

Old Age Management System through Machine Learning

Rashmi M R¹ and Anvitha N B²

¹Assistant Professor, Department of Computer Science and Engineering, The National Institute of Engineering, Mysuru, India

Email: rashmi.mr7@nie.ac.in

²Department of Computer Science and Engineering, The National Institute of Engineering, Mysuru, India

Email: anvitha.nb@gmail.com

Abstract—The Old Age Management System (OAMS) is an innovative solution designed to address the healthcare and emotional needs of the elderly population worldwide. Through a multifaceted approach, OAMS integrates medicine management, emotion detection using Convolutional Neural Networks (CNNs), donation management for old age homes, and secure storage of healthcare records. The system ensures adherence to medication schedules, tracks dosages, and provides timely reminders to minimize errors and improve health outcomes. Emotion detection enables caregivers to monitor emotional states through facial expressions and physiological indicators, facilitating prompt support and intervention. OAMS also fosters community involvement by facilitating donations to old age homes, and promoting eldercare initiatives. Furthermore, the system prioritizes the security and confidentiality of healthcare records through advanced encryption techniques and secure databases, ensuring accessibility when needed. Overall, OAMS offers a comprehensive solution to enhance the quality of life for elderly individuals while providing reassurance to caregivers and family members.

Index Terms—Keywords.

I. INTRODUCTION

As the global population ages, there's a pressing need for holistic approaches to eldercare, given the complex health and emotional challenges seniors face. This paper introduces the Old Age Management System (OAMS), an innovative solution aimed at revolutionizing elderly care. At its core, OAMS integrates various components to offer comprehensive support for the elderly. It features a robust medicine management module, ensuring accurate medication administration through scheduling, dosage tracking, and reminders. By reducing errors and enhancing adherence, OAMS aims to improve the overall health outcomes of the elderly. Additionally, OAMS incorporates Convolutional Neural Networks (CNNs) to monitor the emotional well-being of seniors. By analyzing facial expressions and physiological indicators in real-time, caregivers can promptly identify emotional changes and provide timely support. This approach enhances the quality of care, promoting emotional well-being and overall quality of life.

Moreover, OAMS includes a donation management feature, fostering community engagement and support for old age homes. This enables individuals to contribute to the well-being of elderly residents, promoting solidarity and community involvement. OAMS includes a donation management feature, fostering community engagement

and support for old-age homes. This enables individuals to contribute to the well-being of elderly residents, promoting solidarity and community involvement. OAMS offers a comprehensive solution to address the evolving needs of the aging population. Through its integration of medicine management, emotion detection, community involvement, and secure record storage, it aims to enhance the quality of life for seniors while providing peace of mind for their caregivers.

The aging global population presents a significant challenge, as it brings forth a multitude of health-related and emotional complexities that require tailored solutions in eldercare. Conventional approaches often fall short in addressing these multifaceted needs, resulting in suboptimal health outcomes and reduced quality of life for the elderly. As a result, there is a critical need for a comprehensive solution that combines medicine management, emotion detection, donation facilitation, and secure record storage within a single platform. This paper aims to address this gap by introducing the Old Age Management System (OAMS), which seeks to revolutionize elderly care by providing holistic support tailored to the unique needs of aging individuals.

- Develop a robust medicine management module within the Old Age Management System (OAMS) to ensure accurate administration of medications, including scheduling, dosage tracking, and timely reminders, aiming to minimize medication errors and enhance adherence among the elderly population.
- Implement Convolutional Neural Networks (CNNs) within OAMS to monitor the emotional well-being of elderly individuals by analyzing facial expressions and physiological indicators in real-time, enabling caregivers to promptly detect emotional changes and provide appropriate support and intervention.
- Integrate a donation management feature into OAMS to facilitate community engagement and support for old age homes, allowing individuals to contribute to the well-being of elderly residents and fostering a sense of solidarity and community involvement.
- Prioritize the security and confidentiality of healthcare records within OAMS by implementing secure storage mechanisms, leveraging advanced encryption techniques, and ensuring seamless access to healthcare records for caregivers and healthcare professionals while safeguarding the privacy of elderly individuals.
- Evaluate the effectiveness and usability of the OAMS through pilot studies and user feedback, aiming to assess its impact on improving the quality of life for elderly individuals and providing peace of mind for their caregivers.

II. RELATED WORKS

The paper [1] explores the integration of data mining technology into the Quality Information Management System (IMS) of Health Care Enterprises (HCE) in response to China's aging population and the rise of smart elderly care. Leveraging modern technologies like cloud computing and IoT, the study constructs a quality IMS for HCE, emphasizing the application of data mining algorithms. The proposed system demonstrates enhanced effectiveness compared to traditional approaches, promising significant advancements in HCE development.

The paper[2] focuses on integrating wireless home automation and health monitoring systems to create smart old-age homes, offering independence and comfort to older and disabled individuals. Features include voice-controlled switching for appliances, location tracking, health monitoring, and fall detection to prevent injuries. The integrated system enhances clinical perspectives, intensive care, and overall quality of life for residents, emphasizing safety and convenience in smart elderly living environments.

