technologies in healthcare for   
fall detection of patients

by

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# Abstract

To encourage the improvement of use of assistive technology in healthcare is essential to improve the quality of service in healthcare. Fall detection is a really smart technology for the progress in this sector. There are different methods to do it and the conventional way is to do a trace of the body positions and map the different parts of the body. Which is later on compared and computed to sudden movements or changes to the position of these mapped points. These could be a hit and miss and could provide false alarms. So, what we would be indulging into is a system that detects the fall with a smarter way to identify these body positions and look at the different mapped depth charts captured through smart sensors such as Kinect camera [1]. Kinect camera is smart because it is able to capture the depth of the image which is used to analyse the image more detailed than before. The computer would need to be trained to recognise the different body positions and the different positions can be recorded. This use of technology is less pervasive than using the different other sensors such as the accelerometer or on body devices while they will just be monitoring from a set location.

# Research Question

The main objective of this research is to figure out the best use of available technology while evaluating the emerging new technologies in the sector of healthcare. We’re looking into Kinect camera which is readily available from Microsoft to focus on the problem of fall detection which is a very critical problem in bed ridden patients [2]. The method has to be not pervasive and such that the patients feel comfortable with using the device.

The research questions for this study were as follows:

* Is using Kinect depth sensing camera a good use of technology to enhance the fall detection in healthcare sector?
* How do people feel about being monitored for their safety? Is it better than having to carry motion sensing devices on their body?

# Background Information

For healthcare with bed ridden patients, to get injured from a fall is common and very serious if they can’t do anything when they are injured. It is not uncommon or unusual to have a fall but can be dangerous if not taken seriously [2]. They are only of a fraction of time, as short as one or two seconds but has a big impact [3]. Serious injuries could occur such as head injuries, breaking of bones as bones are fragile and weak in old ages. Falling has initial position with a standing start position and finish up with the laying on the floor position [3].

There are different devices available for fall detection such as motion sensor worn by the patient or different other sensors which is pervasive of people’s privacy and require a complex on the body setup [4]. The other motion sensor-based implications are also there but they are still more dependent on the patient’s body. One of the views that we are looking for is a remote and less intrusive monitoring system that can detect fall while the sensor is easy and efficient in cost and every aspect compared to the traditional models. So, we come get introduced to Kinect which was developed mainly for the purpose of gaming for the Xbox consoles from Microsoft which grew to have many other applications. Kinect camera has the ability to create depth map of the image with its depth sensor, RGB camera, accelerometer and microphones. These can be used to analyse the image and get the patient’s position [5]. Different algorithms can be created then to analyse the positions and make alert notifications during the fall.

# References

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