

Chapter 10

Enhancing Human Safety and Well-Being: A Smart Wearable Compatible With Comprehensive Android Application for Emergency Response

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ABSTRACT

Risks to one's health can arise for both corporate employees and individuals working in mines, factories, or construction sites. On occasion, they must deal with dangerous circumstances like fire, water, rockfall, poisonous chemical releases at work, poor ventilation, etc. Several workers thus experience breathing difficulties, heart attacks, hypertension, etc. In addition, women who work face the risk of harassment, theft, etc. Even those who unavoidably suffer accidents while away from home for work or any other reason regularly fail to notify their families or have delays in seeking medical care. In this study, an Android app and a smart wristband are proposed which will measure wearer's body temperature, heart rate, pulse, and levels of oxygen saturation and send the data to the Android application on the user's mobile device with the 4G long term evolution (4G LTE) module and the internet of things (IoT) framework. This app will even update the user's family about mishappenings.

DOI: 10.4018/979-8-3693-2679-4.ch010

INTRODUCTION

Basic employer liability for workplace accidents is one aspect of social security; complete programs that offer income security through medical care, maternity, family, disability, unemployment, retirement, and employment injury are also included. The evolution of social security law has followed a similar pattern to other areas of labor law, moving from the specific to the broad. Workers' compensation plans were widespread in industrialized and developing nations by the time of World War I, but their provisions for particular situations were extremely limited. Otto von Bismarck left behind pension insurance as part of his legacy to Germany, but aside from pension funds for the privileged and non-contributory pensions for the elderly, not much else could be found. When it came to unemployment and health insurance, Great Britain had led the way. However, social insurance continued to be a practical experiment restricted to a small number of developed nations with developed social policies and economies. For some protected person groups, the coverage was restricted to particular hazards. Its goal was to shield the worker from the risks of life that per-industrial cultures covered through family or communal responsibilities, but the strategy was piecemeal and only applied to the most controllable extreme situations.

Employees of corporations, as well as individuals who work in mines, factories, or construction sites, are subject to a number of health dangers. At work, especially in chemical industries or other industrial companies, they occasionally have to cope with dangerous scenarios like fire, flood, the discharge of harmful chemicals, insufficient ventilation, etc. Several workers may get breathing problems, heart attacks, hypertension, high fevers, etc. as a result. In addition, women who work or are employed bear the danger of harassment, theft, etc. Women's safety is an important concern in today's society, especially in India where rape, sexual assault, robbery, and other forms of domestic abuse are frequent. Therefore, it is important to first identify resources, such as the top safety apps, that can be used in an emergency to save women from dangerous situations in order to safeguard them from such awful deeds. The abundance of security and safety software for women that is accessible on cell phones may be helpful to today's ladies. Women utilize these apps for extra security because they can contact for help in an emergency or speak with friends and family immediately.

Additionally, even common people who inevitably incur accidents when they leave their homes for work or any other reason usually forget to notify their family or have delays in seeking medical assistance. Various solutions have been proposed to detect the medical real time conditions of the workers or such global emergencies, but in order to save the life of the individual; he/she must also be rescued in time and should be provided with proper medical facilities. Also, their families should get notified about the mishapening as early as possible.

LITERATURE SURVEY

A wearable sensing smart solution has been proposed for worker's remote control in health risk activities (Visconti, 2022). The authors proposed the solution using IBM Cloud, MQTT, multisource harvesting section, 38- mAh LiPo battery and microcontroller board- SAMD21G18 along with various sensors, in 2022. In 2021, a real-time performance analysis temperature process using continuous stirred tank reactor was proposed using Continuous Stirred Tank Reactor, PID Controllers, Cascade control scheme, Centum Vp DCS Software, Feedback control system - Feedforward control, Temperature Transmitters (TT2, TT3, TT4), Circulated Control Framework (DCS) and CENTUM VP system (Ponni Bala et al.,

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