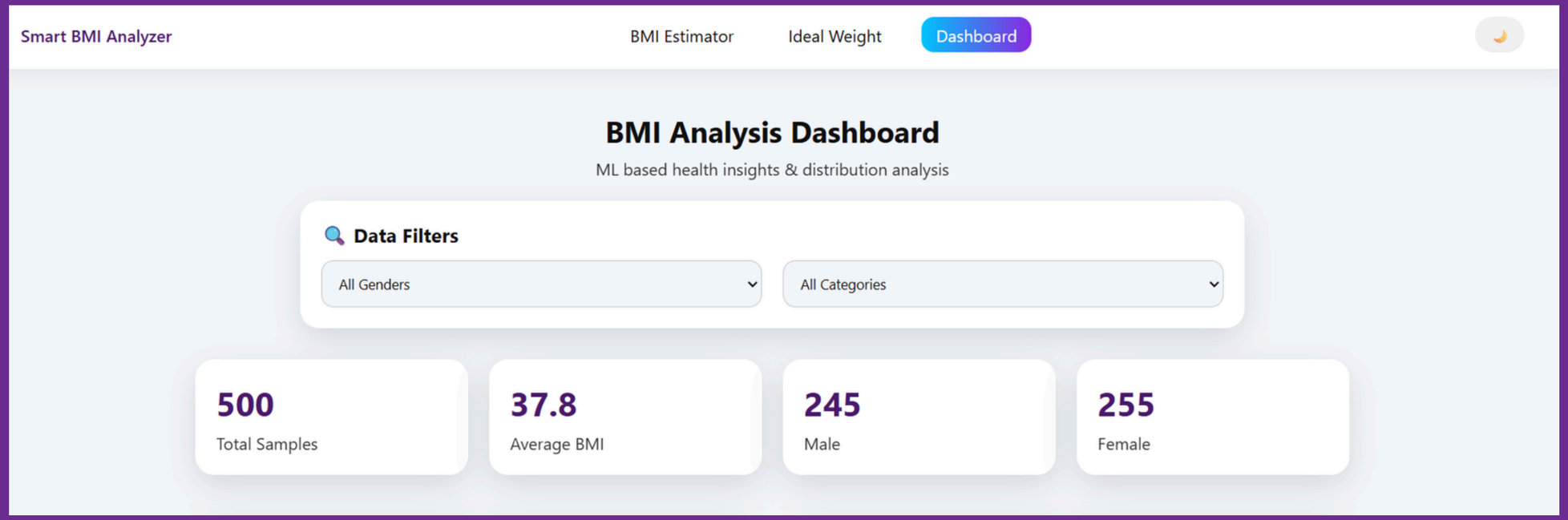
Naviotech
SOLUTION PVT LTD

Estimate the BMI

Machine Learning & Data Visualization Based System

Tamanna Shahid Ashfaq Shaikh,
Naviotech Solutions

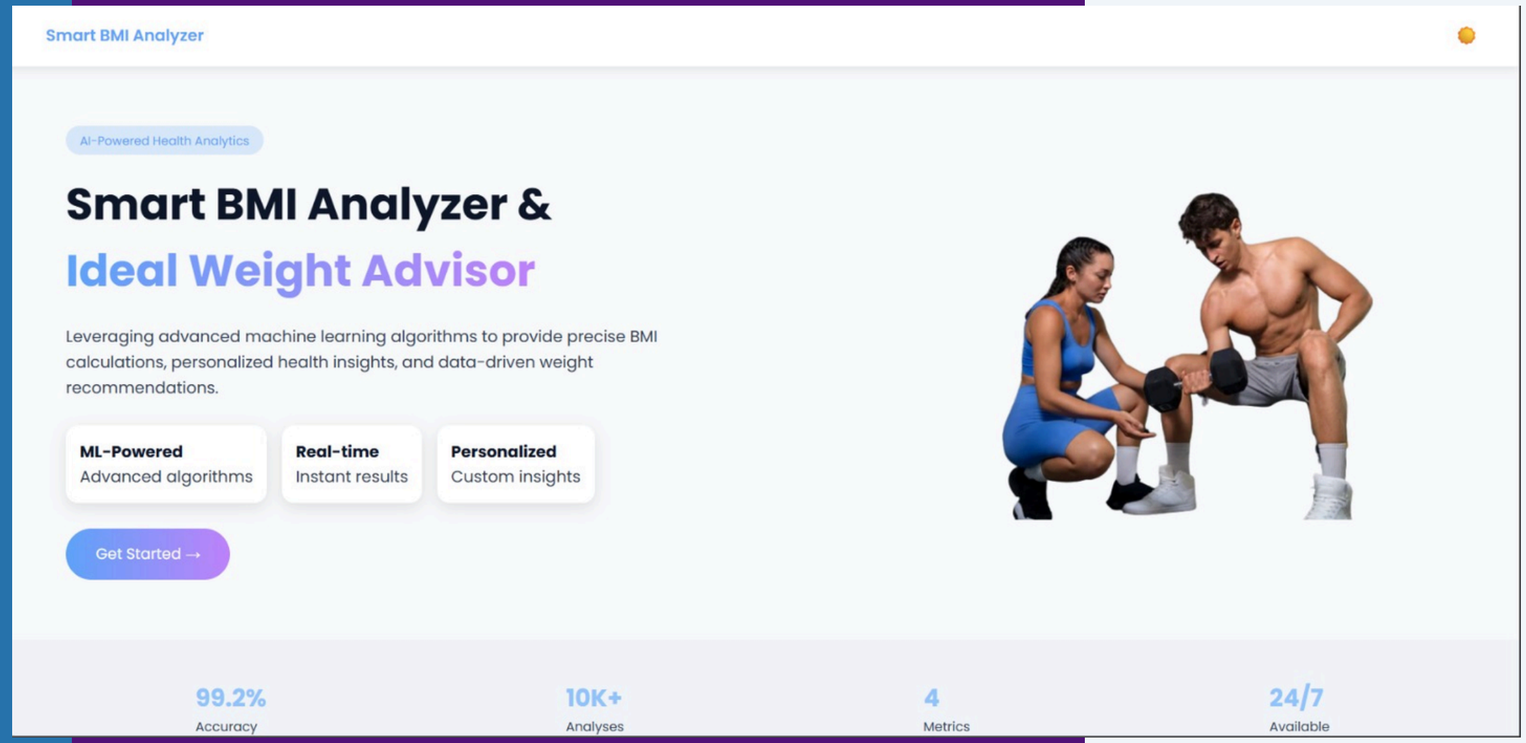


Naviotech
SOLUTION PVT LTD

