SIT740 Research and Development in Information Technology
Credit Task 2.2: Applying IT R&D Methodology

Internet of Things for Elderly Monitoring.

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Introduction:

Improvements in life expectancy achieved by technological advancements in the recent decades have increased the proportion of elderly people. While elderly people perform their daily indoor activities, they are subjected to several risks. To improve the quality of life of elderly people and promote healthy aging and independent living, elderly people need to be provided with an assistive technology platform to rely on during their activities. Ambient intelligence technologies are a means to support ageing-in-place by monitoring clients in the home. The advent of IoT in recent years has allowed researchers to accomplish technologies simple and better for the elderly.

Aim and objective:

The aim of this paper is to propose IoT technology to help and monitor loneliness and fall risk for the elderly. At the end of implementation on large scale the system would help the elderly in improving their life expectancy along with providing instant assistance to the needy. Providing a sense of safety and security to the masses.

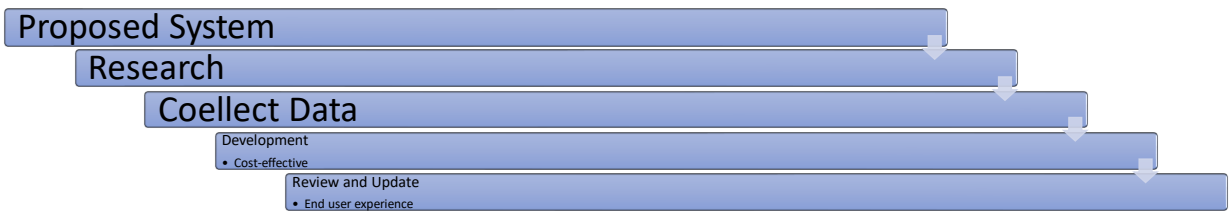
Background [Related work]:

Falls are caused by a sudden loss of balance due to loss of stability or an unexpected slip during movement. Falls are the major cause of fatal and non-fatal injuries among elderly people, (WHO), the frequency of falls increases with age and frailty. Fall consequences are serious and costly. Falls can have severe consequences such as injury or death. These injuries can make it hard also cause broken wrists, arms, and ankles. Ambient assistive technology can help physical therapists for elderly people to get around, do daily activities, or live independently (loss of autonomy). To address fall risk, the Personal Emergency Response System (PERS) represents a commercial solution. These clinical alarm systems enable elderly people who fall to contact an emergency centre by pressing a button. While appropriate in many situations, the PERS system becomes useless if the person is unconscious or unable to reach the button. Even when the system is available, a study revealed that around 80% of elderly people wearing a PERS did not use their alarm system to call for help after experiencing a fall.

Methodology:

Alternatively, the solution can be by using physical sensors attached along the surveillance cameras to monitor the elderly 24/7. A combination of sensors such as thermal sensor and motion detection sensor. The motion sensor is fed with data to detect any abnormal or unexpected movement which generally occurs when a person falls. The thermal sensors in accordance with the motion detection sensor triggers and detects the severity of the fall based on the thermal data that occurs generally in the injured area. Both these collected data are further fed into an algorithm which then computes based on certain rules and sends the data remotely to the concerned. The person receiving the data can be one of the family members, emergency numbers or elderly care who will further assess and assist the deceased. The system can also be implemented as a wearable device so that it will not only assist the elderly.

Timeline:



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