Apeksha Hospital Donor Engagement System

2023-24-100

Status Document 2

Punchihewa S.N

BSc (Hons) in Information Technology specializing in Software Engineering

Department of Information Technology

Sri Lanka Institute of Information Technology Sri Lanka

August 2023

Intelligent Donor-Driven Inventory System for Essential Items

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Declaration of The Candidate & Supervisor

I declare that this is my work, and this proposal does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any other university or institute of higher learning and to the best of our knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

Name	**Student ID**	**Signature**
Punchihewa S. N	IT20665166	

The above candidates are carrying out research for the undergraduate Dissertation under my supervision.

Signature of the supervisor: Date:

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Signature of the Co-supervisor: Date:

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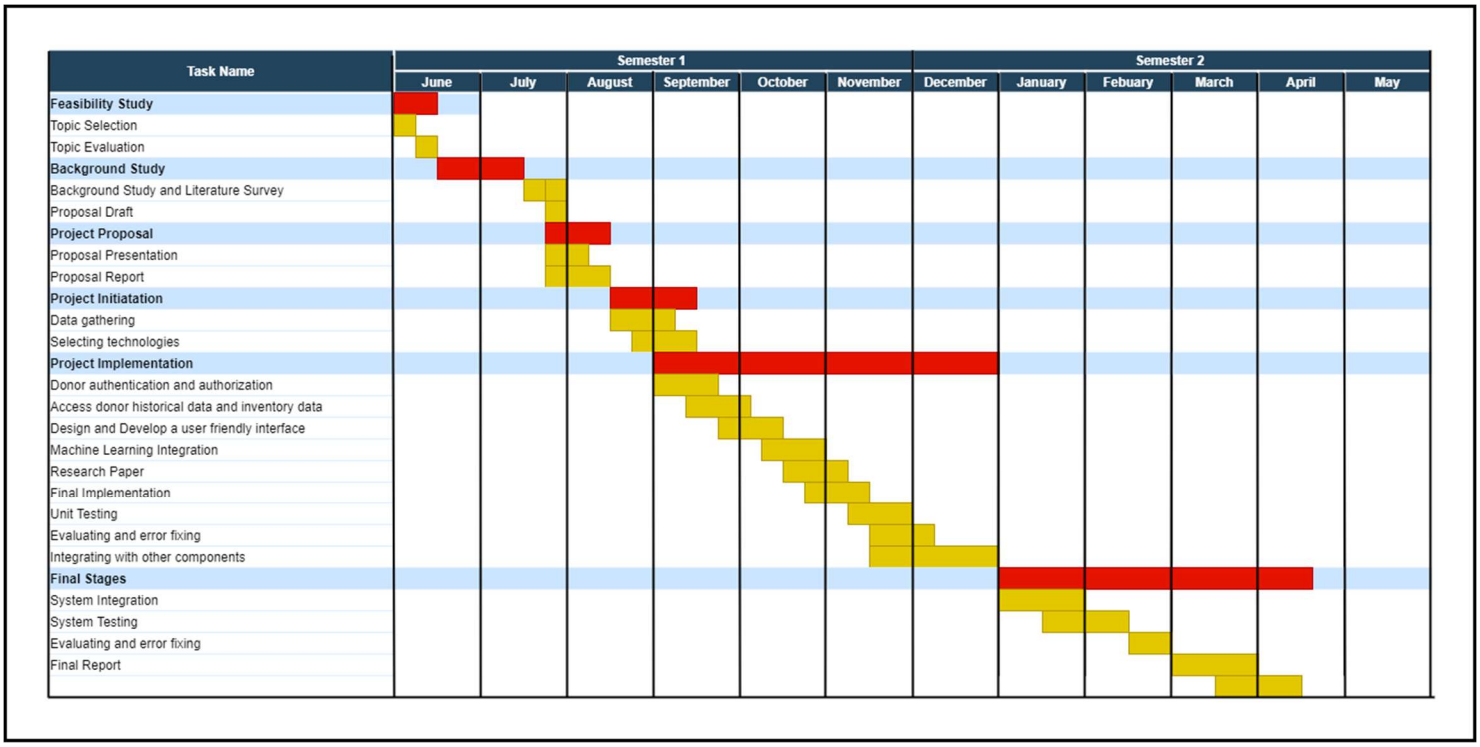
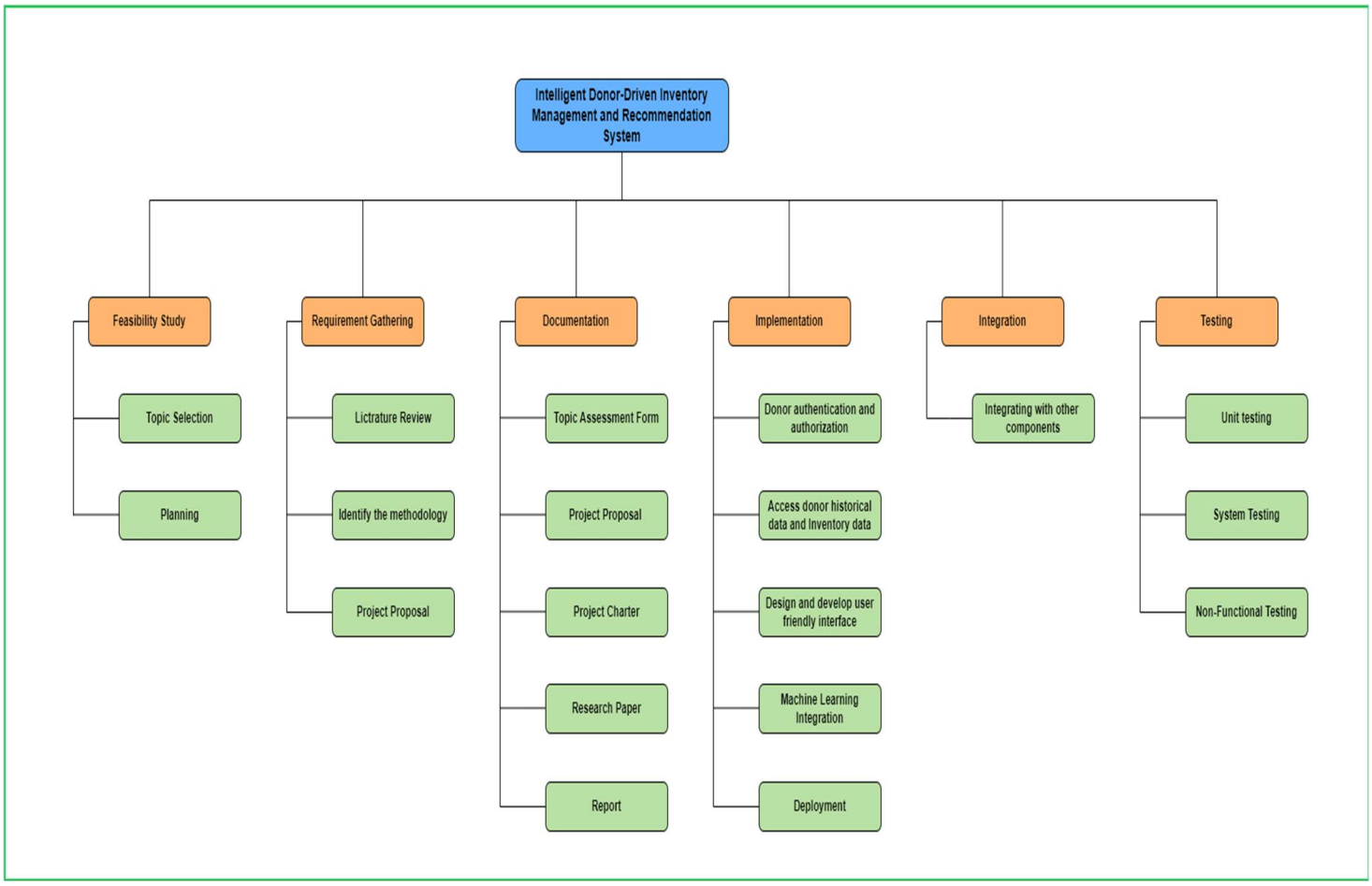
1. Introduction