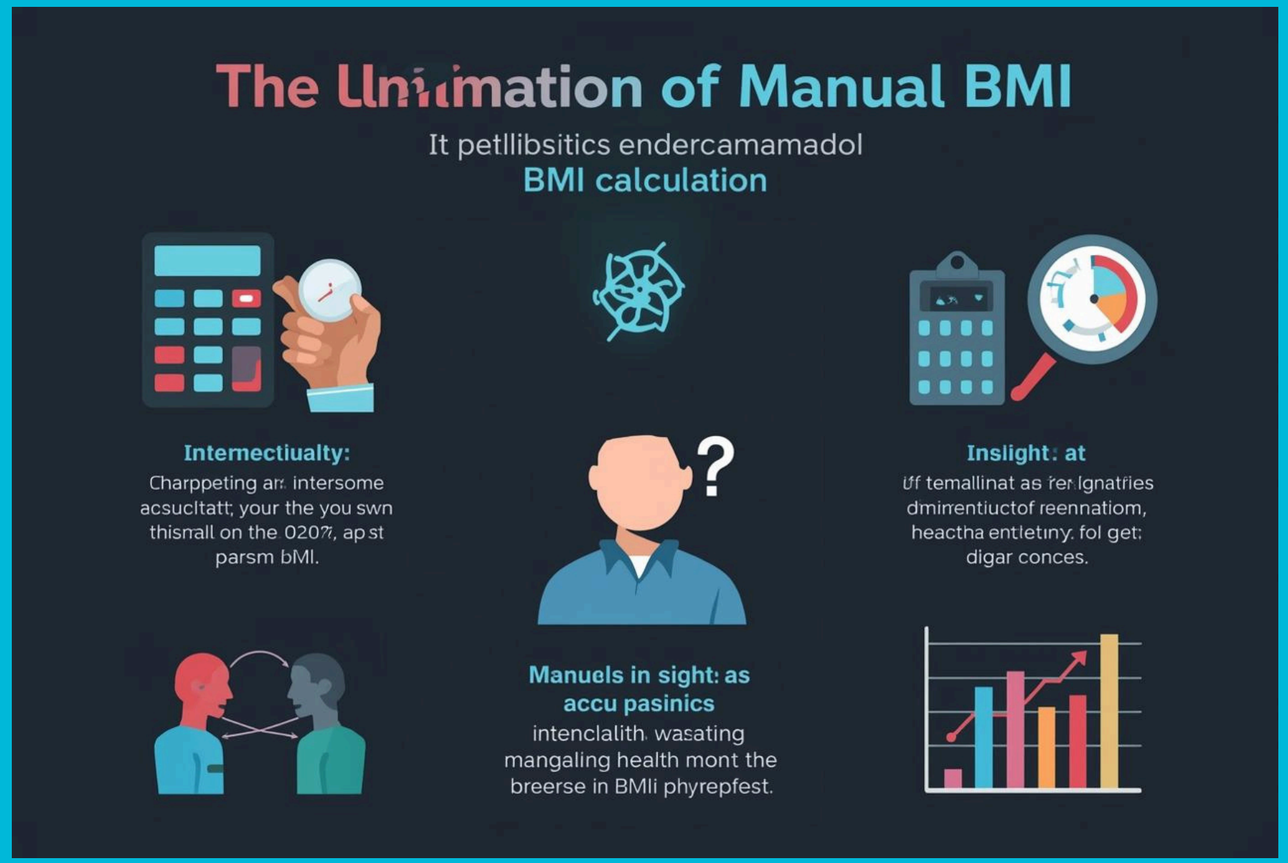
Introduction to BMI

Understanding Body Mass Index and its significance in healthcare

BMI is a key metric for assessing health and obesity risks.



Naviotech
SOLUTION PVT LTD



Problem Statement

01 Lacks Interactivity

