Online]. Available: https://pure.ulster.ac.uk/ws/portalfiles/portal/11713577/mccarthyitt07.pdf

[6] C. M. Matos *et al.*, "Towards a collaborative model to assist people with disabilities and the elderly people in smart assistive cities," *Journal of Universal Computer Science*, vol. 27, no. 1, pp. 65–86, Jan. 2021, doi: 10.3897/jucs.64591.

[7] M. Bolaños, C. Collazos, and F. Gutiérrez, "Adapting a virtual assistant device to support the interaction with elderly people," in *Proceedings of the 6th International Conference on Information and Communication Technologies for Ageing Well and e-Health*, SCITEPRESS - Science and Technology Publications, pp. 291–298, 2020, doi: 10.5220/0009840102910298.

[8] C. Hu *et al.*, "MemServe: context caching for disaggregated LLM serving with elastic memory pool," *arXiv-Computer Science*, pp. 1-14, 2024.

[9] Y. Song, Y. Yang, and P. Cheng, "The investigation of adoption of voice-user interface (VUI) in smart home systems among Chinese older adults," *Sensors*, vol. 22, no. 4, Feb. 2022, doi: 10.3390/s22041614.

[10] M. Liu, C. Wang, and J. Hu, "Older adults' intention to use voice assistants: usability and emotional needs," *Heliyon*, vol. 9, no. 11, Nov. 2023, doi: 10.1016/j.heliyon.2023.e21932.

[11] D. D. Onthoni and P. K. Sahoo, "Artificial-intelligence-assisted activities of daily living recognition for elderly in smart home," *Electronics*, vol. 11, no. 24, Dec. 2022, doi: 10.3390/electronics11244129.

[12] J. Li, N. Z. Qu, and K. P. Valdivia, "Design of a social media voice assistant for older adults," in *Social Robotics: 14th International Conference (ICSR),* Florence, Italy, 2022, pp. 75–88, doi: 10.1007/978-3-031-24667-8_7.

[13] C. Miura, S. Chen, S. Saiki, M. Nakamura, and K. Yasuda, "Assisting personalized healthcare of elderly people: developing a rule-based virtual caregiver system using mobile chatbot," *Sensors*, vol. 22, no. 10, May 2022, doi: 10.3390/s22103829.

[14] A. A. Cantone, M. Esposito, F. P. Perillo, M. Romano, M. Sebillo, and G. Vitiello, "Enhancing elderly health monitoring: achieving autonomous and secure living through the integration of artificial intelligence, autonomous robots, and sensors," *Electronics*, vol. 12, no. 18, Sep. 2023, doi: 10.3390/electronics12183918.

[15] V. Chennuri and V. P. Rodda, "Development of AI-based voice assistants using large language models," *ResearchGate*, pp. 1-23, 2023, doi: 10.13140/RG.2.2.20195.12321.

[16] P. Zhong, C. Zhang, H. Wang, Y. Liu, and C. Miao, "Towards persona-based empathetic conversational models," in *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing*, pp. 6556–6566, 2020, doi: 10.18653/v1/2020.emnlp-main.531.

[17] H. Rashkin, E. M. Smith, M. Li, and Y.-L. Boureau, "Towards empathetic open-domain conversation models: a new benchmark and dataset," in *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, pp. 5370–5381, 2019, doi: 10.18653/v1/P19-1534.

[18] V. Chattaraman, W.-S. Kwon, J. E. Gilbert, and K. Ross, "Should AI-based, conversational digital assistants employ social- or task-oriented interaction style? a task-competency and reciprocity perspective for older adults," *Computers in Human Behavior*, vol. 90, pp. 315–330, Jan. 2019, doi: 10.1016/j.chb.2018.08.048.

[19] S. Valtolina and L. Hu, "Charlie: a chatbot to improve the elderly quality of life and to make them more active to fight their sense of loneliness," in *CHItaly 2021: 14th Biannual Conference of the Italian SIGCHI Chapter*, pp. 1–5, Jul. 2021, doi: 10.1145/3464385.3464726.

[20] A. Alessa and H. A. -Khalifa, "Towards designing a ChatGPT conversational companion for elderly people," in PETRA '23: *Proceedings of the 16th International Conference on PErvasive Technologies Related to Assistive Environments*, pp. 667–674, Jul. 2023, doi: 10.1145/3594806.3596572.

[21] A. Verma, S. Aggarwal, S. Garg, and P. Anand, "Geriatric health care in India: a review," *Journal, Indian Academy of Clinical Medicine*, vol. 20, no. 3–4, 2019.