Apeksha Hospital has the significant problem of enhancing donor involvement and enhancing the management of essential item inventory. To overcome this difficulty, this study proposes a new Intelligent Donor-Driven Inventory System for Essential Supplies. The main goal is to make use of machine learning algorithms to better understand donor habits, preferences, and giving patterns over time. As a result of this knowledge, the system will be in a position to skillfully suggest essential products to prospective donors, therefore stimulating their donations that are in line with the hospital's immediate demands. The ultimate goal of this research is to provide an engaging platform that integrates donor engagement with inventory control. Donors will be able to see the direct results of their donations and get personalized product recommendations from the system. By using these strategies, we want to increase donor pleasure and engagement while establishing a positive cycle of engagement. The research being conducted hopes to make the present of essential items more useful by concluding the gap between what donors want to do and what hospitals need. This collaborative method, which is made possible by machine learning and a donor-centered interface, not only improves the way resources are used but also makes the experience for donors as a whole better. Because of this, the results of this research are likely to make a big difference in how people give donations to Apeksha Hospital.

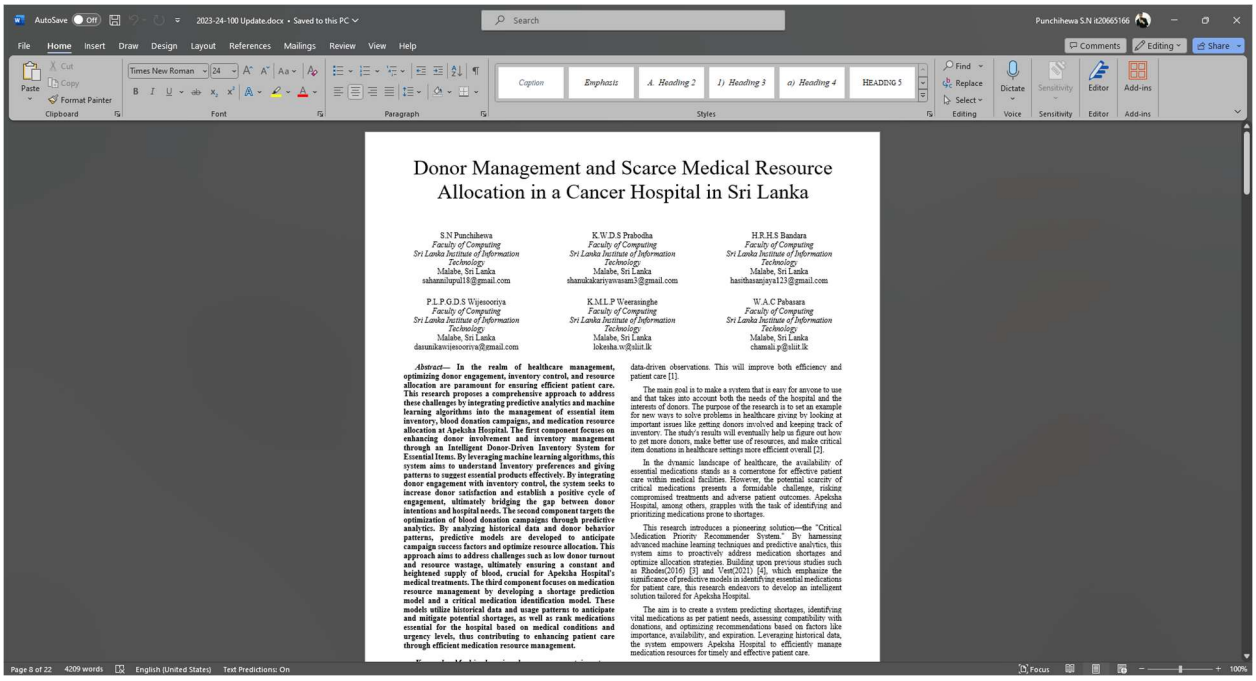
2. Gantt Chart



3. Work-Break-Down Chart



4. Research Paper



Donor Management and Scarce Medical Resource Allocation in a Cancer Hospital in Sri Lanka

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***Abstract*— In the realm of healthcare management, optimizing donor engagement, inventory control, and resource allocation are paramount for ensuring efficient patient care. This research proposes a comprehensive approach to address these challenges by integrating predictive analytics and machine learning algorithms into the management of essential item inventory, blood donation campaigns, and medication