

HealthCal

A SMART APP FOR DISEASE PREDICTION

Motivation

- Limited access to healthcare makes it difficult to individuals to predict risks and take precautions.
- High healthcare costs prevents people from routine checkup for common threats.
- Lack of awareness leads to neglecting health condition until people experience symptoms of serious health problem.



Why HealthCal?

- To provide risk assessments and prediction for a range of health condition
- To help users better understand their health
- To reduce healthcare costs by early detection

**Now let's dive deeper into how HealthCal
actually works!**

Data Collection

We collected the datasets from kaggle.

*** Diabetes Prediction:** ~1000 Data with nine columns.

*** Heart attack risk prediction:** ~500 Data with fourteen columns.

*** Stroke risk prediction:** ~5000 Data with six columns.

*** Maternal health risk prediction:** ~1000 Data with six columns

Data Preprocessing

Steps used for data pre-processing :

- * **Data Exploration**
- * **Data Cleaning**
- * **Handling Missing Values and Outliers**
- * **Encoding Categorical Variables**
- * **Data Transformation**
- * **Feature Selection**
- * **Data Splitting**
- * **Data Normalization**

MODELS USED

We tried multiple models for each section and choose the best one based on performance.

★ **Diabetes Prediction:** MLPClassifier - A Neural Network based model that provided ~80% accuracy.

★ **Heart attack risk prediction:** Support Vector Classification (SVC) - a type of supervised learning algorithm that is based on the concept of finding the best decision boundary to separate data points that ensured 85% accuracy.

★ **Stroke risk prediction:** Gaussian Naive Bayes model- A probabilistic approach for classification providing 88% accuracy.

★ **Maternal health risk prediction:** Random Forest - A decision tree based model that provided 78% accuracy in our dataset.

Technologies

— — —

- **Python**
- **JavaScript**
- **CSS**
- **HTML**
- **Flask**

HealthCal in a nutshell

Health Cal

A STEP TOWARDS HEALTHIER TOMORROW

[More Info](#)



Calculate

Heart Attack Risk

Stroke Risk

Diabetes Risk

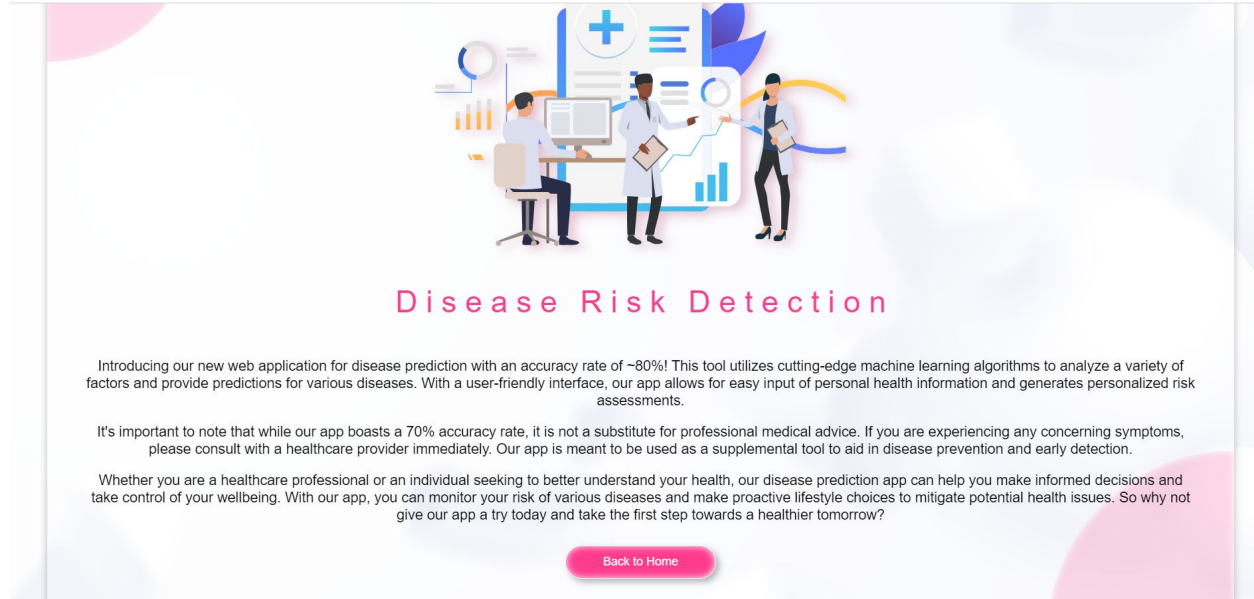
Maternal Risk

Landing Page of HealthCal

Landing page of HealthCal

- Introduction on HealthCal
- Navigation system to know more page
- Routing to separate disease prediction page

Learn more page of HealthCal



- A short overview on our app

Heart Risk Prediction



Heart Risk Detection

Age

Sex:

- ☒ Female
☐ Male

Chest Pain Type

- ☒ Typical Angina
☐ Atypical Angina
☐ Non Anginal Pain
☐ No Pain

Resting Blood Pressure (Systolic)

120

Serum Cholesterol (mg/dl)

120

Fasting Blood Sugar

- ☒ <120
☐ otherwise

Resting Electrocardiographic Results

- ☒ Normal
☐ Abnormal S-T graph
☐ Hypertrophy

Maximum Heart Rate

72

Do you face angina after exercise?

- ☒ Yes
☐ No

Back

submit data

Stroke Risk Prediction



Stroke Risk Detection

Gender

- ☒ Female
☐ Male

Age

Do you have hypertension?

- ☒ Yes
☐ No

Do you have heart disease?

- ☒ Yes
☐ No

Are you married?

- ☒ Yes
☐ No

Work type

- ☒ Children
☐ Govt. Job
☐ Private Job
☐ Self Employed

Residence type:

- ☒ Urban
☐ Rural

Glucose (Plasma glucose concentration after 2 hours in an OGTT test):

120

BMI

Smoking Status:

- ☒ Formerly smoked
☐ Never
☐ Smoker

submit data

Diabetes Risk Prediction



Diabetes Risk Detection

Glucose (Plasma glucose concentration after 2 hours in an OGTT test):



Diastolic Blood Pressure (mm Hg):



Skin Thickness

100

18

Insulin

15

Sex

32

Age


67

Back

submit data

OH NO! YOU HAVE HIGHER RISK OF DIABETES

Maternal Health Risk Prediction



Maternal Risk Detection

Age
25

Systolic Blood Pressure (mm Hg):
120

Diastolic Blood Pressure (mm Hg):
77

Systolic Blood Pressure (mm Hg):
120

Diastolic Blood Pressure (mm Hg):
77

Blood glucose level (mmol/L)
4

Body Temperature (Celsius/Fahrenheit)
98

Normal Heart Rate
72

[Back](#) [submit data](#)

YEEE! YOU HAVE LOWER RISK OF MATERNAL COMPLICATIONS

Use Cases

Some use cases of HealthCal includes :

- * **Early detection of diseases**
- * **Remote disease diagnosis**
- * **Pre-diabetes detection**
- * **Health equity**
- * **Health tracking**

Impacts

HealthCal can impact the society in many positive ways, including :

- ★ **Reduced health-care costs**
- ★ **Improved patient outcomes**
- ★ **Health education**
- ★ **Improved public health**
- ★ **Public health monitoring**

Thank You

Samia Preity - 2018331008

Nasrullah Sami - 2018331036

Hrithik Majumdar Shibu - 2018331052

Mahir Mosleh - 2018331064

Rafiqul Ala Mahid - 2018331092