Components used in the band:

The accelerometer sensor and node mcu are connected to the Twilio API which together results in the automatic fall reduction system. The system is connected to a common power supply to power up the components present in our wearable device.

Our system features detection sensors which are multiple accelerators and processors, which can able to detect between a normal fall and an actual activity. By continuously measuring the speed of moments in all directions, our fall alert detectors can compare what it sense to and what it considers to be an actual fall.

Our fall alert detectors can sense what position we are in, how fast we are moving and how are moving either smoothly or abruptly. According to our project, 80% of users will experience no false fall detections per month while the remaining 20% might experience might experience one or fewer detections per month.

The benefits of automatic fall detection to the seniors can be great. Considering that one-third of adults over 65 will fall each year and all these fall related injuries are uncommon which means they are common. Not only for them, also for us or our loved ones who has diabetes or some other medical conditions like that, will increase the risk of falling. Under such conditions our device will provide us with additional piece of mind. Getting help fast in these situations will be a life saving one.

Algorithm used in the band:

When an elderly person or a baby or a person with any disability falls in any circumstances, accelerometer detects the fall and sends the signal to twilio API. The location of the victim is being fetched b the gps module which has been interfaced with node mcu. Here we are usinf ESP 8266 module. The accelerometer will be alert all the times as it continuously monitors the moments of the device. The accelerometer has 3 axis moments and it always calculates x, y and z-axis movements for every 0.5s and if any sudden change in these axis moments is detected by the accelerometer it waits for further 5 seconds. If the accelerometer couldn’t detect any further movements in these 5 seconds, it is considered as a fall and the Twilio api triggers a call to the registered mobile number. This 5 seconds fall is to detect whether the fall is an actual fall or a false fall.

Now you will be thinking that this type of sensors will be already available in market Then what is the uniqueness in our device? Let me explain…During the time of fall obviously we all know that there will be change in gyro values abruptly that is vertical to horizontal. So based on these 2 parameters the sensor MPU6050 will sense the fall and trigger the call to the message to the registered mobile number using Twilio.

Twilio's APIs (Application Programming Interfaces) power its platform for communications. Behind these APIs is a software layer connecting and optimizing communications networks around the world to allow your users to call and message anyone, globally. Twilio has a whole host of APIs, from SMS to Voice to Wireless.