resource allocation at Apeksha Hospital. The first component focuses on enhancing donor involvement and inventory management through an Intelligent Donor-Driven Inventory System for Essential Items. By leveraging machine learning algorithms, this system aims to understand Inventory preferences and giving patterns to suggest essential products effectively. By integrating donor engagement with inventory control, the system seeks to increase donor satisfaction and establish a positive cycle of engagement, ultimately bridging the gap between donor intentions and hospital needs. The second component targets the optimization of blood donation campaigns through predictive analytics. By analyzing historical data and donor behavior patterns, predictive models are developed to anticipate campaign success factors and optimize resource allocation. This approach aims to address challenges such as low donor turnout and resource wastage, ultimately ensuring a constant and heightened supply of blood, crucial for Apeksha Hospital's medical treatments. The third component focuses on medication resource management by developing a shortage prediction model and a critical medication identification model. These models utilize historical data and usage patterns to anticipate and mitigate potential shortages, as well as rank medications essential for the hospital based on medical conditions and urgency levels, thus contributing to enhancing patient care through efficient medication resource management.**

data-driven observations. This will improve both efficiency and patient care [1].

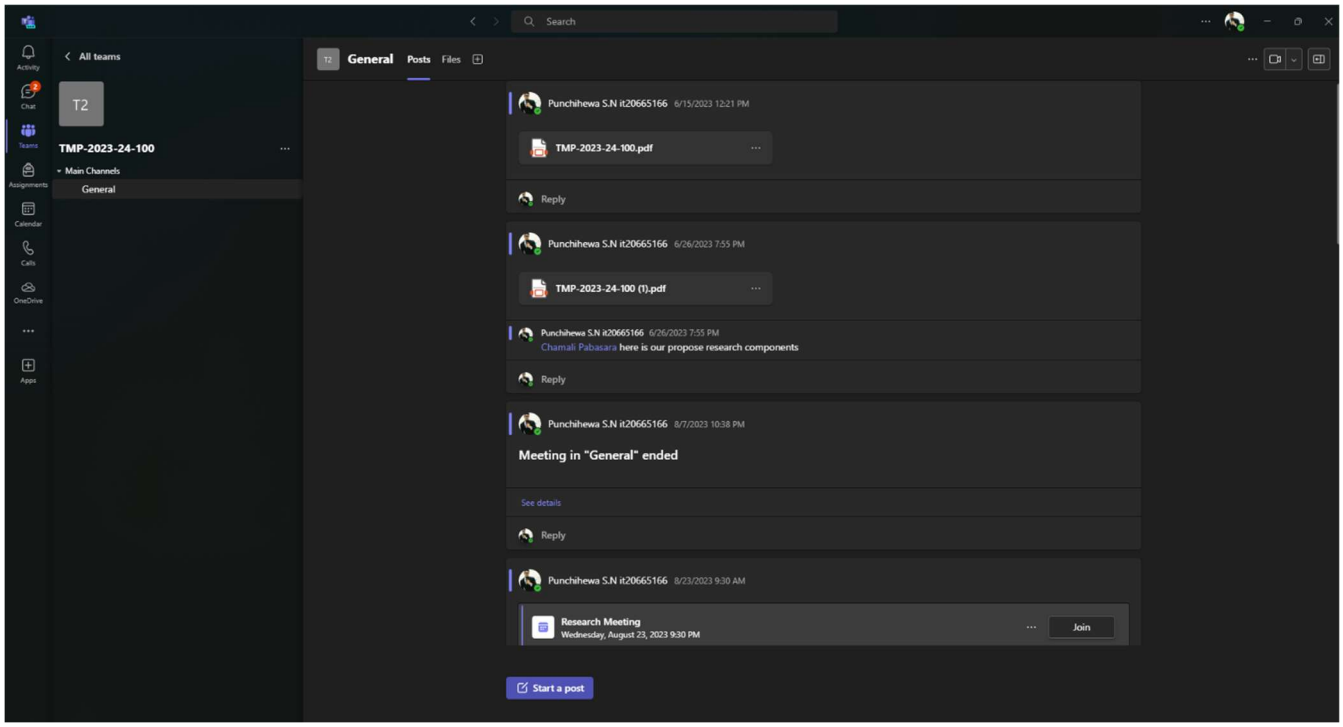
The main goal is to make a system that is easy for anyone to use and that takes into account both the needs of the hospital and the interests of donors. The purpose of the research is to set an example for new ways to solve problems in healthcare givingt by looking at important issues like getting donors involved and keeping track of inventory. The study's results will eventually help us figure out how to get more donors, make better use of resources, and make critical item donations in healthcare settings more efficient overall [2].

