# DEVELOPMENT OF A WEARABLE ECG DEVICE USING LOW POWER CONSUMPTION FOR DETECTING ARRYTHMIA DISEASES

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11506011

BACHELOR'S DEGREE
in

ELECTRICAL ENGINEERING – BIOMEDICAL ENGINEERING CONCENTRATION

LIFE SCIENCES AND TECHNOLOGY

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August 2019
[REVISION AFTER THE THESIS DEFENSE ON 18th JULY 2019]

## STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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## ABSTRACT

DEVELOPMENT OF AN ARRHYTHMIA DETECTION USING LOW POWER CONSUMPTION WEARABLE ECG DEVICE

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There are plenty ECG devices produced in health care industry. However, those devices are high power consumption, not commonly affordable and require large space. In this research, the idea is to build a portable ECG device that could be a solution for those problems. This device is capable of storing data inside micro SD and transmit the data via Bluetooth. The design would be wearable for patients. It is also quite ergonomics and comfortable to be used in daily basis. By using this technology, it would be easier for physicians to obtain and analyze the data from the patient. It The device has low power consumption because of its small sizes and specific usage. This could be achieved by using small components such as Teensy LC processor, AD8232 Heart rate sensor, and Bluetooth Bluefruit SPI. This research focuses mainly on providing battery charging and discharge, analyzing input and output voltage of the PCB (Printed Circuit Board), detecting the current sensor, determine the appropriate operational safety rating, maintaining voltage regulator, testing every component of the devices. During this research, it showed a promising result which is a portable ECG device had the desired performance.

*Keywords: arrythmia, wearable ECG, AD8232 heart rate sensor, voltage analysis, battery management*

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## DEDICATION

I dedicate this work to God, the world, my family and my friends.

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## ACKNOWLEDGEMENT

First of all, I would like to express my gratitude to God, who gave me a chance to finish this thesis at Swiss German University with Mr. Aulia Iskandar as my thesis advisor and Mr. Dedy Wicaksono as my thesis co-advisor, who helped and guided me during ups and downs creating this bachelor's thesis. I also humbly acknowledge the assistance of the English Department at Swiss German University for their support and cooperation in checking this thesis work.

Above all, I would like to thank my family, who supported me throughout the entire process, by helping me finding the materials and equipment needed for this research and keeping me motivated and determined. Lastly, I would like to thank all of lab assistants and all of my friends in Life Sciences batch 2015 for their real support throughout the course of this thesis and help me through hard time.

I have found my coursework throughout the biomedical engineering program to be both inspiring and challenging, providing me with different obstacle and ability to overcome unique problem.

Thank you for all of my friends that had support me from the beginning until this thesis printed. Especially for all person that involved by helping me as a volunteer such as Jessica Sabella, Agatha Hintama, Timotius William Jefferson, Jufendi Ettin, James Alan Kusuma Christopher Aldwin Anandito Putra, Irena Sugiarto also our lab assistant Devita. My friends that already been my friend since high school junior Ardyanto, Bryan, Gibson, and Andias. I really grateful to had you all.

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