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Wear Tech

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Abstract - The "Wear Tech" project presents the cutting-edge smart jacket designed for a military personnel. It offers advanced features including temperature control, navigation, water detection, phone loss notification, oxygen level monitoring, and emergency response capabilities. This innovative jacket prioritizes wearer well-being and operational efficiency in diverse climates. The "Wear Tech" project heralds a new era in military apparel with its revolutionary smart jacket, meticulously engineered to cater to the needs of modern military personnel. Seamlessly integrating cutting-edge technology with rugged functionality, this state-of-the-art garment redefines the standards of performance and comfort on the battlefield.At its core, the smart jacket embodies a fusion of advanced features designed to optimize wearer safety and operational effectiveness across diverse environmental conditions. From its sophisticated temperature control system ensuring optimal thermal regulation to its precise navigation capabilities facilitating seamless maneuvering in unfamiliar territories, every aspect of the jacket is meticulously crafted to empower the wearer.Moreover, its water detection mechanism provides a crucial layer of protection against unforeseen hazards, while the phone loss notification feature ensures that connectivity remains uninterrupted even in the midst of chaos. Additionally, the integration of oxygen level monitoring technology underscores a commitment to safeguarding the wearer's health in high-stakes situation.Perhaps most impressively, the jacket boasts emergency response capabilities, offering reassurance in times of crisis by swiftly summoning assistance when needed most. In essence, the "Wear

Tech" smart jacket represents a paradigm shift in military attire, where innovation converges with tradition to redefine the boundaries of possibility, ensuring that those who serve are equipped with nothing less than the best.

***Key Words*:** Wear Tech, smart jacket, military personnel, temperature control, navigation, water detection, phone loss notification, oxygen level monitoring, emergency response, well- being, operational efficiency, diverse climates.

1.INTRODUCTION

Smart jackets are the new and innovation type of wearable technology the combine a functionality of traditional jacket with a power of embedded sensors and electronics. This allows smart jackets to perform a wide range of tasks ,such as:

- **Providing safety and security features**: Smart jacket can also be equipped with Sensor to detect falls impacts or other hazards. This data can be uses to trigger alarms or send alerts to the emergency services. In addition, smart jacket can be integrated with GPS and other technologies to provide location tracking and the navigation capabilities.(a)
- **Monitoring and tracking health data:** Smart jacket can be equipped with sensors to track oxygen level, body temperature, and other the vital

signalThis data can be transmitted to the smart phone forreal time monitoring, store on jacket's internal memory storage for later analysis.(a)

- **Improving performance and comfort:** Smart jacket can also be used to improve athletic performance and comfort. For example,smartjacket can provide heating and cooling function to help users stay comfortable in extreme temperatures. Others can provide real-time feedback on posture , gait, and , other biometrics tohelp users improve their technique.(a)

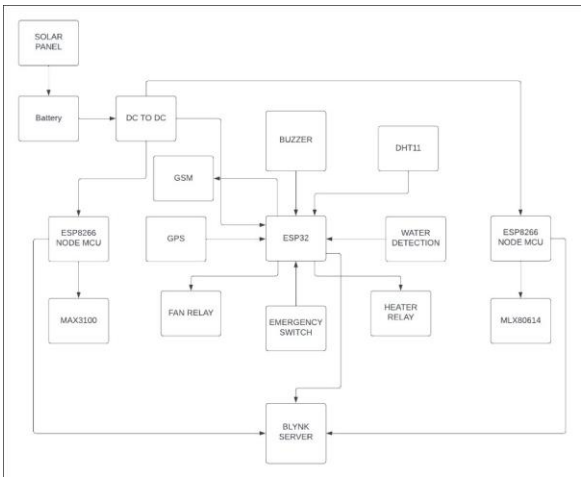

Fig. a) block diagram

2.Working: Smart jacket work by combining traditional jacket construction with embedded sensors and electronics. The sensors collects data about the wearer's body and environment, and the electronics process and transmit this data to other devices, such as smart phone.

We are using esp 32 as a main controller most of the sensors like float sensor emergency switch gpsgsm and dht 11 temperature sensor are attached to esp 32 as well as heating pads and fans are also attached to esp 32 when dht 11 temperature gets high fans get on and if temperature gets low heatingpads get on float sensor and emergency switch sends emergency msg with respect to gps location and using gsm module as well ass all sensor data issend to blynk server gps data temperature data fromesp 32. Esp8266 node mcu is also used this is usedto detect body temperature using mlx 90614 sensorand its a infrared temperature sensor it is used to send data of temperature to the blynk server and a another esp 8266 is used to send data of max3100 sensor to blynk server spo 2 data all the esp are powered with 2 dc dc to step down converter 12 v to 5 volts and a main battery of 3 lithium iron cell is used 12 volts.(a)

Temp: Temp sensor is to measure temperature of body and then control the body temperature by oning heater and fans.