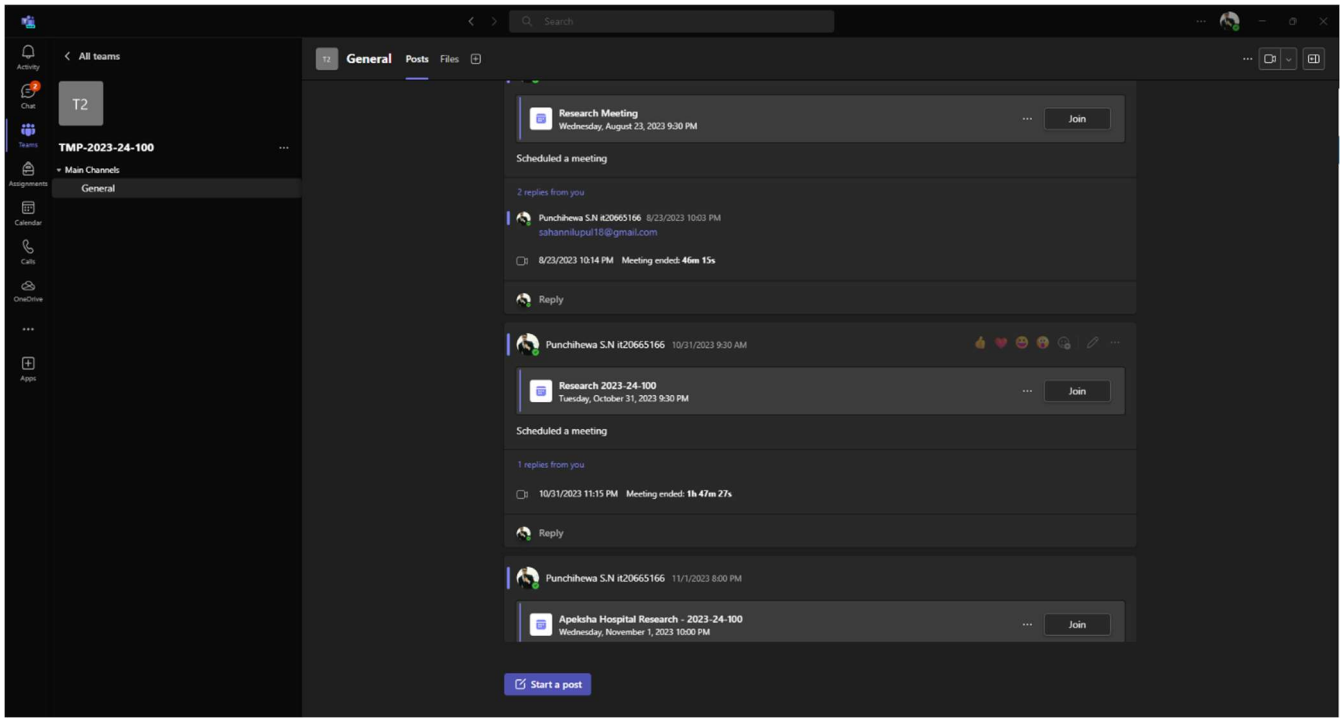
In the dynamic landscape of healthcare, the availability of essential medications stands as a cornerstone for effective patient care within medical facilities. However, the potential scarcity of critical medications presents a formidable challenge, risking compromised treatments and adverse patient outcomes. Apeksha Hospital, among others, grapples with the task of identifying and prioritizing medications prone to shortages.

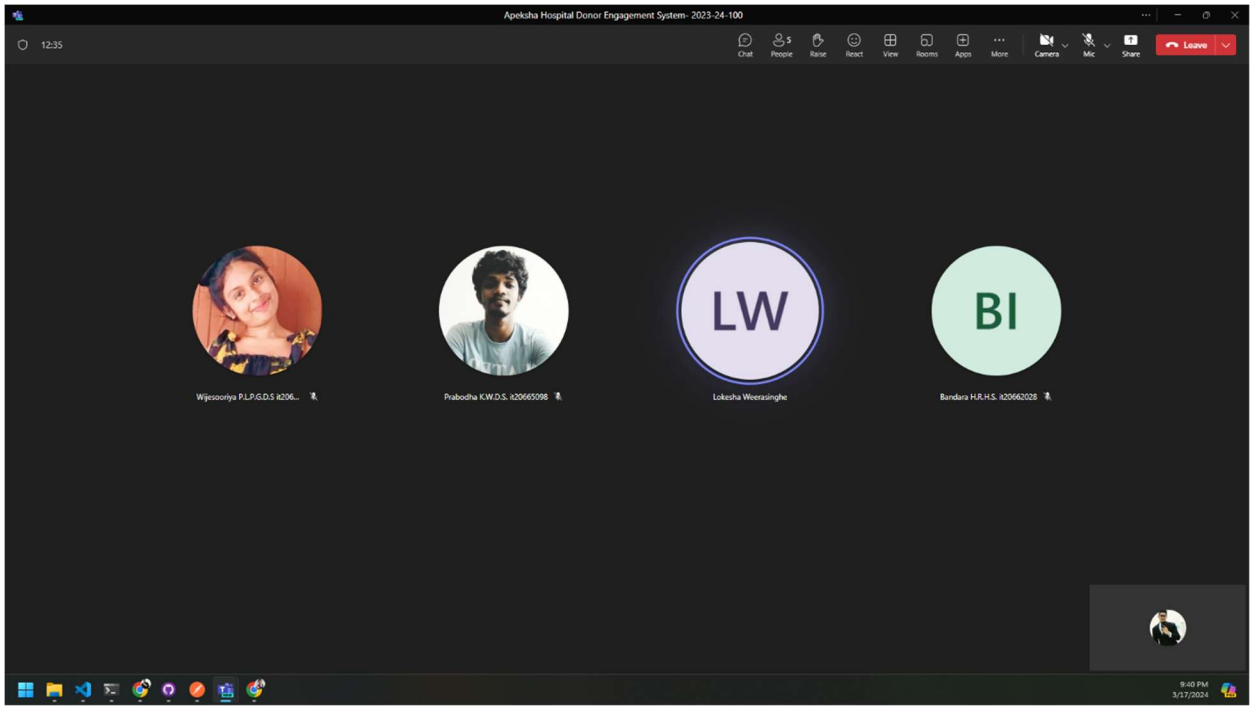
This research introduces a pioneering solution—the "Critical Medication Priority Recommender System." By harnessing advanced machine learning techniques and predictive analytics, this system aims to proactively address medication shortages and optimize allocation strategies. Building upon previous studies such as Rhodes(2016) [3] and Vest(2021) [4], which emphasize the significance of predictive models in identifying essential medications for patient care, this research endeavors to develop an intelligent solution tailored for Apeksha Hospital.

