

IOT FOR MANKIND

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Abstract - The risk of potential threats is a critical consideration in contemporary safety plans for any organization. Employees play a pivotal and indispensable role in this context. Health issues encompass various factors that require careful attention, and numerous tools and techniques are employed to ensure the well-being and safety of employees, including monitoring their health and access to weaponry. To provide cost-effective peripheral solutions for monitoring employee health, healthcare-related devices such as heart rate sensors, temperature measurement detectors, and communication and data processing capabilities can be integrated. Employee safety is a fundamental aspect of organizations, and there are various strategies and positions in place to ensure the safety of the workforce. This project employs the Global Positioning System (GPS) to track the current location of employees, and information is relayed to the organization through a GSM modem. Combining these technologies with sensors and a GSM modem establishes a wireless system for monitoring employees' real-time location, heart rate, and body temperature. The employee's heart rate is displayed on an LCD screen, and in case of abnormal temperature readings, a GSM module sends an alert to the control center in emergency situations.

Key Words ;

- IoWT
- Healthcare Monitoring
- LCD
- Heartbeat
- Oxymeter
- Temperature Sensors

1. INTRODUCTION

Ensuring the health and safety of employees is a primary issue for organizations in the corporate world. We have created a state-of-the-art system aimed at improving employees' health, safety, and overall work experience, much how the military uses cutting-edge technology to watch over and safeguard its soldiers. "E-Health" (Employee Health) is the name given to this

system, which integrates health-related communication technologies with medical sensors to provide a complete solution for workers in a variety of work environments. Comparable to its military equivalent, E-Health uses smart sensors to monitor health in real time. These sensors are easily incorporated into wearable technology or clothes that workers put on, providing constant monitoring of stress levels, vital signs, and other health-related variables. A portable health hub that functions as a personal server is at the centre of the E-Health system. An LCD screen, batteries, a GSM connection, and a PCB are all included in this small device that employees may carry or set up in their workstation. It makes it possible to process data in real time, store health-related data securely, and communicate with the central server without interruption. By including GPS monitoring, E-Health goes one step further and enables companies to keep an eye on their employees whereabouts at work. In bigger or possibly hazardous workplaces, this function is very helpful in guaranteeing safety and effective management.

2. Body of Paper

2.1 BACKGROUND :

E-Health is a cutting-edge system that uses health-related communication technologies and medical sensors to improve worker productivity, safety, and well-being in a variety of work contexts. This creative approach guarantees that workers are supported and safe in the workplace by enabling not just real-time health monitoring but also smooth communication and tracking.

E-Health incorporates wearable technology and employee apparel with smart sensors. These sensors provide real-time insights into the health of the employee by continuously gathering data on stress levels, vital signs, and other health-related information. The goal of E-Health's mobile health hub is to give staff members a

complete tool for managing their health. This small gadget can be carried around because it has an LCD screen, batteries and a GSM connection.

2.2 Methodology :

1. Needs Evaluation:

To ascertain the precise health and safety needs of the company and its employees, conduct a thorough needs assessment.

2. Technology Evaluation:

Conduct a comprehensive assessment of the current infrastructure and technologies in order to determine points of compatibility and integration for the E-Health system.

3. Stakeholder Participation:

To guarantee that the system satisfies a variety of needs, involve important stakeholders in the design and planning stages, such as staff members, IT specialists, and experts in health and safety.

4. Measures for Data Security:

To protect sensitive health information, put strong data security measures in place, such as encryption and biometric authentication.

5. Integration of Wearable Technologies:

Investigate and incorporate the most recent developments in wearable technology, making sure that sensors work with the E-Health system to provide continuous and discrete monitoring.

6. Application of AI Algorithms:

Create and incorporate AI algorithms for predictive health analytics so that the system can use past data to foresee possible health problems.

7. Framework for Real-time Data Analytics:

Provide a framework for real-time data analytics so that health data can be processed and analyzed quickly, giving workers and organizational decision-makers useful insights.

8. Integration of Emergency Reaction:

To improve the system's efficacy in emergency scenarios, incorporate cutting-edge emergency response features like

automated first aid instructions and direct communication with emergency services.

9. Designing User Interfaces:

Work together with user experience (UX) designers to develop interfaces that are easy to use and intuitive for administrators and staff to ensure that health monitoring procedures are widely accepted and followed.

10. Personalization in Workplaces:

Tailor the E-Health system to the unique requirements of various work settings while taking industry-specific health parameters and requirements into account.

11. Worldwide Execution Plan:

Create a plan for implementing your plan globally, taking into account regional infrastructure variations, cultural differences, and regulatory compliance.

