

ABSTRACT

Hypertension is a disease that occurs due to high blood pressure, and it often doesn't show any symptoms, making it highly dangerous if not detected early. It can lead to a chain of detrimental effects, including inflammation, plaque buildup, and even higher risks such as heart attacks and strokes. Given its severe nature, it is crucial to detect this condition as early as possible, and one way to achieve that is through regular blood pressure measurements. However, current blood pressure checks can be challenging as they require visits to healthcare facilities or the possession of specialized equipment for measuring blood pressure.

In this study, the authors developed a non-invasive method for measuring blood pressure through photoplethysmography (PPG) signals captured using a cell phone camera. The method involves extracting blood pressure from PPG signals recorded using a cell phone camera and light that will be attached to the fingertips of the subject's hands, video data is collected from several subjects and processed using signal processing algorithms. The results showed that the level of blood pressure accuracy after being compared using the MAPE (Mean Absolute Percentage Error) method obtained a value of 6.28% (very accurate) on systolic and 14.18% (good) on diastolic, for the Bland-Altman Plot method obtained a value of 3.57 (mean difference) for systolic and -6.6 (mean difference) for diastolic and the pattern of distribution of data points for systolic and diastolic is around the 0 line and is still within the confidence limit range.

Keywords: Hypertension, Photoplethysmography (PPG), MAPE (Mean Absolute Percentage Error), Bland-Altman Plot, Blood pressure.