

Technical Terms

PPG (photoplethysmography)

A non-invasive test that uses infrared light to measure blood flow near the skin's surface

01

02

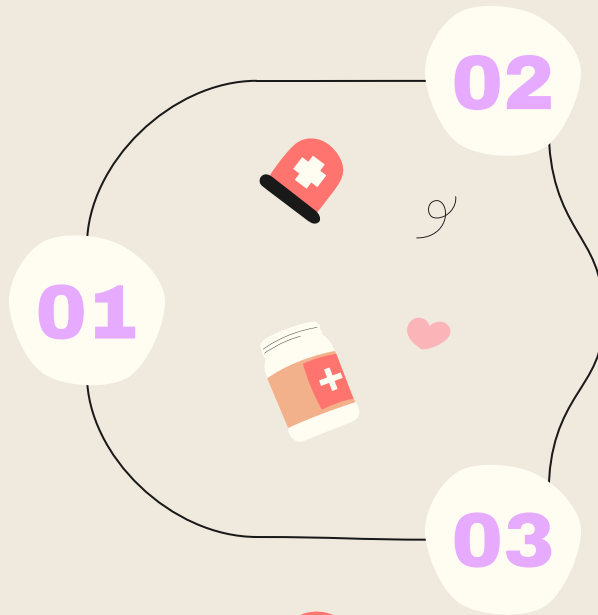
Systolic Blood Pressure

Measures the pressure your blood is pushing against your artery walls when the heart beats.

03

Diastolic Blood Pressure

Measures the pressure your blood is pushing against your artery walls while the heart muscle rests between beats.



Our Solution

01

Early Data

PPG taken by
wearable device

02

Derived Data

Blood Pressure (BP) in
terms of Systolic and
Diastolic BP

03

Analysis

Problems Identified;
AI to analyse and
devise preventive
measures

04

Response

Push advice to
reduce dangerous
symptoms through
telegram

Our Solution in Detail

Firstly, we created a model centred around PPG (Photoplethysmography), which generated data that we processed using **Feature Extraction** as opposed to **Blackbox** (By extracting, we're able to extract the actual important data instead of dumping everything blindly). The processed data is then computed by **ML Model, Hyperparameter Tuning**.

Multiple models such as Optimised LSTM and XGBoost are tested, but performance indicators such as MAE and RMSE led to our final model to be **Tuned Multilayer Perceptron (Tuned MLP)**

For the current prototype, we utilized a locally run DeepSeek model, specifically the **DeepSeek-r1-8B**, which represents the AI response that will give preventive measures and actionables to the user based on the data generated on our trained model.

This AI, tied to a telegram bot **@HealthyHappyHeart_bot** would then be completely accessible to the wearer to both generate data desired by the user (Blood Pressure readings for a specific time span), or to give advices on **preventive measures** based on the BP readings.

Chatbot able to create a summary of the data processed from the model so that the patient can understand and act accordingly to the data processed. By using localized deepseek model to interpret it, it offer the upmost privacy for every user.

Our Strength

01

Feasible

Our solution uses the same methodology employed by mainstream, established companies

02

Accessible

ChatBot integrated into common social media used on the daily

03

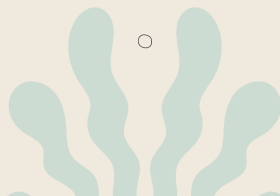
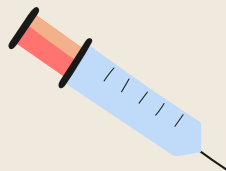
Coverage

By utilising multiple data source, gain multiple labels to give deeper insights

04

Relevant

Addressing a very real issue of healthcare centered around BP



Current Market

1. Apple Watch & Apple Health
 - Monitoring heart rate
 - Checking atrial fibrillation
 - Detecting falls and car crashes
 - Monitoring blood-oxygen levels
 - Tracking body temperature for fertility planning.
2. Abbott Lingo/ Dexcom Stelo
 - Purely Diabetes (and therefore Blood Glucose Levels) monitoring
3. Oura Ring
 - Basal body temperatures (BBT) tracking, Daytime Stress levels monitoring.

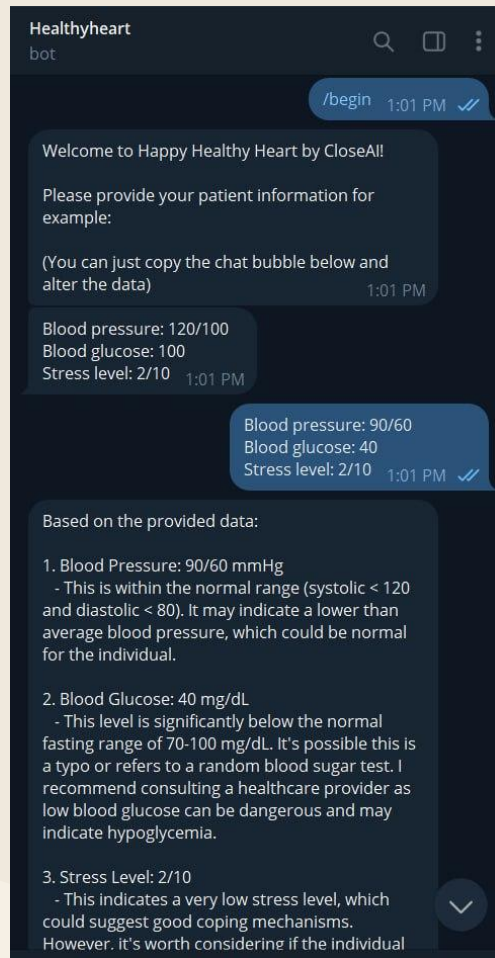


Value Proposition

- 1. AI-based approach**
Powered by AI models, which has an edge over most of current traditional devices
- 2. Two-way communication**
By having database which stores data from the patient, accessible to them and health practitioners, and at the same time enabling health practitioners to upload personal data taken by external wearable devices
- 3. Non-invasive measures**
Our wearable device didn't use any needles in its operation
- 4. Accessibility**
Our AI can be accessed through Telegram, amplifying its accessibility; eliminating the need to possess physical interface device such as Apple Watch



Telegram User Interface



References

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