West Visayas State University
COLLEGE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
La Paz, Iloilo City, Philippines

HEALTHSENSE: A MEDICAL DEVICE WITH AN EMBEDDED SENSOR SYSTEM FOR VITAL SIGNS MONITORING AND HEART DISEASE PREDICTION

An Undergraduate Thesis

Presented to the Faculty of the

College of Information and Communications Technology

West Visayas State University

La Paz, Iloilo City

In Partial Fulfillment

of the Requirements for the Degree

Bachelor of Science in Information Technology

by

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Approval Sheet

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Abstract

This study developed a device that monitors vital signs in real-time and predicts the probability of heart disease using machine learning algorithms. The device comprises an embedded system using Arduino to scan and monitor vital signs, a mobile application to display the data, and a web app to host the machine learning algorithm. The study aimed to evaluate the device's effectiveness and usability in monitoring vital signs and predicting the likelihood of heart disease. The device was tested on a select few users chosen through convenience sampling, some with underlying conditions. The results showed that the healthcare device and embedded system are effective and reliable tools for monitoring vital signs and predicting the probability of heart disease. The heart disease prediction system with an embedded sensor system using Arduino fulfilled the objectives of scanning and monitoring vital signs and displaying the data on a mobile

application. The accuracy test showed that the machine learning algorithm had a training and testing accuracy of 76% and 74%, respectively, out of 1025 training data, indicating high accuracy and fulfillment of its purpose. Additionally, the ISO 25010 evaluation showed that the application had an overall mean rating of 3.97, indicating a very satisfactory rating and suitability for meeting the users' needs.

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