The aim is to create a system predicting shortages, identifying vital medications as per patient needs, assessing compatibility with donations, and optimizing recommendations based on factors like importance, availability, and expiration. Leveraging historical data, the system empowers Apeksha Hospital to efficiently manage medication resources for timely and effective patient care.

5. Screenshot of Meetings and Conversations






Apeksha Hospital Donor Engagement System- 2023-24-100
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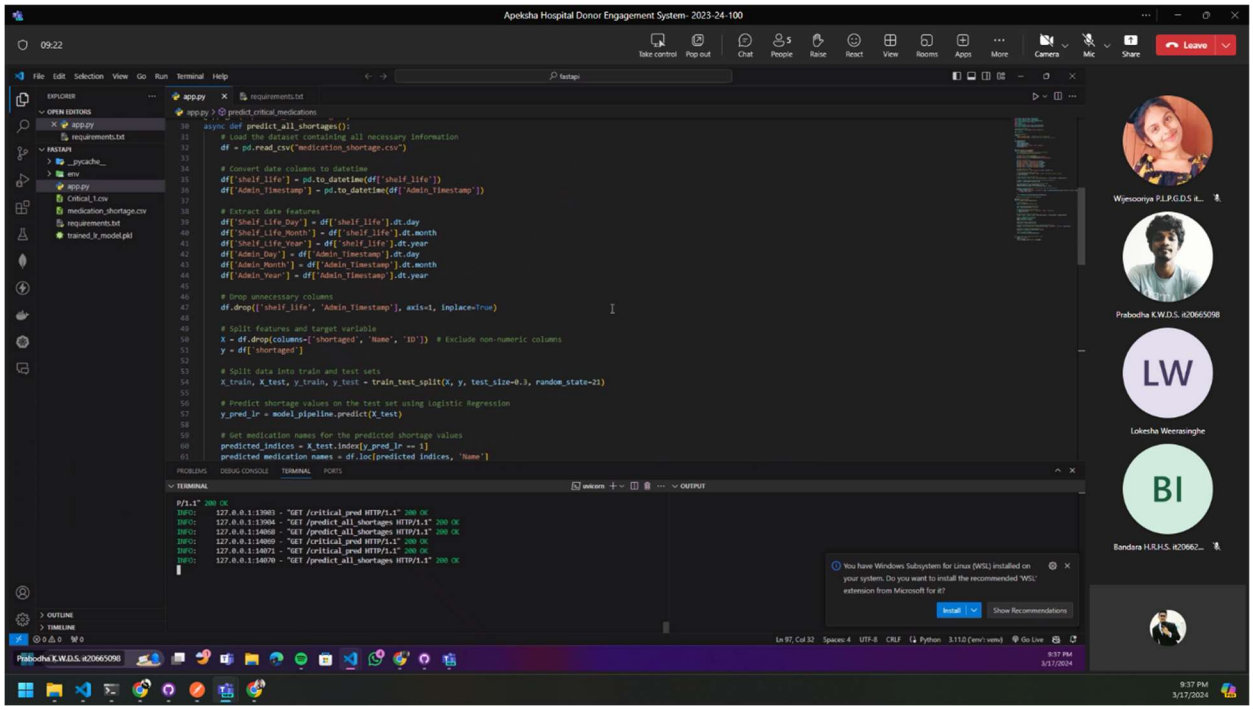
Chat
People
Raise
React
View
Rooms
Apps
More
Camera
Mic
Share
Leave
Wijesooriya P.L.P.G.D.S it206...
Prabodha K.W.D.S. it20665098
LW
Lokesha Weerasinghe
BI
Bandara H.R.H.S. it20662028
9:40 PM
3/17/2024