Manual BMI calculation does not allow users to interact or explore their data dynamically, limiting insights.

02 No Visual Understanding

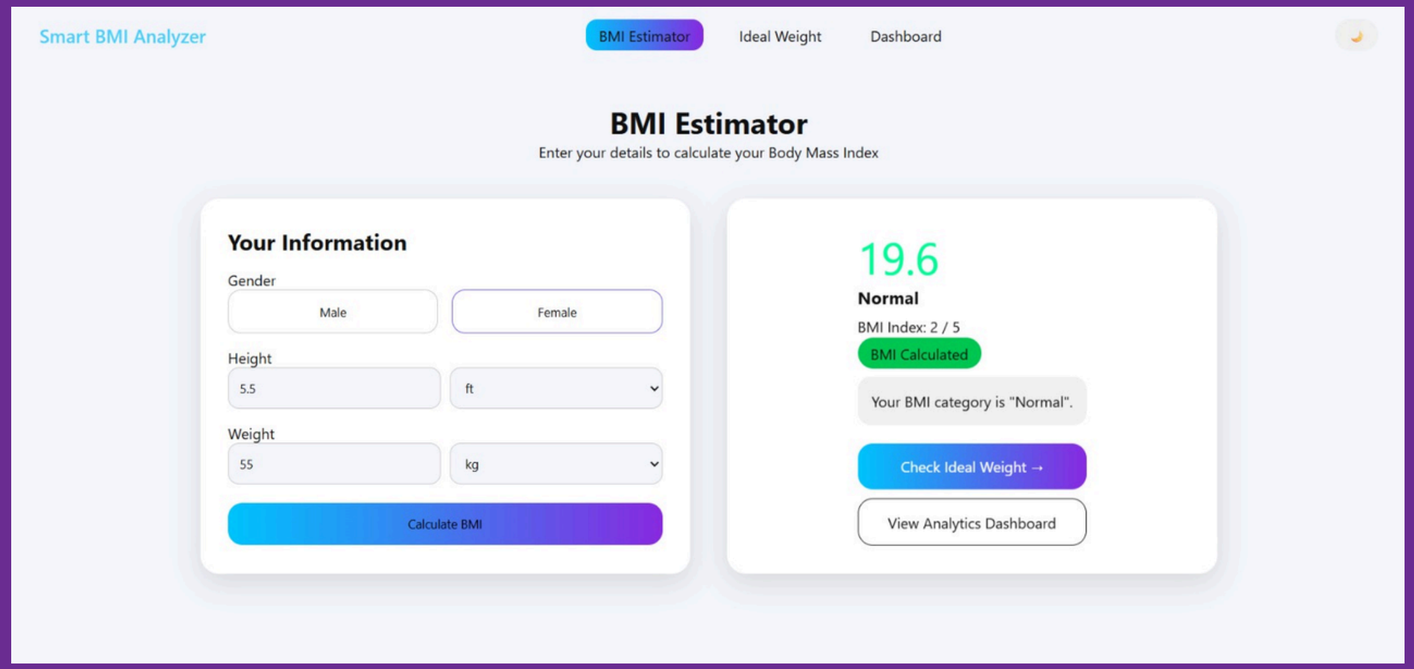
Traditional methods fail to provide visual representations of BMI categories, making it difficult for users to interpret results.

