

**STUDY ON CUFF-LESS BLOOD PRESSURE MEASUREMENT BASED ON
ELECTROCARDIOGRAPHY AND PHOTOPLETHYSMOGRAPHY SIGNAL**

By

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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

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The continuous blood pressure measurement research is widely known for helping the development of ambulatory blood pressure monitoring where it measures blood pressure every 15 to 30 minutes throughout the day. The cuff is a problem for the patient with Ambulatory Blood Pressure Monitor. It can make a person feel uncomfortable and must stay still when the cuff starts to inflate. It is limiting and disturbing their daily activity when the device is starting to measure the blood pressure. Blood pressure measurement without cuff is being proposed in this research, called cuff-less blood pressure measurement. It will allow continuous blood pressure measurement since it is based on Photoplethysmography (PPG) and Electrocardiography (ECG) signal analysis. ECG (Lead 1, Lead 2, and Lead 3) with PPG signal produced from index finger on the left hand are compared. Then, the relation of PPG and ECG signal and the optimum location for daily usage can be obtained. Based on the result, PPG and ECG signal have a linear relation with Blood Pressure Measurement and Lead 1 is more stable in producing the ECG signal. The equation from Lead 1 is appeared a lot as one of the optimum equation for Systolic Blood Pressure (SBP) or Diastolic Blood Pressure (DBP).

Keywords: Photoplethysmography, Electrocardiography, Cuff-less Blood Pressure Measurement, Ambulatory Blood Pressure, Blood Pressure.



DEDICATION

I dedicate this works for my family, my best friends and the future of healthcare development in Indonesia.



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