12. Pilot Examining:

Before implementing the change widely, conduct pilot testing with a representative sample of employees in a controlled environment to find possible problems, get their input, and make the necessary adjustments

2.3 Applications :

- his voice based Email system is built so that blind people can use the email services independently.
- These systems use Speech to Text and Text to Speech converters for the conversion of speech to text and vice versa.
- Due to its simplicity and accessibility, Internet is widely used in almost all the communication applications.

3. Literature survey

1. Paper name :- IoT-Based Healthcare-Monitoring System towards Improving Quality of Life: A Review, 2022
Author name :- Suliman Abdulmalek, Abdul Nasir, Waheb A. Jabbar, Mukarram A. M. Almuahaya , Anupam Kumar Bairagi , Md. Al-Masrur Khan and Seong-Hoon Kee.
Methodology :- The benefits, drawbacks, and review of the research are covered in this paper on IoT advancements in healthcare monitoring systems. It looks at IoT systems with wearable and wireless sensors, talks about issues with privacy, security, and quality of service (QoS) in the healthcare industry, and offers suggestions for new developments and IoT applications in the field of healthcare.

Gap Analysis :- Narrowly focused on IoT in healthcare monitoring, while our paper provides a broader overview of IoT's significance across multiple domains.

2. Paper name :- IOT based Heartbeat and Oxygen level Monitoring System, 2022

Author name :- Pardeshi Priyanka Ghanshyamsingh, Bodkhe Sambhav Gajendra, Kulkarni Mangesh Sanjay , Prof. P. S. Kulkarni

Methodology:- The need of monitoring blood oxygen levels with a pulse oximeter is discussed in the study with reference to COVID-19 pandemic. IoT is recommended as a platform that can help with this because of its extensive sensing capabilities and connectivity. The design of a pulse oximeter device, which uses infrared and visible light detection to monitor oxygen saturation and pulse rate.

Gap Analysis:- It is more focused on the specific context of monitoring blood oxygen levels with IoT and not BPM or temperature.

3. Paper name :- IoT based Smart Healthcare Monitoring Systems: A Literature Review, 2021

Author name :- R. Alekya , Neelima DeviBoddeti,K.Salomi Monica , Dr.R. Prabha, Dr.V. Venkatesh.

Methodology :- The paper explores IoT's role in healthcare, driven by its cost-effectiveness and patient satisfaction. It envisions IoT integration in complex healthcare processes, highlighting the "Mobile Healthcare Management System (HMS)". This IoT-based smart HMS enables remote patient monitoring by linking mobile sensors, clinicians, and networks. The approach aims to enhance healthcare with seamless connectivity and remote monitoring capabilities.

Gap Analysis :- Delves deeply into the specific application of IoT in healthcare, particularly emphasizing the "Mobile Healthcare Management System." Management System).

4. Paper name :- A Review of IoT-Enabled Mobile Healthcare: Technologies, Challenges, and Future Trends, 2022

Author name :- Yilin Yang, Haocong Wang, Ruizhe Jiang, Xiaonan Guo, Jerry Cheng, YingYing Chen.

Methodology :- The growth of the Internet of Things (IoT) has led to various sensing modalities becoming more sophisticated and cost-effective. This survey article explores smart health monitoring systems, categorizing them based on device-based (worn or carried sensors) and device-free (wireless sensing) techniques, as well as signal processing methods. The article discusses

innovative combinations of these techniques for professional and commercial health-monitoring IoT networks.

Gap Analysis :- This paper allies closely with our projects but lacks the GSM model technology to get the current location.

CONCLUSION

The E-Health system, integrating smart sensors, GPS tracking, and GSM communication, emerges as a cutting-edge solution for ensuring employee health and safety. By continuously monitoring vital signs and providing real-time data processing through a portable health hub, the system promotes a proactive approach to well-being. The inclusion of GPS tracking enhances safety in larger workplaces, enabling efficient emergency response and management. With the ability to detect abnormal health readings and promptly communicate alerts, E-Health represents a cost-effective, technologically advanced solution that aligns with the evolving priorities of organizations in prioritizing employee welfare and safety.

FUTURE SCOPE

1. Biometric Authentication for Data Security:
Enhancing data security through biometric authentication can be explored, ensuring that health-related information remains confidential and accessible only to authorized personnel.

2. Wearable Technology Advancements:
Keeping abreast of advancements in wearable technology will allow for the integration of more sophisticated and compact sensors, making the monitoring process even more seamless and less intrusive for employees.

3. Customization for Different Work Environments:
Adapting the E-Health system to cater to the specific needs of diverse work environments, such as manufacturing, healthcare, or office settings, ensures its applicability across various industries.

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