03 Intelligent Visual System

There is a need for an intuitive, user-friendly system that presents BMI data visually for better decision-making.

Naviotech
SOLUTION PVT LTD

Project Objectives



01 Estimate BMI

Accurately calculate BMI using user-provided height, weight, and gender data for personalized health insights.

02 Classify BMI

Categorize BMI results into health classifications, such as underweight, normal, overweight, and obese for easy understanding.

03 Provide Visual Insights

Generate interactive charts and dashboards to enhance the user's comprehension of BMI data and trends.

Naviotech
SOLUTION PVT LTD

Data Attributes

Collect attributes: Gender, Height, Weight, and BMI data.

Data Cleaning

Remove duplicates and handle missing values effectively.

Data Transformation

Convert dataset into JSON format for frontend integration.

Data Validation

Ensure dataset accuracy and integrity before use.

Naviotech
SOLUTION PVT LTD

Model Selection

Choose appropriate machine learning model for BMI prediction.

Feature Selection

Identify key features: height, weight, and gender data.

Model Training

Train model using labeled dataset for accurate predictions.

Prediction Output

Generate and evaluate BMI predictions based on input data.

Naviotech
SOLUTION PVT LTD

ML Notebook

Develop and train the model using Python libraries.

Backend API

Implement Flask to serve model predictions efficiently.

JSON Data

Format processed data for seamless frontend integration.

Frontend Dashboard

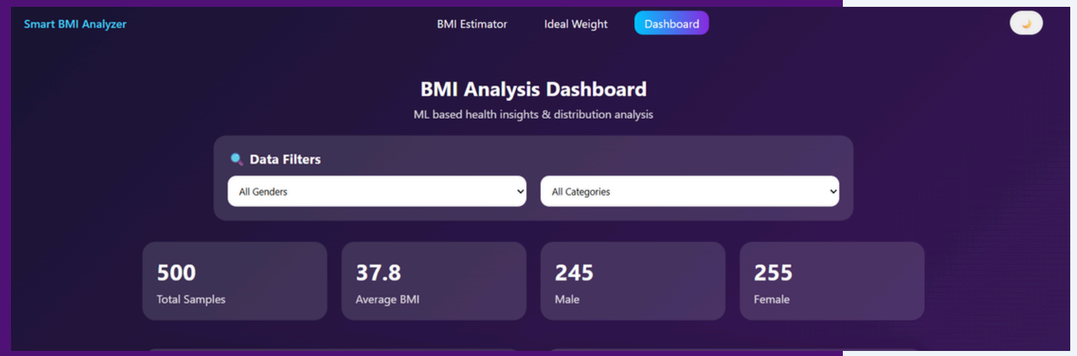
Create interactive UI for user-friendly BMI analysis.