ESP 32: The ESP32 is widely used in IoT (Internet of Things) applications due to its versatility, energy efficiency, and connectivity features. It has a dual-core processor, various digital and analog input/output pins, and support for a range of communication protocols, making it suitable for a wide range of projects, from simple sensor monitoring to complex automation systems.

GPS: GPS provides a user with positioning, navigation and a timing services.

GSM: A GSM module plays the crucial role in the communication between devices and a GSM network.

It is responsible for establishing and a maintaining the communication link between a device and a network.

2 CH RELAY: A 2CHANNNELS RELAY module is a convenient board which can be used to control high voltage, a high current load such as motor, a solenoid Valves, lamps and the AC load.

FLOATING Sensor: Use to sense the water and then send the signal or message to assigned number.

MAX3100: The probe measures pulse – oxygen level and a temperature from aa connected finger.

BLUETOOTH: All connections are connected to a Bluetooth module so that the jacket can be operated for phone application.

3.Hardware used:

- Temp
- SOLAR PANEL
- BATTERY
- DC TO DC
- BUZZER
- MLX80614
- EMERGENCY SWITCH
- ESP 32
- GPS
- BLYNK SENSOR
- GSM
- FAN AND HEATER EMERRELAY
- FLOATING SENSOR
- MAX3100
- BLUETOOTH

4.Smart Jacket Development:

Requirements of jacket:

- Fitness tracking
- Communication and entertainment
- Environmental monitoring
- Temperature controller
- Posture correction
- Fall detection
- Navigation and Privacy and security

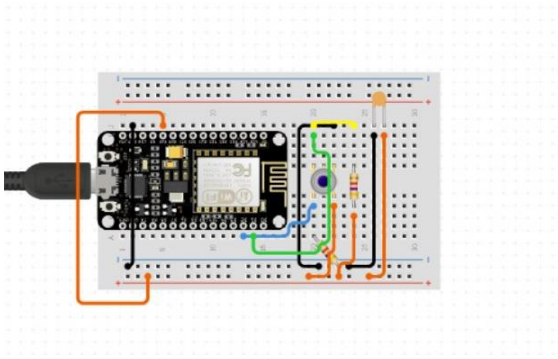

Fig.b)Temperature sensor ESP8266

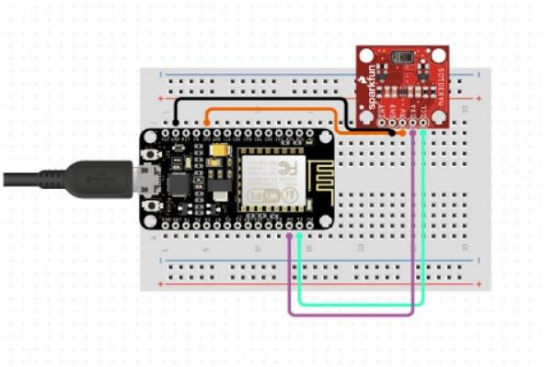

Fig.c) ESP32 is main controller

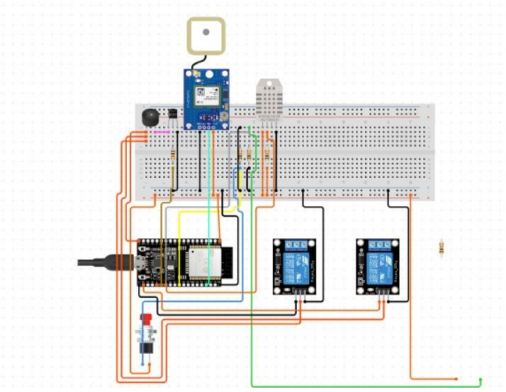

Fig.d) max3100 oxygen meter controller

Advantages :

Convenience: Smart jacket can provide a variety of convenient features, such as temperature control, navigation and communication.

Safety: Smart jacket can be euipped with sensors that can detect hazards such as falls and etc. This info can be used to alert the wearer of danger and prevent accidents from happening.

Health: Smart jacket can track the wearer's fitness metrics, such as pulse .This info can be used to improve the wearer health and fitness.

Productivity: Smart jacket can help the wearer to be more productive by providing them with access to info and tools on the go.(b)

Conclusion:

In this report , we discussed all aspects regarding smart jacket, This will give all information about it, as jacket development , working and advantages

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