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A Review Paper on Analysis of Human Limbs Motion by Designing Wearable Wireless Device Message Alert System for Various Applications

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Abstract: ***This paper concentrates on, Most of the existing systems need wiring that commands the natural movement. To overcome this flaw, a wearable wireless sensor network with message status using accelerometers and flex sensor will be about to be designed in this undertaking. In this project, a wearable wireless sensor system is aimed to overcome this limitation. The wireless feature enables the uncontrolled movement of the human body as obstruct to a wired monitoring device & makes the system truly movable. This will permit the system to be deployed in a cluttered home environment. The lightweight feature & small form factor of the sensor nodes also approve easy attachment to the limbs. This technology also used in sports, in this field, we know about the players' behavior & if want the details on a remote location, then using GSM technology, it will send the status of the user. In our project we will introduce the FLEX sensors, MEM sensors & GSM Technology into medical and sports applications.***

Keywords: Flex sensors, MEMS, GSM, Microcontroller.

I. INTRODUCTION

Tracking of human motion has fascinated significant interest in recent years due to its wide applications such as virtual reality, medical science, rehabilitation, sports science and surveillance. In recent years, magnetic & inertial tracking has fascinated much interest as they are the source-free approaches unlike the radar & audio that requires an emission source. The development of flex sensor technology & micro electro mechanical system technology had also made such sensors cheaper, lighter & smaller. Consequently, they are good candidates conducted in the patient's home or office. This will also decimate the ratio to visit the patients undergoing physiotherapy in hospital. This technology also used in sports, in this stream we know about the behavior of the player. In this project the FLEX sensors & MEMS sensors will be introduced into the application of medical & sports. The wireless feature activates the unrestrained movement of the human body as a counter to a wired monitoring device & makes the system truly movable.

This will also permit the system to be set up in a cluttered home environment. The lightweight feature & small form factor of the sensor nodes also approve easy attachment to the limbs. Today, we are facing many problems affecting our health

because of increment in the pollution and other mental stresses which produce a very dangerous scenario for day to day life of a man. And this results in rapid growth of "Accident" & "Heart Attacks, Paralysis and many more."So in all this disease, it is necessary to monitor Human Limb Motion along with Muscle temperature and heart rhythm. To achieve this mentioned, we are using this project to implement all that which helps in better and fast recovery of the patient.

Also, our project will be applicable to lots of other area

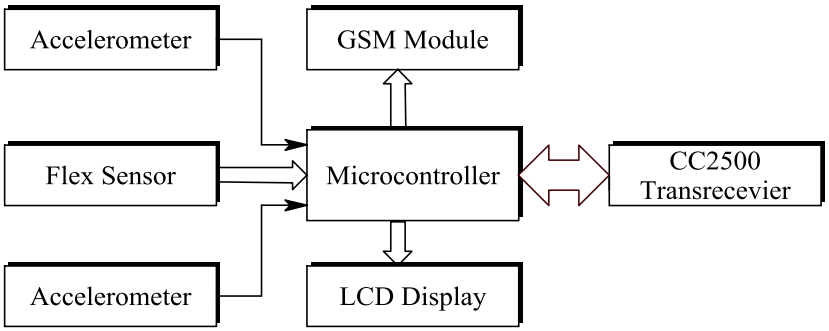

FIGURE1: FUCTIONAL BLOCK DIAGRAM

II. RELATED WORK

A paper published by Guo Xiong Lee; Kay Soon Low; Taher, T focuses on Unrestrained Measurement of Arm Motion Based on a Wearable Wireless Sensor Network. He discussed that Techniques that could precisely monitor human motion are useful in applications such as rehabilitation, virtual reality, sports science, and surveillance. Existing systems want wiring that restrains the natural movement. To prostrate this restriction, a wearable wireless sensor network using accelerometers has been developed in this paper to determine the arm motion in the sagittal plane. The system provides unrestrained movements and improves its usability. The lightweight and compact size of the developed sensor node makes its attachment to the limb easy. [1]

Also Yuan Luo; Hongmei Yang; Zhangfang Hu suggests their thoughts for Human limb motion real-time tracking based on CamShift for intelligent rehabilitation system and stated that the Intelligent rehabilitation system has become a hot topic. Considering the limb motion and selected color probability distribution all together, we put forwards the modified algorithm, which enhances anti-interference ability and avoids distracting. In conclusion, based on the Open CV computer vision library, use CamShift tracking algorithm to achieve limb motion tracking [IEEE International Conference on vol., no., pp. 343,348,19-23 Dec. 2009]. A paper published by Bakhshi, S.; Mahoor, M.H. Named as "Development of a Wearable Sensor System for Measuring Body Joint Flexion," summarized that. This paper presents an approach for monitoring & observing human body joint angles using wearable sensors. This type of monitoring is favorable for physicians & therapists as it allows them to assess patient's activities remotely. In their approach many flex-sensors are built up on supportive cloth to count the flexion of a joint. Changes in the opposition of the flex-sensors can be increases using an electronic control panel. They used an Extended Kalman Filter to intimate the joint angle based on the enthusiastic model of the joint movement & the measurements acquire from the flex-sensors. Because of changes in the measured angle by each sensor, to estimate the best value for the actual body joint angle & the outcomes are fused to decimate the error. They assessed the performance & effectiveness of their view for observing knee joint angle by comparing with the measured angles using goniometer. The result indicates that the average error is 6.92E with a correlation of 0.98. [2]

Fitzgerald et al also maintains information for the development of a wearable motion capture suit & virtual reality biofeedback system for the instruction & analysis of sports rehabilitation exercises & advised that the development & design of a computer game for directing an athlete through a series of prescribed rehabilitation exercises. To care for the musculoskeletal type injuries along with trying to improve athletes & physical performance are prescribed exercise programmed by trained specialists. They described that illustrates how a clinician can at a later date review the athletes progress & subsequently alter

the exercise programmed as they see fit [29th Annual International Conference of the IEEE, vol., no., pp. 4870,4874, 22-26 Aug. 2007]. [3]

III. CONCLUSION

An uncontrolled & ambulatory measurement system based on a wearable wireless sensor network for searching the human arm motion in the sagittal plane has been proposed. The wireless feature activates the uncontrolled movement of the human body as repelled to a wired monitoring device & makes the system purely movable. This allows the system to arrange in a cluttered home environment. The lightweight feature & small form factor of the sensor nodes also permits easy attachment to the limbs. To compare with other existing appeals, the new system is movable & easy to use. It permits the patients to be monitored without rehabilitation & controlled can be taking place in a home environment rather than laboratory in the hospital. There will be no chance of signal jamming by other nodes.

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