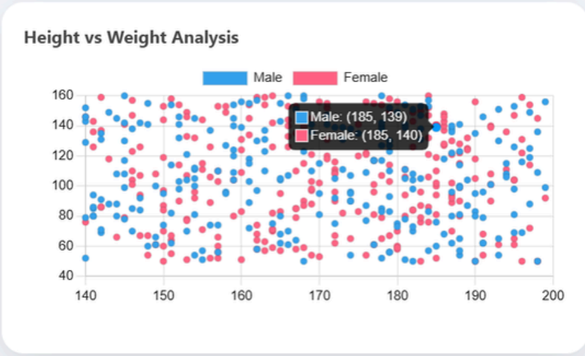
Naviotech
SOLUTION PVT LTD

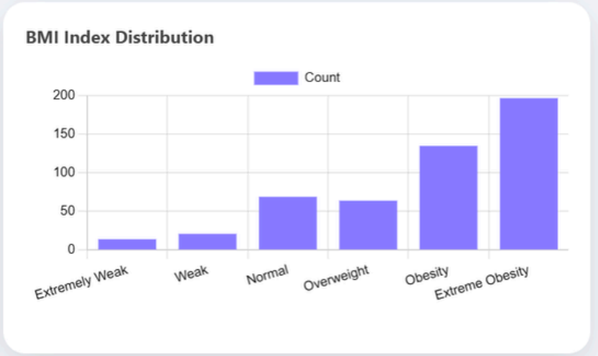
Dashboard Overview

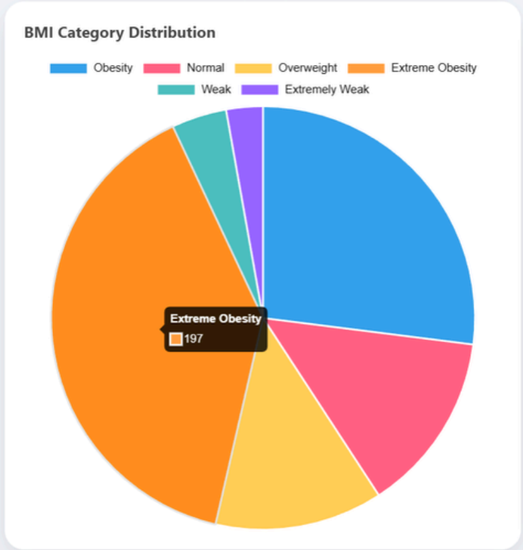
Explore the interactive BMI analysis web-based interface features

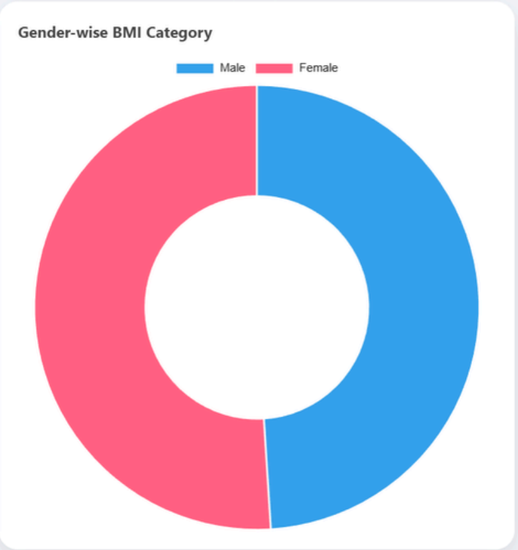
The dashboard allows users to filter data by gender and BMI category.





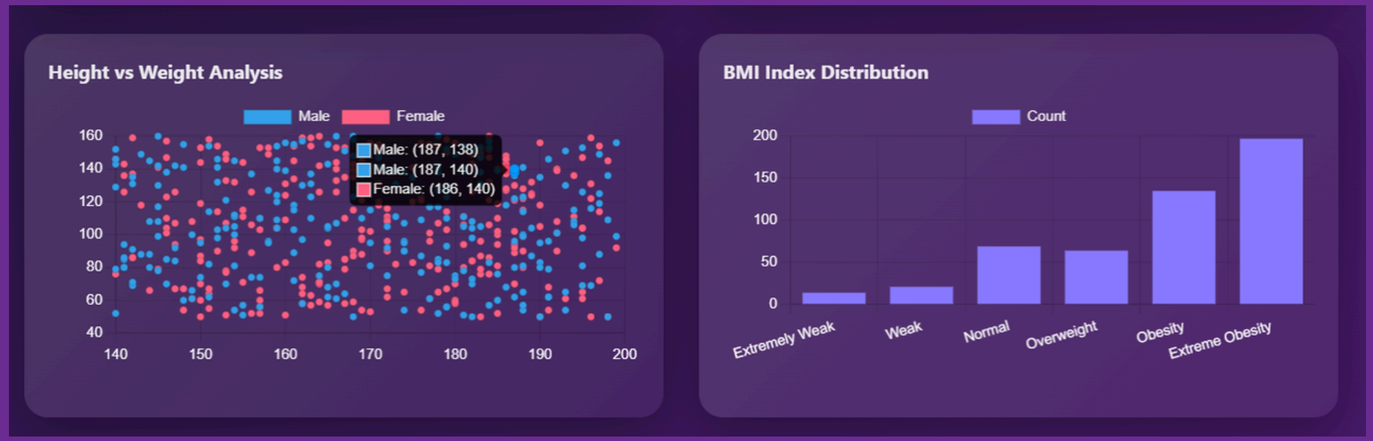






Naviotech
SOLUTION PVT LTD

Data Visualization Insights



01 BMI Category Distribution

A pie chart visualizes the **distribution of BMI categories**, providing intuitive insights into population health metrics.

