



Empowering Heart Health with Tech: Introducing the Hearty App

by NutriComm:

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Beat Strong, Eat Bold.



Agenda

1. Social Problem & Innovative Tech Solution
2. Project Development
3. Application Functionalities



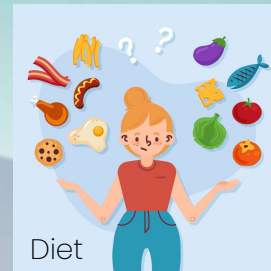
Social Problem & Innovative Tech Solution

Social Problem

Addressing the Heart of the Matter: Combatting CVD with Diet and Informative Resources

- **CVD Impact:** Leading cause of death in the US, with one in four deaths annually and great impact on health costs, highlighting the need for heart-healthy habits.

Cardiovascular health



Social challenge



**Integrate
personalized, heart-
healthy diet choices
into daily life**

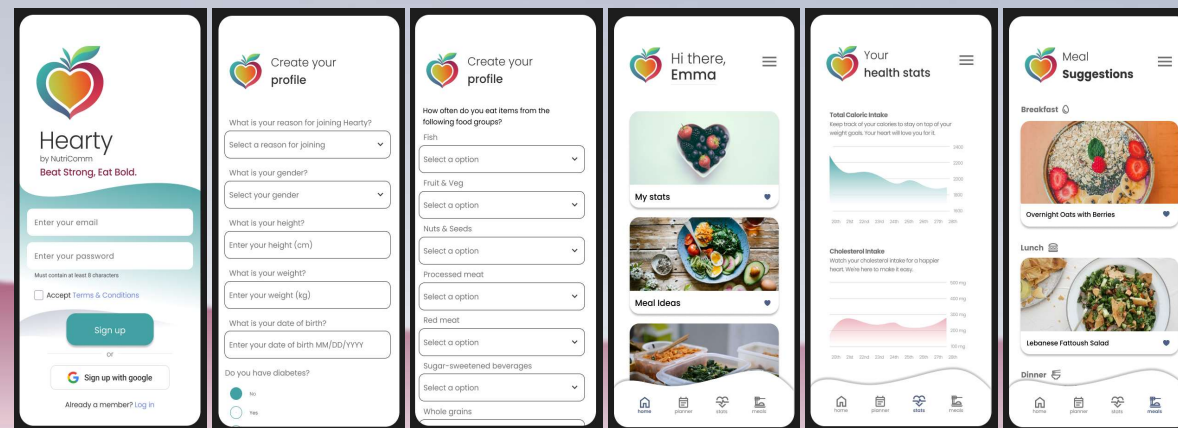




Innovative Tech Solution

Hearty app provides personalized heart health management based on individual parameters using machine learning.

- **Risk Assessment:** Identifies risk factors using health data for customized advice
- **Customized Nutrition:** Tailors dietary advice to user preferences for easy heart health
- **Actionable Tips:** Provides steps for transitioning to a heart-healthy lifestyle
- **Adaptive Learning:** Offers evolving insights based on user interaction and data





Hearty by NutriComm:


A Tech4Good Innovation in Heart Health

Transforming Cardiovascular Wellness through Technology

Hearty's Tech4Good Approach: Hearty by NutriComm leverages technology to democratize cardiovascular health management, offering personalized, accessible guidance to reduce heart disease globally. Through machine learning, it promotes preventative health, supports holistic well-being, and encourages sustainable habits, embodying Tech4Good's mission to improve life quality and sustainability in healthcare.



Project Development



Utilizing NHANES Data for Tailored Heart Health

Powering the Hearty App with Comprehensive Health Insights

- **NHANES Overview:** Essential resource for U.S. health and nutritional data, combining interviews and physical exams for a multi-dimensional dataset.
- **Hearty App Integration:** Employs NHANES's extensive cardiovascular and dietary data to inform AI models for personalized CVD risk assessment and nutrition advice.
- **Supervised Machine Learning:** Utilizes Logistic Regression and Neural Networks to analyze NHANES patterns for CVD risk evaluation and custom dietary recommendations.
- **Impact on Health:** Informs app development with empirical data, guiding individualized heart health management.



Defining Variables for CVD Risk Assessment

Selecting Key Input and Output Variables for Hearty's Predictive Models

- **Dietary Inputs:** Daily intake of key food groups and nutrients measured to reflect eating habits.
- **Demographic Factors:** Age, gender, ethnicity, education, income, and marital status included for comprehensive risk profiling.
- **Examination Data:** Blood pressure and BMI as clinical predictors of cardiovascular health.
- **Laboratory Parameters:** Lipid profile, including HDL, LDL, total cholesterol, and triglycerides.
- **Cardiovascular Disease Definition:** Based on personal medical history of heart-related conditions, with binary labeling for disease presence.



Application Functionalities



Front-End Functionality Video



Hearty

by NutriComm

Beat Strong, Eat Bold.

Enter your email


Enter your password

Must contain at least 8 characters

☐ Accept [Terms & Conditions](#)

Sign up

or

 Sign up with google

Already a member? [Log in](#)



Back-End Functionality Video

```
# Accessing the probability of Class 1 for the mock user sample and explaining it
predicted_prob_numeric = float(mock_prob_lr[0][1])
print("\nYour estimated risk of cardiovascular disease by Logistic Regression Model is:", np.round(predicted_prob_numeric, 2))

# For the Neural Network Model prediction
# Accessing the probability of the positive class for the mock user sample and explaining it
prob_pos_class_nn = mock_prob_nn_CVD[0][0] # Assuming there's only one output for the probability of Class 1
if prob_pos_class_nn >= 0.5:
    prediction_message_nn = "High risk of cardiovascular disease"
else:
    prediction_message_nn = "Low risk of cardiovascular disease"
print("\nRisk assessment by Neural Network Model:", prediction_message_nn)
print("\nYour estimated risk of cardiovascular disease by Neural Network Model is:", np.round(prob_pos_class_nn * 100, 2), "%")
```

```
2 11.152 22.7145 12.8855 113.5 44.0 5.0 4.0 1.0
3 11.152 22.7145 12.8855 113.5 44.0 5.0 4.0 1.0
4 11.152 22.7145 12.8855 113.5 44.0 5.0 4.0 1.0
```

```
DMDMARTL INDHHIN2 SBP DBP BMXBMI LBDHDD LBXTR LBDLDL LBXTC
0 4.0 50000.0 122.0 7.06 25.249338 42.0 116.0 56.0 121.0
1 4.0 50000.0 122.0 7.06 25.249338 42.0 116.0 56.0 121.0
2 4.0 50000.0 122.0 7.06 25.249338 42.0 116.0 56.0 121.0
3 4.0 50000.0 122.0 7.06 25.249338 42.0 116.0 56.0 121.0
4 4.0 50000.0 122.0 7.06 25.249338 42.0 116.0 56.0 121.0
```

```
1/1 [=====] - 0s 21ms/step
```

Risk assessment by Logistic Regression Model: Low risk of cardiovascular disease

Your estimated risk of cardiovascular disease by Logistic Regression Model is: 0.0 %

Risk assessment by Neural Network Model: Low risk of cardiovascular disease

Your estimated risk of cardiovascular disease by Neural Network Model is: 12.34 %

In []:



Until next heartbeat!

May your health and our Hearty App sync
in perfect harmony.

