

FALL DETECTION SYSTEM IN MILITARY APPLICATION USING WEARABLE TECHNOLOGY

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Abstract

Falls can cause genuine injuries, for example, cerebrum wounds and bone breaks, particularly among older individuals. Dread of falling may decrease proactive tasks bringing about declining social cooperations and in the end causing wretchedness. To reduce the impacts of a fall, convenient conveyance of clinical treatment can assume an essential part. In a comparable situation, an IoT-based wearable framework can clear the most encouraging approach to moderate genuine outcomes of a fall while giving the comfort of use. In traditional IoT frameworks, wearable gadgets assemble and communicate information to portable entryways where the majority of calculations are performed. Notwithstanding, the improvement of wearable gadgets, lately, has diminished the hole as far as calculation capacity with portable passages. Therefore, some new works present offloading plans to use wearable gadgets and henceforth decreasing the weight of portable entryways for explicit applications. Notwithstanding, to convey adequate level of observing and unwavering quality, wearable gadgets working at the center of fall identification frameworks are needed to work for a drawn out timeframe. The older individuals have restricted actual capacities and are more defenseless against genuine actual harms even with little mishaps, for example fall. The falls are eccentric and unavoidable. If there should be an occurrence of a fall, early recognition and brief warning to crisis administrations is fundamental for brisk recuperation. In any case, the current fall discovery gadgets are massive and awkward to wear. In this work, we center around energy proficiency of a wearable sensor hub in an Internet-of-Things (IoT) based fall recognition framework in military field.

Key words: IOT, Wearable Technology, sensor node, fall detection.

INTRODUCTION

Wearable innovation incorporates savvy gadgets that can be worn on the body. Astute gadgets like action trackers monitor information without human obstruction. Instances of these sorts of gadgets incorporate smartwatches and action trackers, for example, Apple Watch Series 2 or the Samsung Galaxy Gear Sport. This

kind of wearable innovation can likewise be utilized in wellbeing checking gadgets. Since the wearable innovation accessible today is expensive here we propose a financially savvy gadget that can not exclusively can check strides yet additionally convey ecological boundaries through Internet of Things (IoT) worker. IoT-empowered wearable are savvy gadgets that can be worn as outside frill, inserted in attire and pieces

data is passed to higher specialists by utilizing Wi-Fi module. They screen all the solider by and by. Furthermore, signal sign is given by the framework to show deficiency to closest solider to help him.

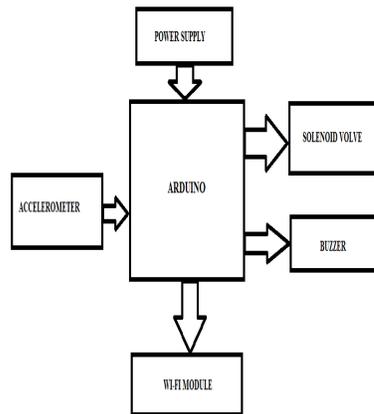


Fig 2. Praposed System

WORKING

A solenoid valve is an electrically controlled valve. The valve includes a solenoid, which is an electric loop with a versatile ferromagnetic center (unclogger) in its middle. In the rest position, the unclogger shuts off a little hole. An electric flow through the curl makes an attractive field. The attractive field applies an upwards power on the unclogger opening the hole. This is the essential rule that is utilized to open and close solenoid valves. Fig 3 shows the Fuel chamber plan. It will store the fuel and when valve will associate fuel chamber is actuated fig 4 shows the start switch it utilizes An Arc Lighter like this is a really flawless little gadget. Get your trusty borer and removed a segment by the catch opening to account for wires.

Bind lead wires to the catch terminals. The ESP8266 is an extremely easy to understand and minimal effort gadget to give web availability to your activities. The module can work both as an Access point (can make area of interest) and as a station (can associate with Wi-Fi), thus it can without much of a stretch bring information and transfer it to the web making Internet of Things as simple as could be expected. It can likewise bring information from web utilizing API's subsequently your venture could get to any data that is accessible in the web, hence making it more astute. The ESP8266 module works with 3.3V just, anything over 3.7V would execute the module thus be alerts with your circuits. The most ideal approach to program an ESP-01 is by utilizing the FTDI board that upholds 3.3V programming. On the off chance that you don't have one it is prescribed to get one or for time being you can likewise utilize an Arduino load up. One normally issue that each one countenances with ESP-01 is the fueling up issue. The module is a cycle power hungry while programming and consequently you can control it with a 3.3V pin on Arduino or simply utilize a possible divider. ARDUINO PRO MINI board is one of use sheets. Since it is an application board it doesn't have in-assembled software engineer. USB port and different connectors are likewise eliminated. Since whenever it is set in an application software engineer and connectors are fundamentally futile. Utilizing PRO MINI is like

some other improvement board. You should simply program the regulator and give the suitable fringe to get framework running. Piezo ringers are straightforward gadgets that can create essential blares and tones. They work by utilizing a piezo gem, an uncommon material that changes shape when voltage is applied to it.



Fig 3. Fuel chamber design



Fig 4. Ignition switch

FLOW CHART

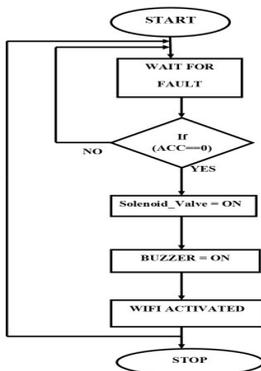


Fig 5: Flow chart

The fig 5 shows the flow chart of proposed method. In this proposed method we have check any fault will occur to nearest places of individual solider then accelerometer is activated and if any movement is their in accelerometer then fault will occure solenoid volve activated and fire will comes through valve and buzzer is ON mode and information passed to higher authorities through wifi module.

EXPERIMENTAL SETUP AND RESULTS

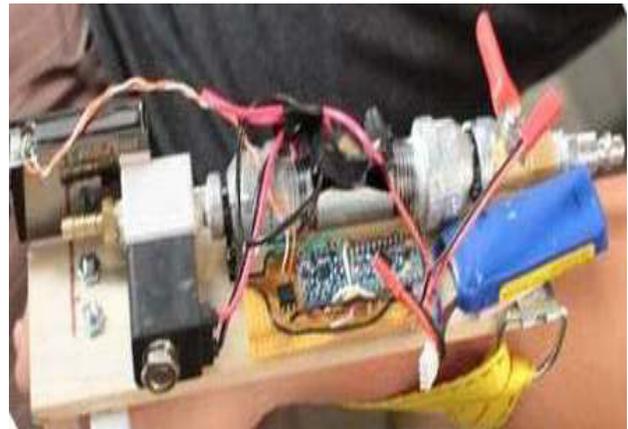


Fig 6: Experimental Result

Fig 6 shows the experimental Results of the proposed system that is IoT Based Military appilication using Wearable technology. In this Wifi module , accelerometer and solenoid valve setup with fuel chamber and ignition switch buzzer all are interfaced to arduino board. When any fault will be detected solider will be moved with accelerometer then solenoid valve will be open and fuel chamber will be activated and switch will be

open then fire will come according to time specified in the system. Buzzer will be ON and information sent to higher authorities through wi-fi module.

CONCLUSION

The system IOT Based Military applications using Wearable Technology will be useful for every soldier and monitored in warfield by the higher officials. Wearable Technology is the emerging technology in electronics and it will be added with IOT gives so many advance systems to design and research will be taken place on these area. In Future same system will be increased number of soldiers and monitored and intergrated all the soldiers in warfield into one system using IOT.

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