

CONTINUOUS BLOOD PRESSURE MONITOR USING IMPEDANCE PLETHYSMOGRAPHY AND ECG TECHNIQUE

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ABSTRACT

Since it might be used in a wearable device, continuous blood pressure measuring technology has received a lot of attention in the previous ten years. The pulse transit time (PTT) is constantly detected using electrocardiography (ECG), photo-plethysmography (PPG), and phonocardiography since there is a negative correlation between the PTT's altered tendencies and blood pressure. And since the invention of blood pressure monitoring devices, the main method of operation has been through inflatable cuffs. Devices that use inflatable cuffs to measure blood pressure can't give instant or continuous readings. We selected three viable alternatives after reading research on the topic of our project and learning about related projects. The first was a wrist strap that uses electrocardiography (ECG) and impedance plethysmography (IPG) [1], The second test combined the two, utilizing a chest piece to assess seismocardiography (SCG) and a wrist strap to evaluate IPG [2]. Finally, a chest belt that uses photoplethysmography and seismocardiography (SCG) [3]. Our project will change the concept of blood pressure measurement and make it easy and fast to use continuous readings with IPG and ECG techniques. By using electrodes to calculate the impedance cardiography and ECG sensor to detect the ECG signal we designed a circuit which will be processed using Arduino.

Index Terms — *Impedance plethysmography, IPG, Electrocardiography, ECG, blood pressure monitoring, blood pressure.*