Paper[3] addresses the growing concern of providing security and care for the increasing elderly population by leveraging Internet of Things (IoT) technology. It proposes the design of an intelligent home care system to enhance the quality of life for the elderly, reduce the burden on their children, and promote healthier and happier aging. Through the integration of IoT, the system aims to create a supportive and comfortable environment for elderly individuals in their later years.

[4] Addresses the increasingly important issue of elderly care by focusing on care institutions and proposing four key indicators: physiological function tracking, activity domain monitoring, fall prevention, and emergency assistance. Utilizing smart clothes, BLE components, and indoor positioning algorithms, the smart elderly care system collects resident data for analysis. The system offers wearable detection, low power consumption, and signal loss warnings to ensure device reliability. Already implemented in Taiwan's long-term care institutions, this system aims to enhance elderly care and promote their well-being.

The study[5] explores leveraging internet technology to enhance satisfaction among elderly residents' relatives in care facilities. Using the Hongjing Home as a case study, the authors implemented internet applications like WeChat to share activities and updates, improving communication and satisfaction. Questionnaire surveys indicated significant satisfaction improvement through WeChat, with relatives appreciating timely updates and

feeling respected. The findings suggest internet applications can effectively enhance satisfaction among elderly residents' relatives in care facilities.

The paper[6] employs a literature review method to underscore the crucial importance of home care for the elderly, particularly in managing chronic diseases. It discusses the increasing use of innovative healthcare technology in home health management and explores its impact on older individuals through case studies. Delving deeper, the paper questions whether chronic disease management for older people solely entails treatment and highlights the importance of addressing emotional, respect, and social needs. It suggests that innovative medical technology should aim to enhance fulfillment across these aspects, offering a direction for further exploration.

The paper[7] addresses the lack of satisfactory elderly care facilities in Bangladesh by proposing a smart senior citizen assistance mobile application. It offers various services including old home search, doctor appointments, emergency contact, and more. User feedback indicated high satisfaction with the application's features and problem-solving capabilities.

As Malaysia's elderly population grows, traditional methods of monitoring rely on family members or adoption. [8]Paper proposes a UHF RFID monitoring system to address monitoring challenges. The system offers continuous monitoring for seniors, providing an alternative solution for those without familial support.

The paper[9] introduces a sophisticated energy management system targeting enhanced energy efficiency, cost reduction, and user comfort in a Greek residence with elderly occupants. The system integrates controllable and uncontrollable loads, energy storage, and photovoltaic generation, operating under the net-metering policy. Through three control mechanisms, it optimizes residential energy management practices and compares.

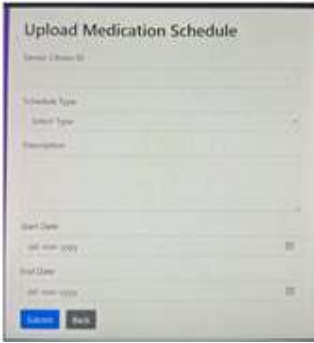


Fig 1. Medication Management



Fig 2. Community Donation

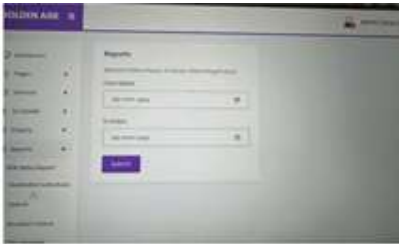


Fig 3. Secure Storage of Reports

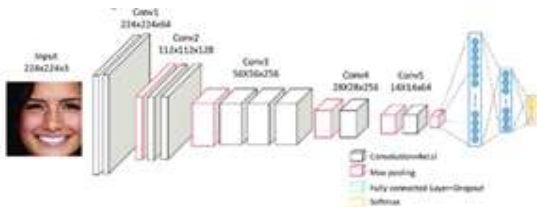


Fig 4. CNN Working

favorably to alternative demand response solutions, offering valuable insights into its performance. The manuscript[10] proposes an integrated prototype utilizing IoT and MEMS nanotechnology to monitor elderly individuals' activities and detect potential dangers. Kinematic data collected by inertial sensors is processed by a

III. CONCLUSION

In conclusion, our integrated system for managing elderly health and well-being combines medicine management and emotion detection through Convolutional Neural Networks (CNNs). This approach addresses multifaceted challenges faced by aging individuals, enhancing their overall quality of life. The medicine management system ensures timely and accurate medication administration, reducing errors and improving adherence, thereby promoting independence. Emotion detection allows caregivers to monitor emotional states,

facilitating timely intervention and support. By identifying changes in emotions like sadness or stress, our system fosters emotional well-being and overall satisfaction. Leveraging advanced technology, our holistic approach caters to both physical and emotional needs, aiming to enhance elderly independence, medication adherence, and emotional health. Ultimately, our system provides peace of mind for caregivers and family members while promoting the well-being of older adults.

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