**Cuffless Continuous Blood Pressure Monitoring Using ECG and PPG Sensors: A Non-Invasive Approach**

**Abstract**:  
 Blood pressure (BP) is a critical indicator of cardiovascular health, traditionally measured using cuff-based devices that provide intermittent readings. However, these methods are unsuitable for continuous monitoring and can be cumbersome for daily use. Recent advancements leverage wearable sensors, particularly Electrocardiogram (ECG) and Photoplethysmogram (PPG), to estimate BP through Pulse Transit Time (PTT)—the interval between the heart's electrical activity and the pulse wave detected in peripheral blood vessels. PTT-based BP estimation relies on a calibration model derived from regression analysis or machine learning algorithms, allowing non-invasive, real-time monitoring. This approach eliminates the need for periodic cuff inflation, improving user comfort and enabling applications in remote patient monitoring and personalized healthcare. Moreover, it facilitates early detection of hypertension and real-time tracking of cardiovascular trends, especially in high-risk populations. The integration of ECG-PPG systems into wearable devices represents a significant advancement, promoting accessibility, ease of use, and continuous health monitoring for a wide range of users.

**Block Diagram:**

