Team 3

BLOOD GROUP IDENTIFICATION

Introduction

Blood group identification is a crucial aspect of medical science. It involves determining the specific antigens present on red blood cells. This process is vital for safe blood transfusions and medical procedures.

Defination

Blood groups are classifications of blood based on the presence or absence of inherited antigens.

Importance

Understanding blood groups is crucial for safe transfusions and avoiding immune reactions.

Discovery

Karl Landsteiner discovered the ABO blood group system in 1901, revolutionizing transfusion medicine.

Introduction

- The process of blood group identification using blood cell images.
- It eliminates manual testing errors, ensures faster results.
- Users upload images of blood cells to the app, and the system analyzes these images to identify the blood group, displaying results along with annotated visuals.
- The Blood Identification Web App is an innovative tool designed to streamline and enhance the process of identifying blood types.

Project Overview

CUSTOMER FEATURES

- **CREATE** A NEW USER TO ACCESS THE APPLICATION.
- **LOGIN** WITH USERNAME AND PASSWORD.
- **INPUT PAGE** UPLOADS OUR BLOOD IMAGE.
- **OUTPUT PAGE** DISPLAYS BLOOD GROUP RESULT.

MILESTONES

1

The system allows user to register,login and verify email addresses,with password reset functionality and security measures to protect the user data.Includes navigation options (Home, about us,contact us).New users can sign up by providing details like email, name, and password.Passwords are securely encrypted.
Users authenticate with their registered credentials.
Includes "forgot password" functionality.

MILESTONES

2

The number of contours detected in an image can be a feature that can be used in applications like medical image analysis, pattern recognition in computer vision tasks.
Grayscale Conversion: Simplifies image data by reducing color channels.
Noise Reduction: Filters out irrelevant artifacts from images.
Edge Detection: Highlights features like cell membranes and antigens.

MILESTONES

3

Connecting the UI part to the OpenCV code. The blood cell image uploaded through the profile page needs to reach the OpenCV code for the blood type to be identified. OpenCV's image processing capabilities allow for the detection of characteristic patterns in blood cells, facilitating precise classification of blood groups and Rh factors.