Apeksha Hospital Donor Engagement System- 2023-24-100
09:22
Take control
Pop out
Chat
People
Raise
React
View
Rooms
Apps
More
Camera
Mic
Share
Leave
File Edit Selection View Go Run Terminal Help
app.py
requirements.txt
async def predict_all_shortages():
# Load the dataset containing all necessary information
df = pd.read_csv("medication_shortage.csv")
# Convert date columns to datetime
df['shelf_life'] = pd.to_datetime(df['shelf_life'])
df['Admin_Timestamp'] = pd.to_datetime(df['Admin_Timestamp'])
Extract date features
df['Shelf_Life_Day'] = df['shelf_life'].dt.day
df['Shelf_Life_Month'] = df['shelf_life'].dt.month
df['Shelf_Life_Year'] = df['shelf_life'].dt.year
df['Admin_Day'] = df['Admin_Timestamp'].dt.day
df['Admin_Month'] = df['Admin_Timestamp'].dt.month
df['Admin_Year'] = df['Admin_Timestamp'].dt.year
# Drop unnecessary columns
df.drop(['shelf_life', 'Admin_Timestamp'], axis=1, inplace=True)
# Split features and target variable
X = df.drop(columns=['shortaged', 'Name', 'ID']) # Exclude non-numeric columns
y = df['shortaged']
# Split data into train and test sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=21)
# Predict shortage values on the test set using Logistic Regression
y_pred_lr = model_pipeline.predict(X_test)
# Get medication names for the predicted shortage values
predicted_indices = X_test.index[y_pred_lr == 1]
predicted_medication_names = df.loc[predicted_indices, 'Name']
PROBLEMS
DEBUG CONSOLE
TERMINAL
PORTS
TERMINAL
uvicorn
OUTPUT
0/1.1" 200 OK
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INFO: 127.0.0.1:13904 - "GET /predict_all_shortages HTTP/1.1" 200 OK