[22] B. Guo, N. S. A. Shukor, and I. S. Ishak, "Systematic literature review of healthcare services for the elderly: trends, challenges, and application scenarios," *International Journal of Public Health Science*, vol. 12, no. 4, 2023, doi: 10.11591/ijphs.v12i4.23445.
[23] H. Sahoo, D. Govil, K. S. James, and R. D. Prasad, "Health issues, health care utilization and health care expenditure among elderly in India: thematic review of literature," *Aging and Health Research*, vol. 1, no. 2, 2021, doi: 10.1016/j.ahr.2021.100012.
[24] A. A. Portenhauser *et al.*, "Mobile apps for older adults: systematic search and evaluation within online stores," *JMIR Aging*, vol. 4, no. 1, Feb. 2021, doi: 10.2196/23313.
[25] J. Zhu, H. Weng, P. Ou, and L. Li, "Use and acceptance of smart elderly care apps among Chinese medical staff and older individuals: web-based hybrid survey study," *JMIR Formative Research*, vol. 7, Jun. 2023, doi: 10.2196/41919.
[26] Z. Nimmanterdwong, S. Boonviriya, and P. Tangkijvanich, "Human-centered design of mobile health apps for older adults: systematic review and narrative synthesis," *JMIR mHealth and uHealth*, vol. 10, no. 1, Jan. 2022, doi: 10.2196/29512.
[27] M. Wairagkar *et al.*, "Conversational artificial intelligence and affective social robot for monitoring health and well-being of people with dementia," *Alzheimer's & Dementia*, vol. 17, no. S11, Dec. 2021, doi: 10.1002/alz.053276.
[28] N. Wong, S. Jeong, M. Reddy, C. A. Stamatis, E. G. Lattie, and M. Jacobs, "Voice assistants for mental health services: designing dialogues with homebound older adults," in *Designing Interactive Systems Conference*, New York, NY, USA: ACM, Jul. 2024, pp. 844–858, doi: 10.1145/3643834.3661536.
[29] A. Adikari *et al.*, "Empathic conversational agents for real-time monitoring and co-facilitation of patient-centered healthcare," *Future Generation Computer Systems*, vol. 126, pp. 318–329, Jan. 2022, doi: 10.1016/j.future.2021.08.015.
[30] M. Gudala, M. E. T. Ross, S. Mogalla, M. Lyons, P. Ramaswamy, and K. Roberts, "Benefits of, barriers to, and needs for an artificial intelligence–powered medication information voice chatbot for older adults: interview study with geriatrics experts," *JMIR Aging*, vol. 5, no. 2, Apr. 2022, doi: 10.2196/32169.

BIOGRAPHIES OF AUTHORS

Mrs. Shilpa Karegoudra holds a Master of Technology degree from Visveswaraya Technological University, India, in 2014. She also received her Bachelor of Engineering from Visveswaraya Technological University, India, in 2012. She is currently an Assistant Professor at the Computer Science and Engineering Department, NMAM Institute of Technology, NITTE (Deemed to be university), Nitte. Her research includes machine learning, deep learning, image processing, and natural language processing. She has published over 8 papers in international journals and conferences. She is a Research Scholar at GITAM School of Technology, GITAM (Deemed to be university), Bengaluru. She can be contacted at email: shilpa.m.k456@gmail.com or shilpamk@nitte.edu.in.

Pawan Hegde received the Bachelor of Engineering (B.E., CS) from VTU Belgaum in 2010, the master's degree (M.Tech., CS) from Jain University Bangalore in 2012 and pursuing Ph.D. from Vellore Institute of Technology, Vellore, India. He is currently an Assistant Professor in the Department of Computer Science and Engineering at NMAMIT Nitte. He attended several National and International Conferences, Workshops, and published papers in peer-reviewed international journals. His areas of interest are in blockchain technology, the IoT security, federated learning, and network security. He can be contacted at email: pwnhegde@nitte.edu.in.

Sinchana C. Poojary received a Bachelor of Engineering (BE) degree in Computer Science and Engineering from NMAM Institute of Technology (NMAMIT), Udupi, India, in 2025. During undergraduate studies, she contributed to research on the development of an elderly care app: Anisa, as part of an academic project under faculty supervision. She is currently working as an SDE at JPMorgan Chase, where she is involved in cyber security and infrastructure. Her research interests include DevOps, cloud security, and backend development. She can be contacted at email: sinchanac91@gmail.com.

Pranitha P. Shetty received a Bachelor of Engineering (BE) degree in Computer Science and Engineering from NMAM Institute of Technology (NMAMIT), Udupi, India, in 2025. During undergraduate studies, she contributed to research on the development of an elderly care app: Anisa, as part of an academic project under faculty supervision. She is currently working as an SDE who works on SDKs at DevRev. Her research interests include AI development, data science, and cyber security. She can be contacted at email: pranithasv2003@gmail.com.

Sahana M. Kotian received a Bachelor of Engineering (BE) degree in Computer Science and Engineering from NMAM Institute of Technology (NMAMIT), Udupi, India, in 2025. During undergraduate studies, she contributed to research on the development of an elderly care app: Anisa, as part of an academic project under faculty supervision. She is currently working as a Product Engineer at EdgeVerve Systems Limited, where she works in the Application Support Team to help identify, analyze, and resolve software defects in large-scale enterprise applications. Her research interests include data science, backend development, and cloud technologies. She can be contacted at email: sahanamkotian@gmail.com.

Saanvi Kallianpur received a Bachelor of Engineering (BE) degree in Computer Science and Engineering from NMAM Institute of Technology (NMAMIT), Udupi, India, in 2025. During undergraduate studies, she contributed to research on the development of an elderly care app: Anisa, as part of an academic project under faculty supervision. She is currently working as an Associate Technical Consultant at Adobe Inc., where she is part of the Adobe Commerce Team, focusing on building, managing, and scaling eCommerce solutions. Her research interests include machine learning and backend development. She can be contacted at email: saanvika101203@gmail.com.

Dr. Veeresha R. Koti received a Ph.D. degree in Mechanical Engineering from Visveswaraya Technological University, India, in 2021 with the dissertation “Investigation on mechanical micromachining process with piezo actuated machining depth control and its application on MEMS device fabrication”. He is an Associate Professor of the Robotics and Artificial Intelligence Department, NMAM Institute of Technology, NITTE (Deemed to be university), Nitte. His research includes micromachining, machine learning, deep learning, image processing, finite element methods, device development, and composite materials. He can be contacted at email: veereshark@nitte.edu.in.