



WEARABLE FALL DETECTION SYSTEM USING ARDUINO
AND HEALTH CARE MANAGEMENT SYSTEMS BASED ON WEBSITE

UNDERGRADUATE THESIS
Submitted as one of the requirements to obtain
Sarjana Komputer

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INFORMATICS STUDY PROGRAM
CIKARANG
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FACULTY OF COMPUTING
INFORMATION TECHNOLOGY STUDY PROGRAM
CBKARANG
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ABSTRACT

The advancement of embedded systems and IoT technology has opened new opportunities in the development of wearable devices to support human health and safety. This thesis presents the design and implementation of a **Wearable Fall Detection System using Arduino**, integrated with a **Web based Health Care Management System**. The main objective of this study is to develop a reliable and affordable system to detect falls in real-time and provide necessary health-related data monitoring for patients, especially elderly individuals.

The system consists of an accelerometer sensor (MPU6050) attached to the body, which continuously monitors the user's movement. Data from the sensor is processed using an Arduino microcontroller to detect fall patterns using threshold-based logic. When a fall is detected, the device sends an alert signal via a Wi-Fi module (ESP8266) to the web application.

On the software side, a web based health care management system is developed using HTML, CSS, JavaScript, and PHP. It allows medical staff or family members to monitor patient profiles, view fall history, and manage emergency contact information. The system also provides a login mechanism and secure data storage with encrypted medical records.

Testing and evaluation show that the system achieves high accuracy in detecting falls and low false-positive rates. The user interface on the web application is also found to be user-friendly and effective during user acceptance testing. Despite some challenges

in sensor calibration and network latency, the system demonstrates potential for real-world applications in smart health monitoring.

In conclusion, the developed system successfully integrates hardware and software components to provide a low-cost, effective solution for fall detection and healthcare data management, contributing positively to the safety and well-being of vulnerable individuals.

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