INFO: 127.0.0.1:14068 - "GET /predict_all_shortages HTTP/1.1" 200 OK
INFO: 127.0.0.1:14069 - "GET /critical_pred HTTP/1.1" 200 OK
INFO: 127.0.0.1:14071 - "GET /critical_pred HTTP/1.1" 200 OK
INFO: 127.0.0.1:14070 - "GET /predict_all_shortages HTTP/1.1" 200 OK
You have Windows Subsystem for Linux (WSL) installed on your system. Do you want to install the recommended 'WSL' extension from Microsoft for it?
Install
Show Recommendations
Wijesooriya P.L.P.G.D.S it...
Prabodha K.W.D.S. it20665098
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Lokesha Weerasinghe
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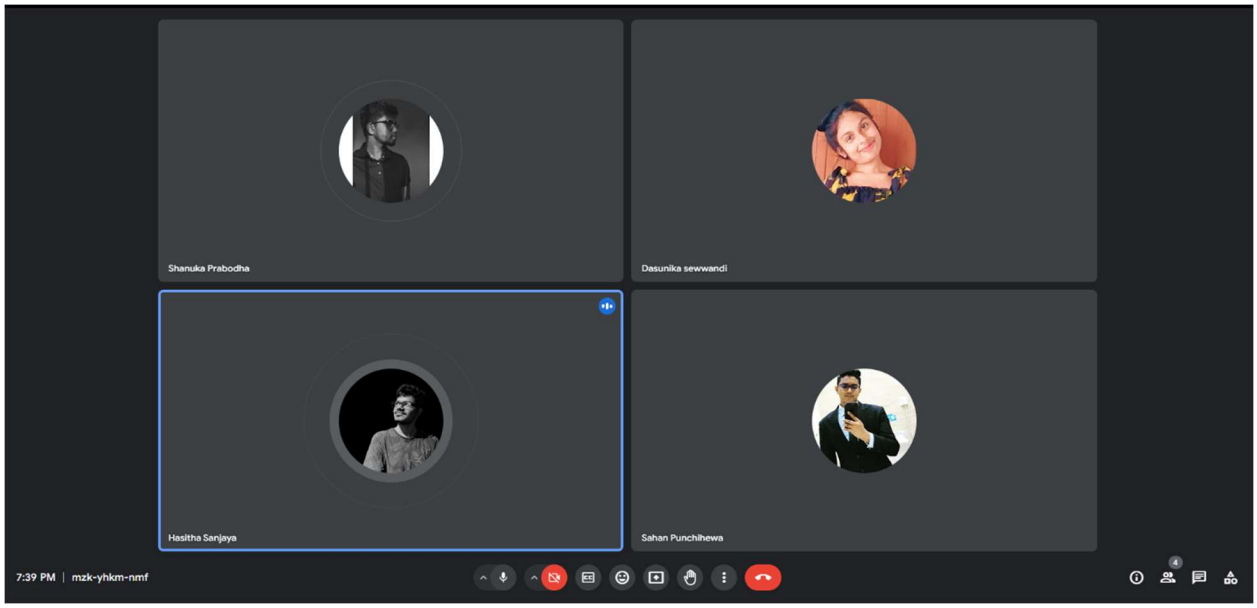
3/17/2024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Dasunika sewwandi
Hasitha Sanjaya
Sahan Punchihewa
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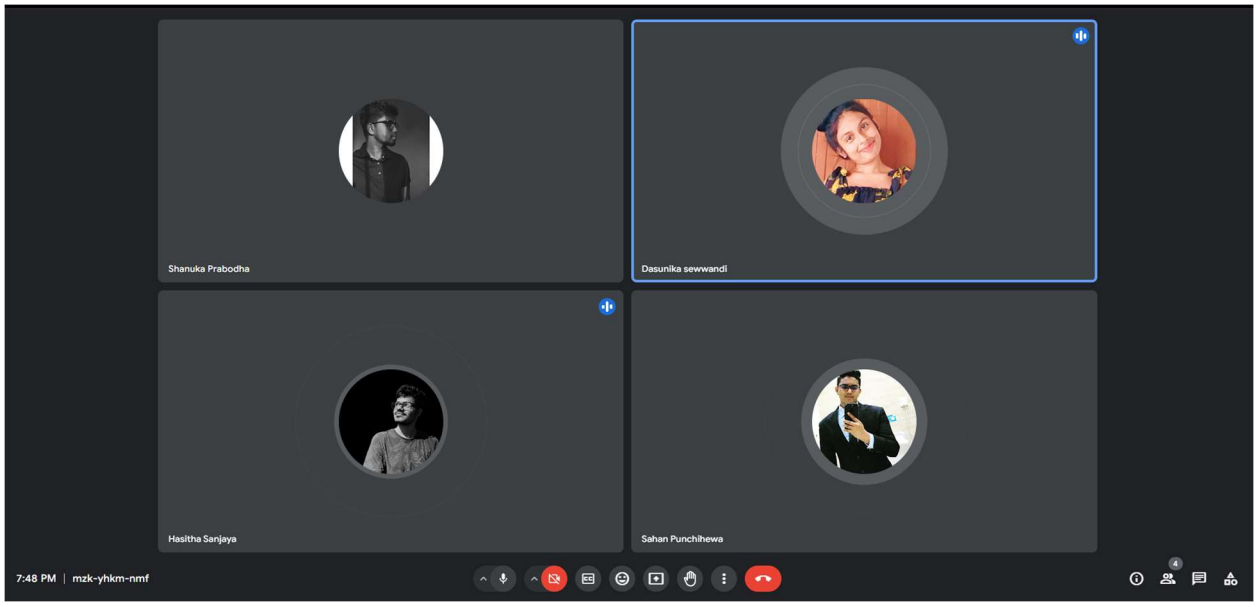
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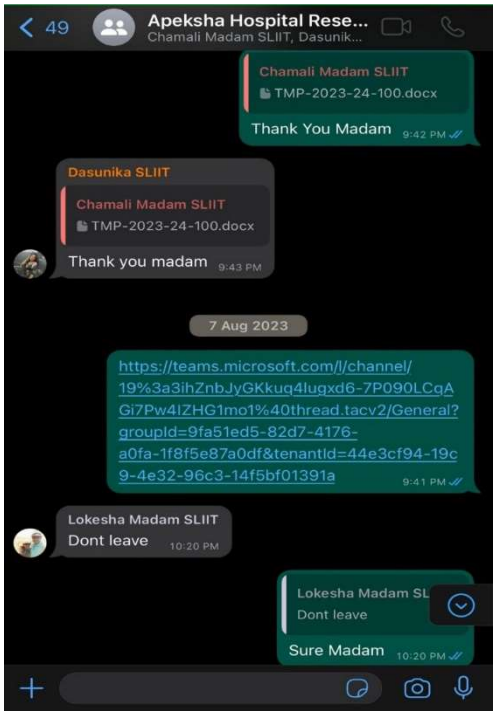
X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Chamali Madam SLIIT
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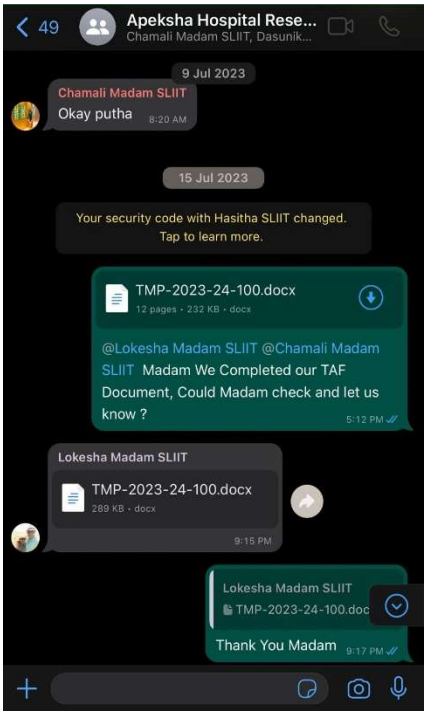
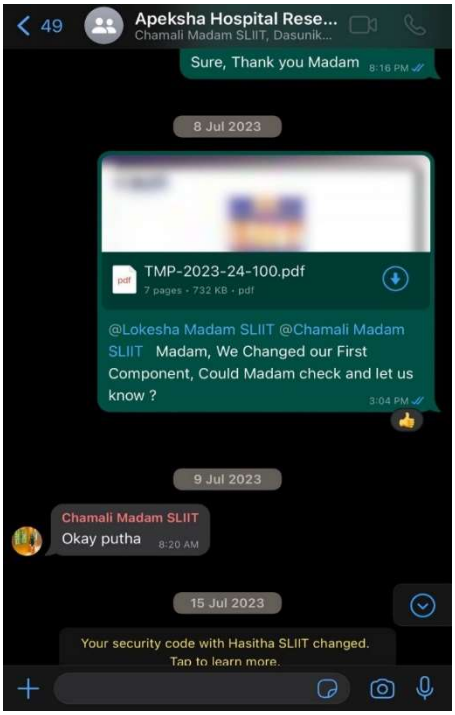
Thank You Madam 9:42 PM
Dasunika SLIIT
Chamali Madam SLIIT
TMP-2023-24-100.docx
Thank you madam 9:43 PM
7 Aug 2023
https://teams.microsoft.com/l/channel/19%3a3ihZnbJyGKkuq4lugxd6-7P090LCqAGi7Pw4IZHG1mo1%40thread.tacv2/General?groupId=9fa51ed5-82d7-4176-a0fa-1f8f5e87a0df&tenantId=44e3cf94-19c9-4e32-96c3-14f5bf01391a 9:41 PM
Lokesha Madam SLIIT
Dont leave 10:20 PM
Lokesha Madam SL
Dont leave
Sure Madam 10:20 PM


