PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF-RELIANT

LITERATURE SURVEY

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INTRODUCTION:

The internet of things(IOT) can be described as the network of things embedded with electronics, sensors, network connectivity, and software. IOT creates opportunities for better and seamless integration between computer-based systems and the physical world.When augmented with sensors and actuators, it becomes an instance of the more general class of cyber - physical systems since each thing is uniquely identifiable and can interoperate within the existing network infrastructure. Since the IOT results in improved Efficiency, accuracy and economic benefits, it is estimated that the IOT will consist of billions of objects in a few years.IOT solutions enable to collect all kinds of information from a few bytes to several megabytes depending on the application requirements.

Life expectancy all around the world is becoming higher. In some high-income countries, most elderly care is funded by government grants and property taxes and care costs paid by elderly people themselves are subsidized and based on specific rates. Some municipalities have been opting to privatise some parts or all of their elderly care services and allowing private care providers to operate with specific business models. Compared to other age groups elderly people are more prone to most health problems.The adverse effects of unforeseeable events such as sudden illnesses and falls can be prevented or alleviated to some extent with real-time monitoring and alarm systems.Moreover, most of those systems also allow their users to communicate their urgent needs to the health care provider using specific prerecorded audio messages played via smart phone screens.

In recent years, progress in wearable devices and sensor technologies has started to improve the prospects of health care services for assisting the elderly and disabled. Since most of the elderly suffer from age-related health problems, using wearable technologies health care providers monitor their vital signs continuously and comfortably . In this paper, we review state-of-the-art IOT solutions and applications that can be used for elderly and disabled care and investigate prospects and research challenges. The rest of this paper is as follows. The second section presents the background of this work as well as related works on IOT solutions and various applications designed for the elderly and disabled. The third section is devoted to research challenges. The fourth section focuses on future research directions. Finally, the last section concludes this paper.

Emergency Assistance and Response:

Emergency assistance and response systems are the key component in the design of assistive domotics . The first generation of emergency assistance and response systems consist of personal alarm systems and emergency response phones . A typical system in this generation consists of a mini wireless pendant transceiver and a central unit plugged into a phone jack, with a microphone and loudspeaker. If the pendant is activated, a 24/7 control centre which has some information about the monitored person, such as medical symptoms and medication allergies, is called. Then the control centre speaks to the monitored person to identify whether he/she needs help. If help is needed, emergency services are dispatched.

Memory :

Considering the cognitive impairment in elderly people, automatic reminder systems are another important solution for the elderly. They make specific announcements about taking medicine, doctor's appointments, and everyday activities and tasks such as locking doors, closing the blinds, turning off the stove, eating lunch and walking the dog over an intercom depending on users' preference. Some user activities such as turning on/off the lights or controlling room temperature can be automatically performed. While these systems are a potential application area of IoT technology, IoT based simpler and cheaper solutions such as a wristwatch with text message and medical alert can function as a reminder system.

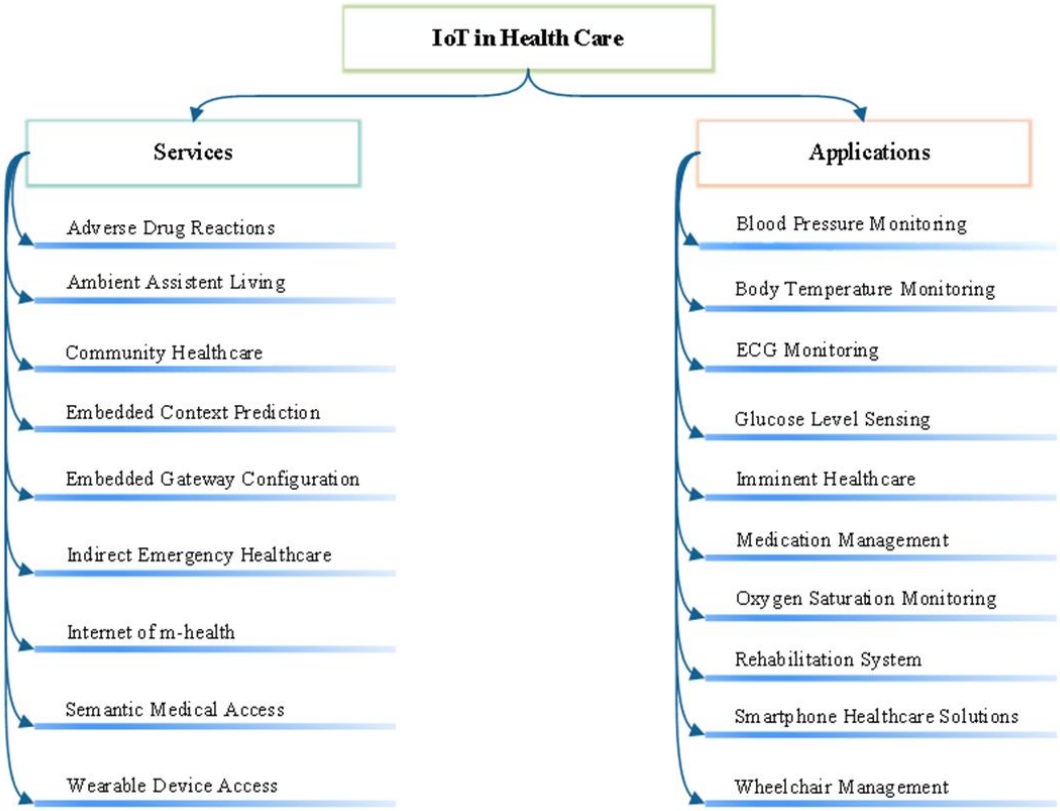
Medication Assistance:

Medication dispensing devices allow necessary medications to be taken at appropriate times and can be quite useful for the elderly who live alone . They can be used alone or be complemented with other solutions such as glucose monitors, blood pressure and pulse monitors and digital thermometers . Talking glucose monitors designed for diabetic patients allow the users to test their blood sugar level and take the appropriate injection. High body temperatures can be recognised by digital thermometers and if necessary doctors can be alerted . Automatic blood pressure and pulse monitoring systems dispense hypertensive medications if needed. In recent years, spoon-feeding robots have been designed, too. IoT technology can be used in all these device categories. Figure 1 lists common health care services and applications for elderly people .

Eyesight and Hearing:

Enhanced alarms on doors, doorbells, home appliances, and smoke detectors alert people with hearing or visual impairments about home-related incidents.

A schematic view of common IoT health care services and the applications supported by these services for the elderly (in alphabetical order)



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