02 Gender-wise Analysis

A bar graph illustrates the **BMI comparisons** between genders, highlighting trends and differences in body mass indices.

03 BMI Index Distribution

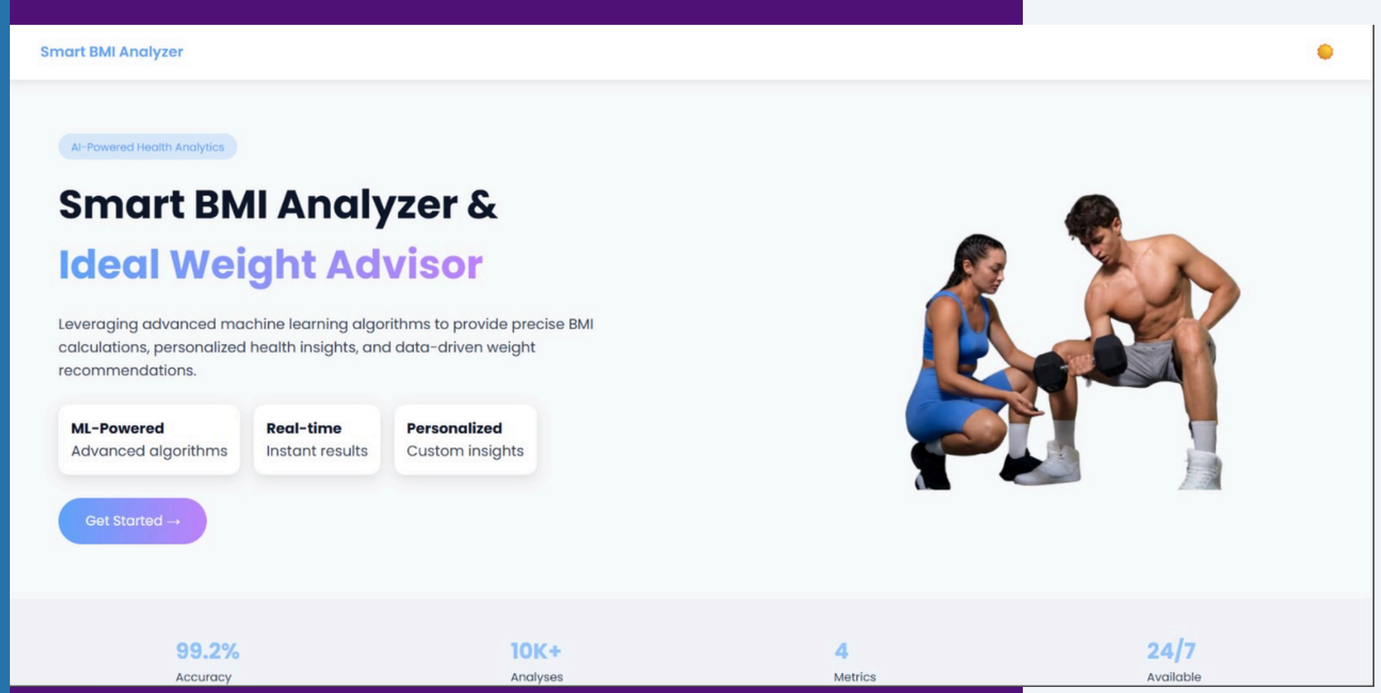
A histogram presents the **BMI index distribution**, effectively showcasing the range and frequency of BMI values within the dataset.

