Purpose:

In this project

The main goal of this project is to predict the systolic and diastolic blood pressure by means of Electrocardiogram (ECG) signal and photoplethysmogram (PPG) signal instead of direct measurement of blood pressure with cuffed devices.

Challenges:

Find a related features that resonate the characteristic of blood pressure in ECG and PPG signal

Approaches:

Datasets include systolic and diastolic measurement for different individuals. First the measurement time of BP was identified the 40 second of ECG signal and PPG signal before BP measurement was separated to use for feature extraction. Features such as average duration of ECG R to R peaks, and PTT_b, PTT_b from PPG signal where extracted. Moreover age, weight and height of subjects was considered as other features.

Result:

MSE of systole pressure estimation: 21.48

MSE of diastole pressure estimation: 9.27

Requirements:

Python packages:

- Pandas
- Matplotlib
- Numpy
- Scipy
- Wfdb
- scikitlearn