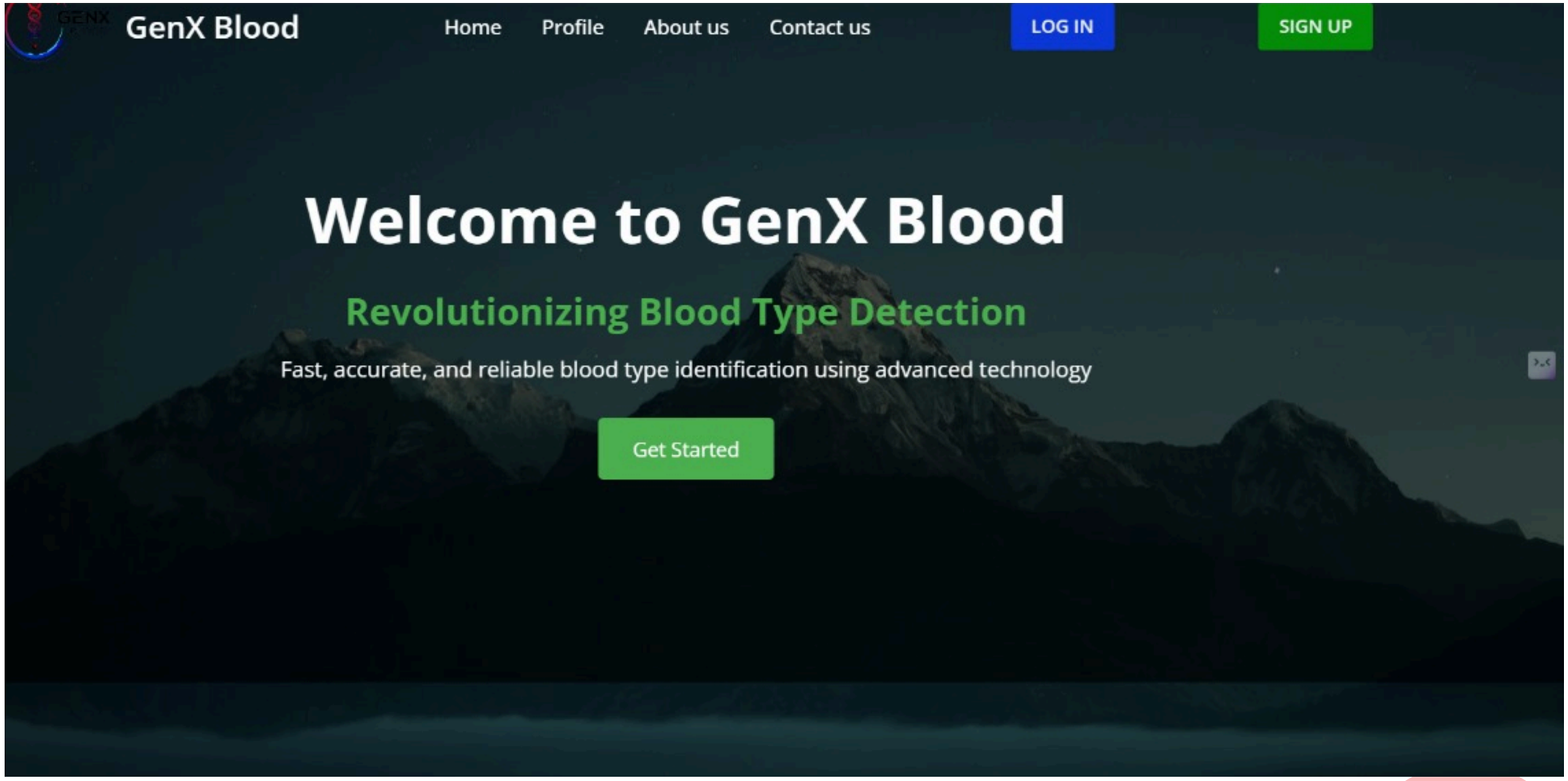
MILESTONES

4

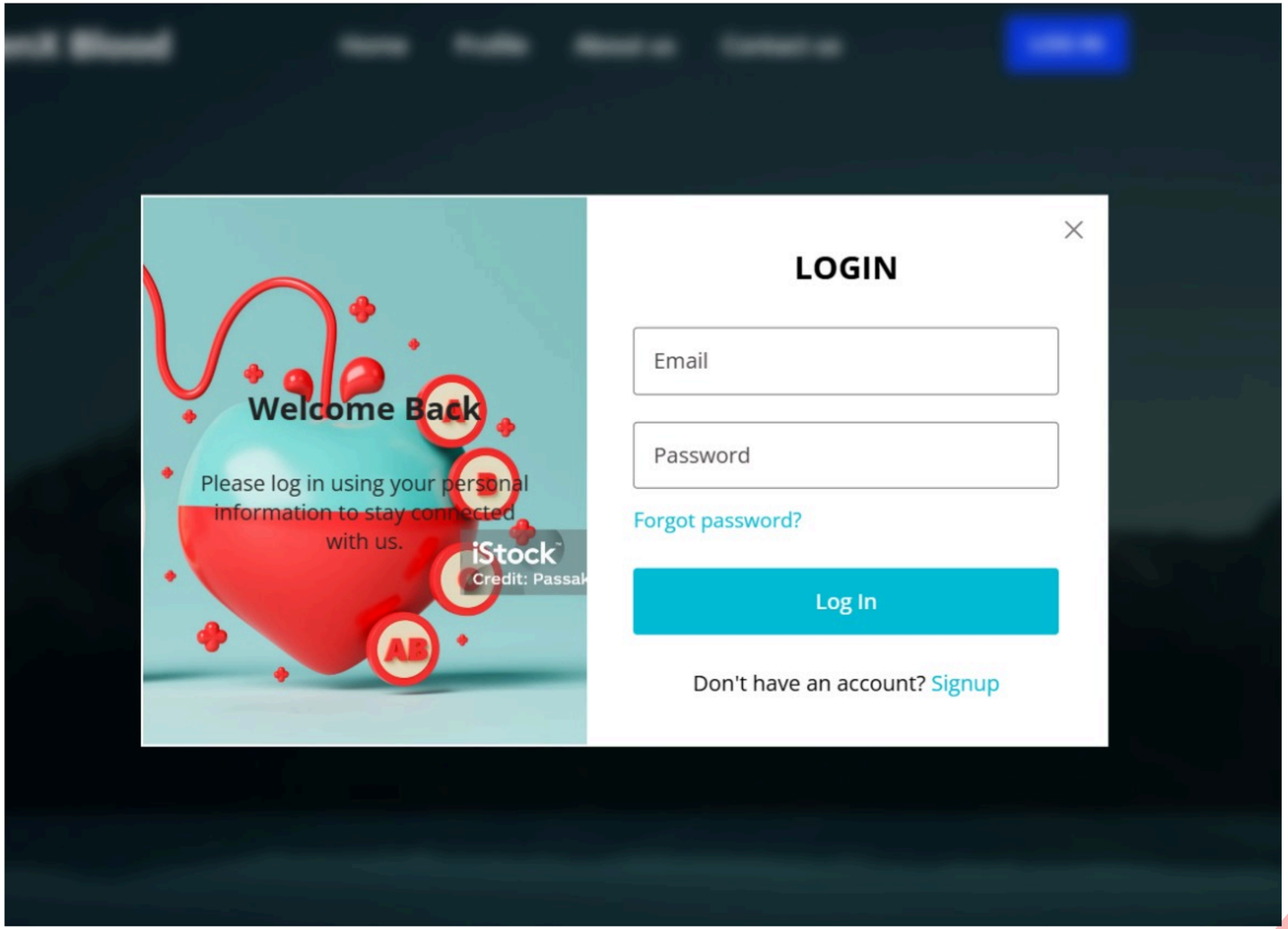
Morphological analysis:

The image morphological patterns were analysed to obtain the identification blood group by capturing its microstructure.Morphology is a comprehensive set of image processing operations that process images based on shapes. Morphological operations apply a structuring element to an input image, creating an output image of the same size.