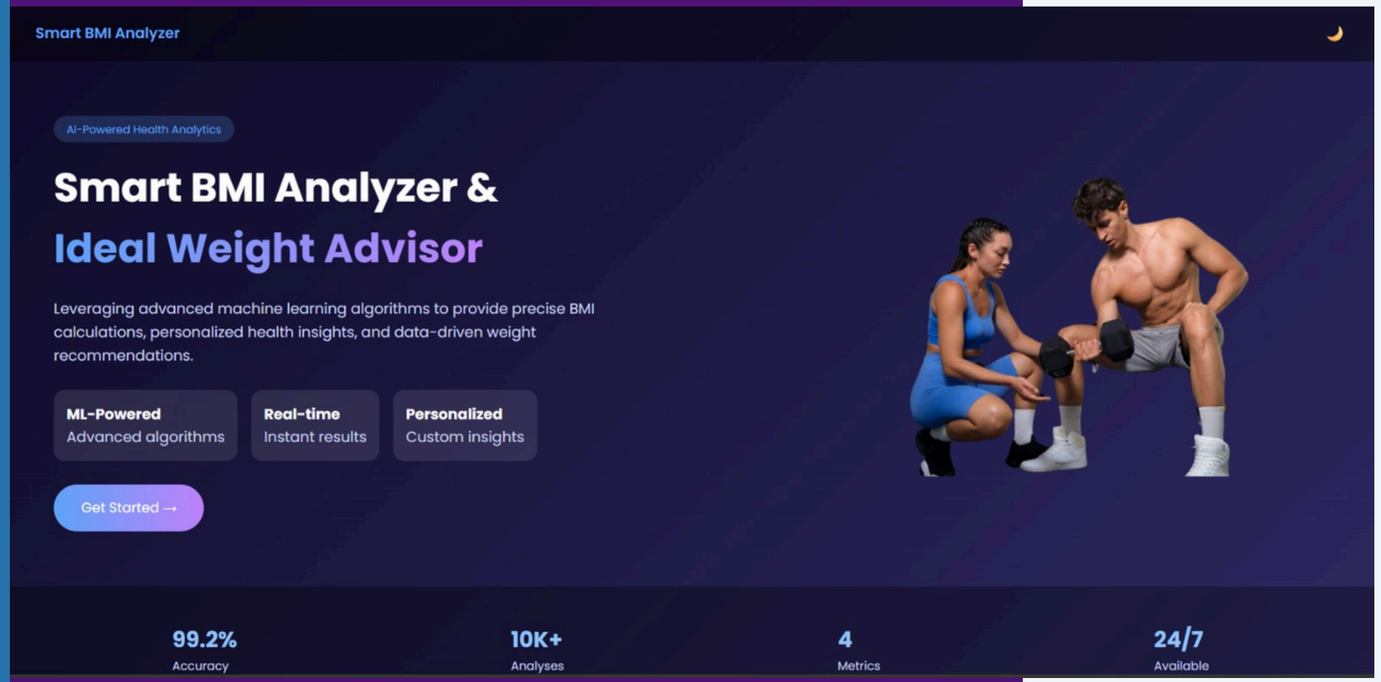
Naviotech
SOLUTION PVT LTD

UI & UX Design

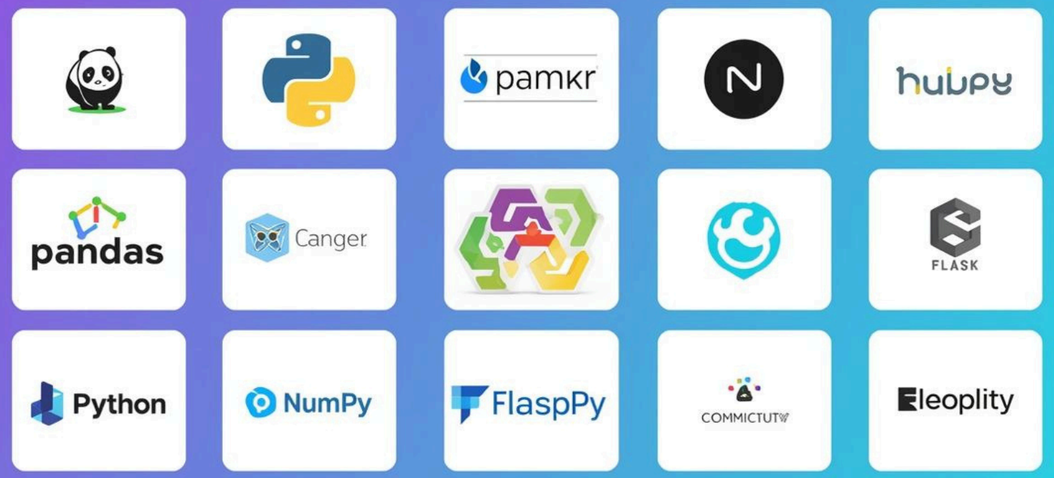
Principles and features for an engaging user experience in our dashboard

The dashboard incorporates **dark and light modes** for user preference and accessibility.





Tools & Technologies



01 Python Programming

Python is the primary programming language for machine learning and data analysis due to its simplicity and versatility.

02 Data Libraries

Libraries like Pandas and NumPy provide essential tools for data manipulation, analysis, and numerical computations.

