

PERSONAL ASSISTANTANCE FOR SENIORS WHO ARE SELF-RELIANT

Abstract—As people become older, people generally will experience a health decline such as becomes weak, susceptible to disease, decreased vision ability, etc. Therefore, special health attention is needed for the elderly people, especially from the family member or personal doctors / nurses. On the other hand, the number of elderly people in the world is rapidly increase so there's more people will need special attention. Therefore, this research try to develop an application on mobile phone that could help elderly people and their family member to supervise and monitor the health of the elderly.

KEYWORD - HEALTH CARE, INTERNET OF THINGS (IoT), MEDICINE/DRUGS, GOOGLE CLOUD, REMAINDERS,

1.INTRODUCTION:

The evolution of Internet of Things (IoT) has enabled the vision of personal assistant for seniors who are self-reliant. On the basis of their comfort, they can easily know their medicine/drugs according to their time and the amount of the medicine/drugs on their intake. This data is transmitted back to the cloud for further analysis. The elders/patients who are basically forgot their regular schedule on the medicine/drugs that must be taken by them. So, to avoid those kind of activity our project is more useful for them and all the people who are in risk.

2.LITERATURE REVIEW:

[1]. “Elderly Healthcare Assistance Application Using Mobile Phone” - 2017

Andreas Handojo, Tioe Julio Adrian Sutiono, Anita Nathania Purbowo

Their research try to develop an application on mobile phone that could help elderly people and their family member to supervise and monitor the health of the elderly. This application has feature to monitor the location of the elderly, remainder to take the medication, doctor appointment remainder, medical record records, emergency phone to family number or personal doctor, etc. From their experimental results of the application to the participant and the test with the questionnaire on the prospective users, 94% of respondents feel the application is very useful and can run well. There is also a feature to find the location of elder mobile phone by utilizing GPS and Google Map API. This feature can be used when the elder gets lost somewhere and

forgets the return direction. This application also have feature to locate nearby hospitals and pharmacies from the user's position using the Google Map. For further development, this application could combine with hardware such as heat sensors, blood pressure sensor, glucose sensor, etc. to improve elder health information especially on dangerous condition.

[2]. “Fuzzy-based Health Monitoring and Voice Assistance Featured Autonomous Elderly Care Service Robot”

Metin Berke Yelaldı, Veliyullah Öztürk, Anıl Gün, Berke Küçüksağır, Alim Kerem Erdoğan, Uğur Yayan, Rifat Edizkan

In this study, the service and assistant mobile robot that is developed for the growing elderly population in our country and in the world will help the user to meet their daily needs and support living alone. The mobile robot, with artificial intelligence-supported voice communication capability, will be able to receive voice commands and provide assistant support to the user. Also, with the robot's autonomous mobility, it will go to the locations that the user says and will be next to the person. It is aimed to increase human-robot interaction by providing interface support with the screen to be placed on the robot. Evarobot is used as mobile robot platform. With Evarobot, which is ROS (Robot Operating System) based mobile robot platform, autonomous movement is provided by using the ROS navigation stack to accompany the user in the home environment. Also, with the help of Google Speech API, the voice commands given by the user are detected and voiceresponses are given to the person. For communication between Yaver and the user, an interface and voice control were provided. Yaver has been made able to fulfill the positioning orders of the user. With the help of Google speech recognition API, speeches were recognized and given commands were executed successfully. Yaver was able to fulfill the given orders with the task management and then enter the new task standby mode. Yaver analyzes the health data coming from the wristband by using fuzzy-based health anomaly detection algorithm. With the help of a robotic arm that will be added in future studies, it is aimed to provide physical support to the user.

[3]. “Monitoring and Detecting Outliers for Elder's Life Activities in a Smart Home: A Case Study”- 2017

Sawsan M. Mahmoud, Hesham A. Alabbasi, Tawfiq E. Abdulabbas

They have considered a technique for monitoring and identifying abnormal behavior of health data collected from a smart home to help an elderly person to live safely in his/her home longer away from hospitals. We approach this by using statistical techniques. The proposed technique is applied in an intelligent environment where a network of wireless sensors is installed. They use a real sensor data extracted from a smart home where an elderly lady living alone during one year. The experiment results show that the statistical test Modified Thompson tau successfully distinguishes the normal and abnormal behavioral patterns. the modified Thompson tau statistical test is applied. The aim was to detect potential outliers and anomalies in data extracted from a wireless sensor network. The purpose of detecting these outliers is to find some extreme duration time the elderly stay in a particular location (unusual in normal days). The results of this study can be interpreted to help and support the care system in prediction and identifying the elder's health status over time to avoid him get chronic diseases.

[4]. “Personal Health Assistance for Elderly People via Smartwatch Based Motion Analysis”-2017

Rainer Lutze, Klemens Waldhör

A new approach is presented for a personal health assistant for elderly people utilizing smartwatches. On the smartwatch, an app featuring an artificial neuronal net (ANN) analyzes the motion patterns of the smartwatch wearer. The ANN recognizes health relevant events and activities of daily living (EDLs, ADL). The system architecture of the app, the data acquisition process, the selection and design of suitable data models and the advantages of ANNs versus other recognition engines are elaborated. The characteristics of the recognized ADLs will beutilized for continuously calculating the wellbeing of the smartwatch wearer, safeguarding a self-determined living in the familiarhome up to the very old age. These smartwatches allow to establish autonomously a speech connection in order to clarify the situation on the spot in case of a concluded emergency. Current smartwatches directly can only measure the performed steps of

the smartwatch wearer and/or the heart rate, pulse. All other aspects of the wellbeing and potential health hazards for the smartwatch wearer must be concluded from condensed sensor data and suitable comparisons with data acquired, learned from the past. EDL, ADL recognition based on an ANN works on today commercial smartwatches and delivers the necessary input for calculating the wellbeing of the smartwatch wearer. Continuous reliable detection of the EDL, the ADLs described requires durable background operations of the smartwatches, which only now will be supported by the most advanced smartwatch operating systems (OSs). The sensitivity of the individual model will require a substantial retraining even in cases of a smartwatch model change or even a major OS update.

4. PROS:

Avoid the difficulties for doctors (or) caretakers to monitor the patients around the clock. Patient can easily take the medicine/drug at correct time.

5. CONS:

If seniors/patients who are physically disabled (like deaf) ,they can't hear the voice command. If seniors/patients who are visually challenged (like cataracts)and illiterate, they can't read the medicine/drugs name properly.