DIVE GUARD IOT BASED HEALTH MONITORING SYSTEM FOR SCUBA DIVERS

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IoT, Health Monitoring, Scuba Diving, Sensors, Safety System, Underwater Communication.

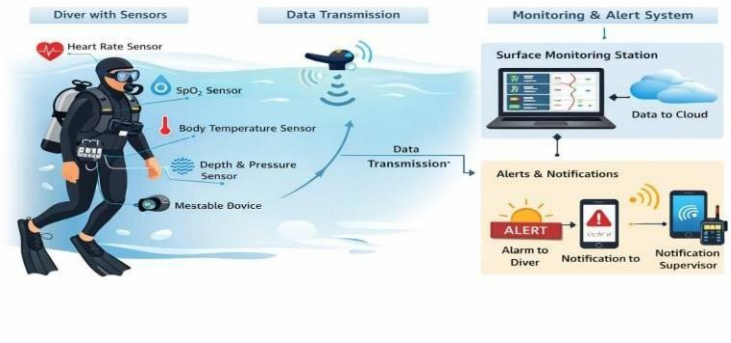
Introduction

Scuba diving is a high-risk underwater activity where divers are exposed to environmental and physiological dangers such as pressure changes, oxygen depletion, and hypothermia. Traditional diving equipment does not provide real-time health monitoring.

The proposed system, Dive Guard, is an IoT-based solution designed to continuously monitor a diver's vital parameters including heart rate, oxygen saturation, and body temperature. It also measures environmental conditions like depth and pressure.

This system enables real-time data transmission to a monitoring station, helping in early detection of dangerous conditions and improving overall safety.

2016: Research focused on scuba diving safety and underwater risks.
2017: Studies introduced sensor-based health monitoring systems.
2018: IoT-based healthcare systems were developed.
2019: Advanced real-time monitoring and alert systems were proposed.



Title: Dive Guard System Architecture

Objectives

1. To design a real-time health monitoring system.
2. To measure heart rate and oxygen levels.
3. To monitor environmental conditions.
4. To provide alert mechanisms.

Methodology

1. The system uses wearable sensors to collect data from the diver. The MAX30100 sensor measures heart rate and oxygen levels, while the BMP180 sensor measures temperature and pressure.
2. A microcontroller processes the data and transmits it using underwater communication techniques. Alerts are generated when abnormal conditions are detected.
3. The data is stored for further analysis after the dive.

Result and Conclusion

The system successfully monitors real-time health and environmental conditions. It provides early warnings during critical situations.
The Dive Guard system improves safety and reduces risks during scuba diving.

References

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4. Scuba equipment technology, 2017.

Future Scope

1. Mobile app integration.
2. AI-based prediction.
3. Improved communication.
4. Industrial applications.