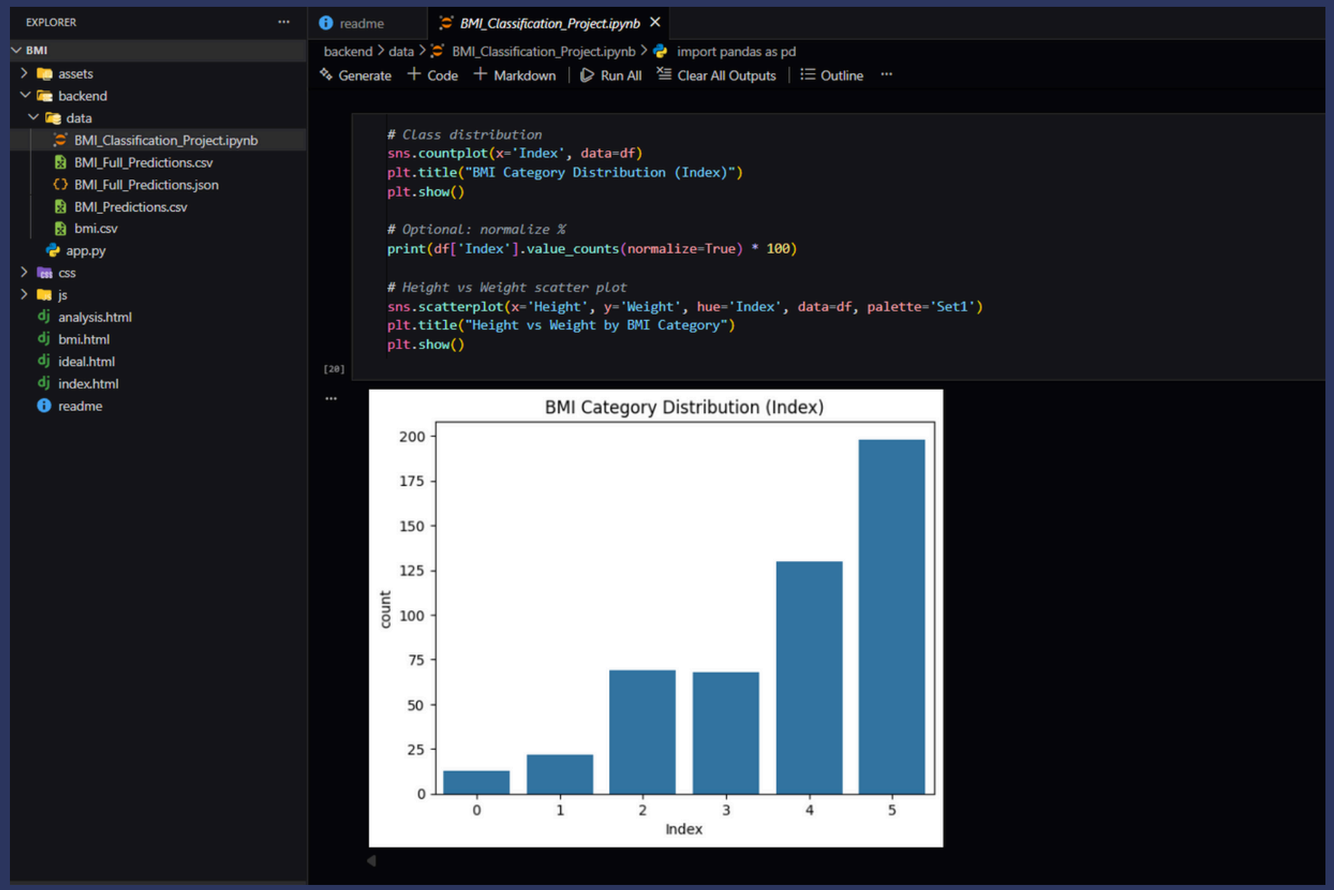
03 Web Framework

Flask is used as the backend framework to create a robust API, enabling seamless data interaction with the frontend.

Naviotech
SOLUTION PVT LTD

Conclusion

This project estimates Body Mass Index (BMI) using Gender, Height, and Weight by applying Machine Learning and Data Visualization techniques. An interactive dashboard was developed to visualize BMI categories, gender-wise distribution, and health insights in an easy-to-understand format.
The project demonstrates the practical use of ML models, data preprocessing, and visual analytics to build a user-friendly and professional healthcare analysis system.



Naviotech
SOLUTION PVT LTD

Thank you