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

Recede: A Social Distancing System Using ESP32 Microcontroller and Bluetooth Low Energy for Peer-to-Peer Warning Signal

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

Catherine G. Duero

Jason P. Esperela

John Ray T. Godin

Jellie Marie J. Jover

Albert S. Parreño

June 2023

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

Approval Sheet

Recede: A Social Distancing System Using ESP32 Microcontroller and Bluetooth Low Energy for Peer-to-Peer Warning Signal

An Undergraduate Thesis for the Degree

Bachelor of Science in Information Technology

by

Catherine G. Duero

Jason P. Esperela

John Ray T. Godin

Jellie Marie J. Jover

Albert S. Parreño

Approved:

DR. EVANS B. SANSOLIS Adviser	ENGR. LEA M. GABAWA Co-Adviser
DR. FRANK I. ELIJORDE Chair, Information Technology	DR. MA. BETH S. CONCEPCION Dean

June 2023

Acknowledgment

The researchers would like to extend their sincere gratitude towards the following persons, who got involved in the development of this study.

Dr. Evans B. Sansolis and Engr. Lea M. Gabawa, their thesis adviser and co-adviser respectively, who accepted the invitation to be part of the development and formulation of the study, for lending their valuable time and effort in providing insights on what should be done to improve the study, for letting the researchers use their office and internet connection in the course of the development of the study, and for their unwavering support and guidance all throughout.

Prof. Cyreneo Dofitas Jr., Thesis writing I professor for the guidance in the formulation and ideation phase of the study.

Their panelist, Dr. Evans B. Sansolis, Dr. Cheryll Ann Feliprada, Prof. Cyreneo Dofitas Jr., Prof. Mark Joseph J. Solidarios, Dr. Ralph Voltaire J. Dayot and Prof. Janine P. Defante for their impactful comments, suggestions, and recommendations to improve the study from concept proposal to final defense.

Godin family, for providing a comfortable space and warm meals despite the threat of COVID-19 infection.

Mr. Jhemer Cris B. Colas, their good friend for providing assistance to the researchers when they are having a hard time formulating the concept proposal.

The respondents of West Visayas State University, for letting the researchers present their study and respond to the given questionnaires through google docs for the system evaluation.

Prof. Marievic M. Violeta, Ma. Ed, their grammarian for the act of kindness when the researchers asked for assistance, and for the meticulous and free of charge service in editing the manuscript.

Their families, for the strong emotional, financial, moral, and spiritual support in the conduct of the study from start to finish. Their steadfast support lit the burning passion of the researchers to continue the conduct of the study despite being in the midst of pandemic.

They would have never made it without the generosity of these people. Above all, to the Almighty God, the creator of all things who made everything possible despite unprecedented events. To all that the researchers

mentioned, this study is humbly dedicated to the advancements of technology and of humanity.

Catherine G. Duero

Jason P. Esperela

John Ray T. Godin

Jellie Marie J. Jover

Albert S.Parreño

June 2023

Duero, Catherine G.; Esperela, Jason P.; Godin, John Ray T.; Jover, Jellie Marie J.; Parreño, Albert S.; "Recede:A Social Distancing System Using ESP32 Microcontroller and Bluetooth Low Energy for Peer-to-Peer Warning Signal". Unpublished Undergraduate Thesis, Bachelor of Science in Information Technology, West Visayas State University, Iloilo City, Philippines, June 2023.

Abstract

This study was focused on developing a social distancing system "Recede" to mitigate the spread of COVID-19 infection especially in schools. The aim of this study was to create a hardware solution that solves the noncompliance of individuals in the social and physical distancing and to incorporate a software that can record individuals who came in close contact with each other. The researchers used ESP32 Microcontroller as the primary tool for development. The device was tested at West Visayas State University. The participants were given a device (Recede) to carry the moment they enter the school premises. The Recede records the information of the individuals who came in close contact with them for more than ten (10) seconds and logs the data into the database. After the development, the system underwent testing and evaluation using ISO 25010. The outcome resulted in a mean of 3.80, which is equivalent to Very Good.

Table of Contents

List of Figures

List of Tables

List of Appendices