BLOOD PRESSURE DETECTION FROM pHOTOPLETHYSMORGRAPHY (PPG) SIGNALS

**Group-III**

Efforts By:-

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Objective

The ultimate idea of the project is to develop an algorithm which allows us to predict the Blood Pressure using PPG(PHOTOPLETHYSMORGRAPHY) Signals .

Dataset

For our problem statement, we have found our dataset at kaggle :

* <https://www.kaggle.com/franckycash/cuff-blood-pressure-ppg-over-6-weeks?select=PPG-Blood+Pressure+monitoring+over+4+weeks>

MachineLearning Algorithm

*The following Machine Learning Algorithms are suited to complete the objective :-*

* *Incremental Gradient Descent :* **Gradient descent** is an optimization algorithm used to minimize some function by iteratively moving in the direction of **steepest descent** as defined by the negative of the **gradient**. In **machine learning**, we use **gradient descent** to update the parameters of our model.
* *Neural Network (Deep Learning):* Deep learning is an [artificial intelligence](https://www.investopedia.com/terms/a/artificial-intelligence-ai.asp) function that imitates the workings of the human brain in processing data and creating patterns for use in decision making. Deep learning is a subset of [machine learning](https://www.investopedia.com/terms/m/machine-learning.asp) in artificial intelligence (AI) that has networks capable of learning unsupervised from data that is unstructured or unlabelled .
* *BACKWARD PROPAGATION :* Back-propagation is the essence of neural net training. Back propagation is a short form for "backward propagation of errors." It is a standard method of training artificial neural networks. This method help

to calculate the gradient of a loss function with respects to all the weights in *the* network.

Expected Outcome

At the end of the project ,we will be able to give the analytics of the data and prove that the PPG Signals give us enough information to identify the Blood Pressure of the person .we would be giving various graphical representation to show samples of signals and how we gathered the data from it.

Application of the Project

* *Hypertension or high blood pressure is a leading cause of death throughout the world and a critical factor for increasing the risk of serious diseases including heart attack ,stroke and heart failure .So if we could measure the blood pressure beforehand we could easily prevent uncertain death and chaos.*
* *A successful app “Instant Heart Rate” from Azumio uses the cell phone camera and the flash light to measure heart rate. Similarly we could use this algorithm and implement it to analyse the PPG signals and hence report their blood pressures regularly giving them a gesture of regular treatment.*