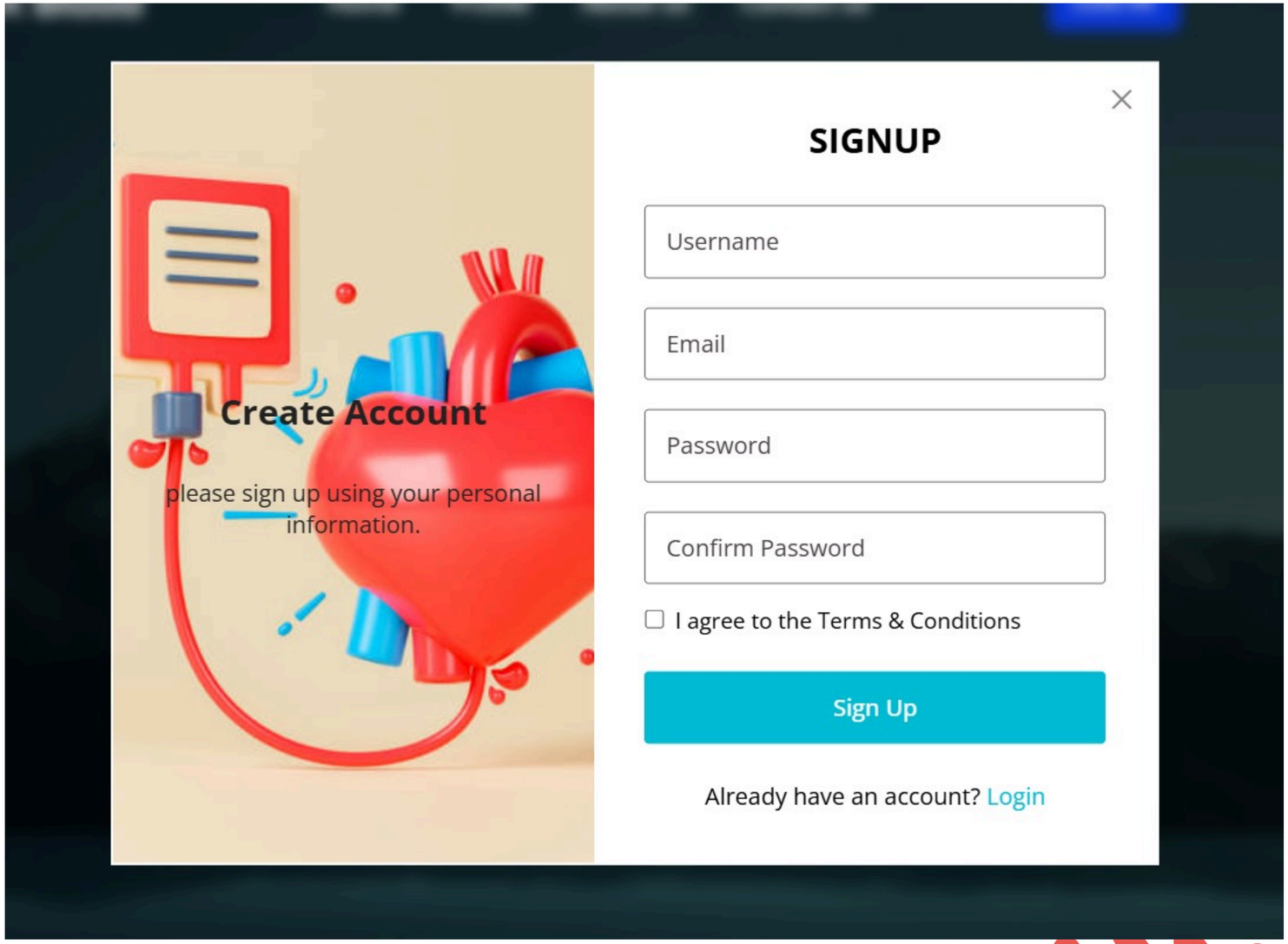
HOME PAGE SCREENSHOT



LOGIN PAGE SCREENSHOT

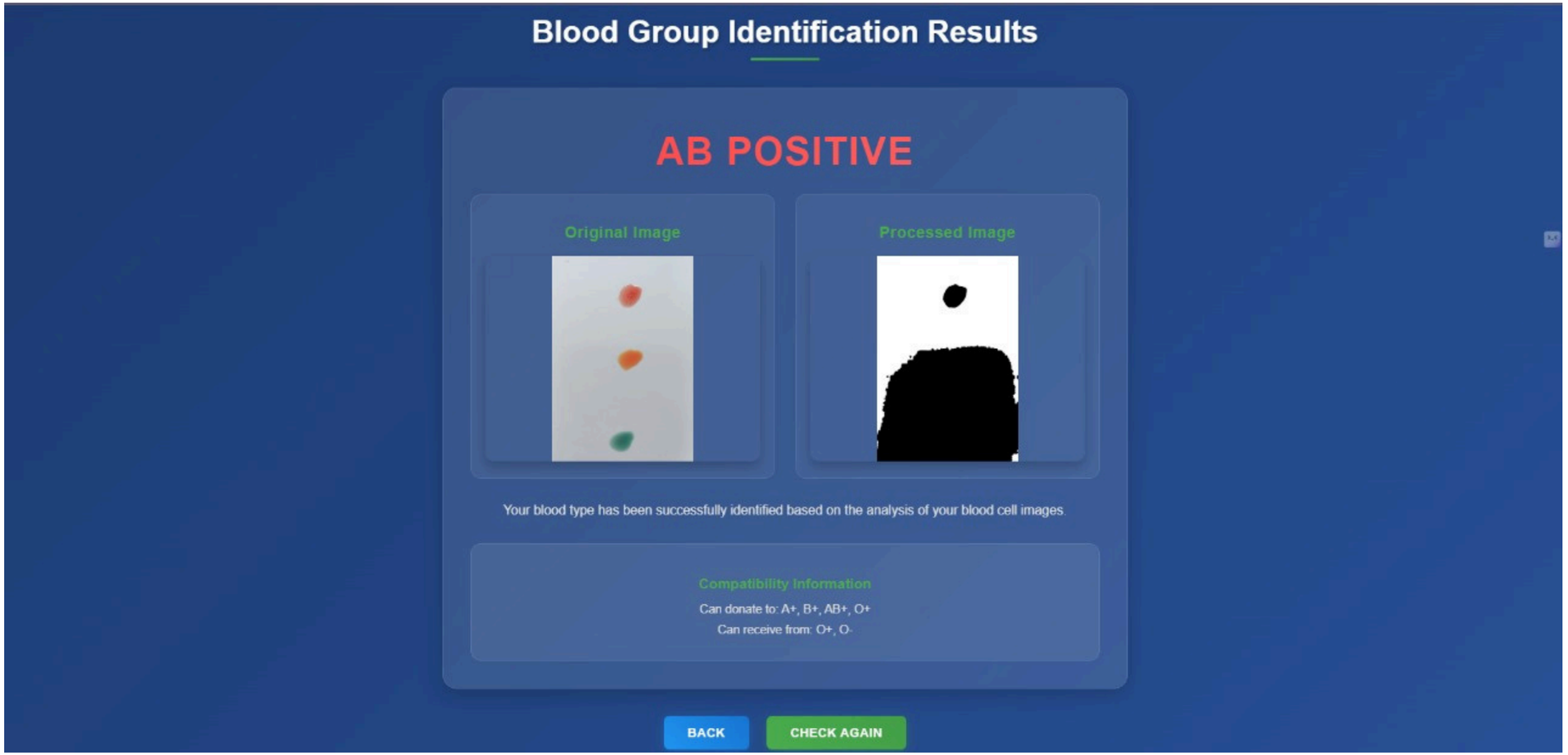


REGISTRATION PAGE SCREENSHOT



Profile page screenshot

Profile page screenshot with results



Technical Components

- **Frontend:**

  Technology Stack:

  - HTML/CSS: Built static and interactive pages.

- **Feature:**

  Designed forms for registration and login.

Technical Components

- **Backend:**

  Technology Stack:

  - Python (Django): Managed server-side operations and API integration.

- **Feature:**

  User authentication and session management.

Technical Components

- **Image Preprocessing:**

  Library Used: OpenCV,Marphological Analysis.

- **Steps:**

  Grayscale Conversion: Simplifies image data by reducing color channels.

  Noise Reduction: Filters out irrelevant artifacts from images.

  Edge Detection: Highlights features like cell membranes and antigens.

LIVE DEMO

CONCLUSION

- The development of a blood group identification system is an effective and efficient solution for automating the process of determining an individual's blood group, leveraging the power of both backend programming and modern web technologies.

- Python serves as a powerful tool to process user data, perform any necessary calculations or comparisons (such as identifying ABO and Rh blood types), and communicate the results back to the user. Using libraries like Flask or Django.

- It plays a crucial role in enhancing patient care and safety.

TEAM MEMBERS

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THANK YOU