

ABSTRACT

Blood pressure is an important parameter in cardiovascular health monitoring. Low awareness and access to blood pressure monitoring pose serious challenges in the management of hypertension. Blood pressure prediction using conventional blood pressure monitor has limitations because it only provides momentary information and cannot monitor continuously. This study offers a solution in the form of a non-invasive blood pressure prediction system utilizing electrocardiogram (ECG) signals and a machine learning algorithm, specifically Support Vector Regression (SVR), with the assistance of an AD8232 sensor for signal acquisition. The system is capable of generating systolic blood pressure predictions ranging from 102.2 to 123.6 mmHg, and diastolic from 67.3 to 80.1 mmHg. The results exhibit an accuracy of R-squared, with 94% for systolic and 91% for diastolic. The prediction results are displayed in real-time via a GUI interface and can be saved as historical data, enabling users to monitor blood pressure practically and continuously.

Keywords: blood pressure prediction, Support Vector Regression, electrocardiogram, AD8232, machine learning, GUI