49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
9 Jul 2023
Chamali Madam SLIIT
Okay putha 8:20 AM
15 Jul 2023
Your security code with Hasitha SLIIT changed.
Tap to learn more.
TMP-2023-24-100.docx
12 pages • 232 KB • docx
@Lokesha Madam SLIIT @Chamali Madam SLIIT Madam We Completed our TAF Document, Could Madam check and let us know ? 5:12 PM
Lokesha Madam SLIIT
TMP-2023-24-100.docx
289 KB • docx
9:15 PM
Lokesha Madam SLIIT
TMP-2023-24-100.doc
Thank You Madam 9:17 PM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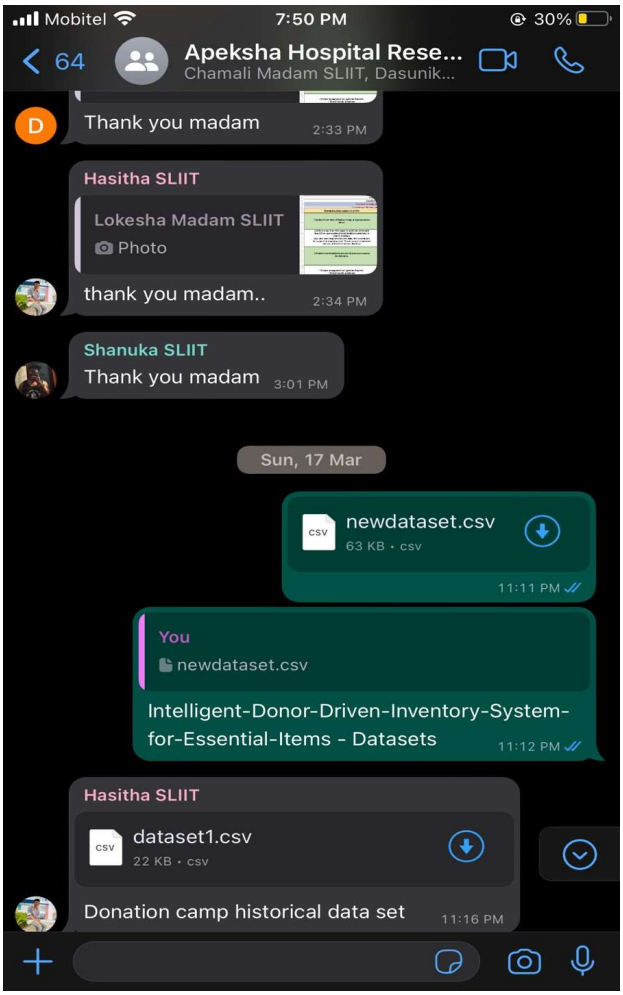
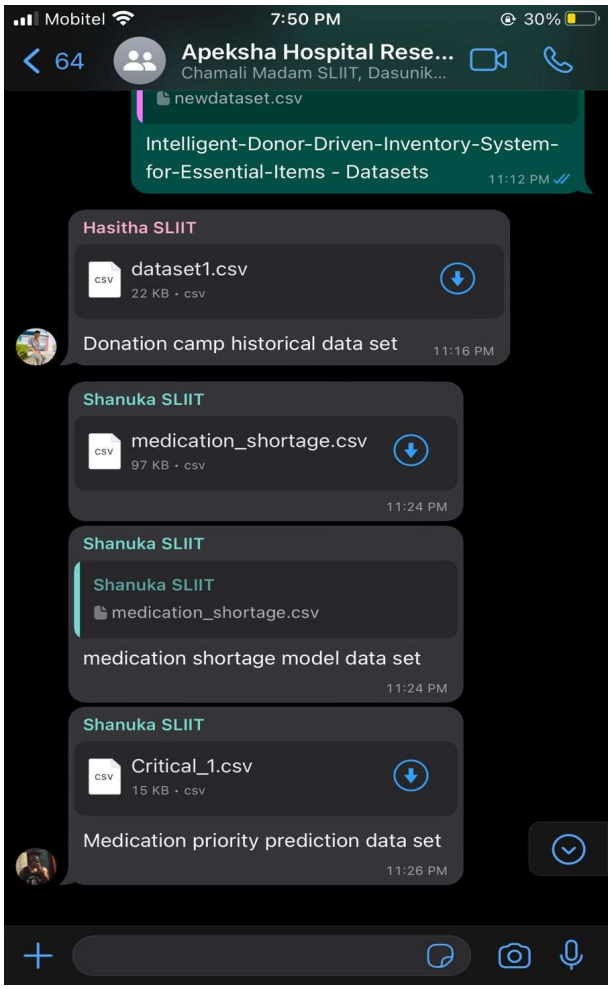
Sure, Thank you Madam 8:16 PM
8 Jul 2023
TMP-2023-24-100.pdf
7 pages • 732 KB • pdf
@Lokesha Madam SLIIT @Chamali Madam SLIIT Madam, We Changed our First Component, Could Madam check and let us know ? 3:04 PM
9 Jul 2023
Chamali Madam SLIIT
Okay putha 8:20 AM
15 Jul 2023
Your security code with Hasitha SLIIT changed.
Tap to learn more.


Mobitel
7:50 PM
30%
64
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
Thank you madam 2:33 PM
Hasitha SLIIT
Lokesha Madam SLIIT
Photo
thank you madam.. 2:34 PM
Shanuka SLIIT
Thank you madam 3:01 PM
Sun, 17 Mar
newdataset.csv
63 KB • csv
11:11 PM
You
newdataset.csv
Intelligent-Donor-Driven-Inventory-System-for-Essential-Items - Datasets 11:12 PM
Hasitha SLIIT
dataset1.csv
22 KB • csv
Donation camp historical data set 11:16 PM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64
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
newdataset.csv
Intelligent-Donor-Driven-Inventory-System-for-Essential-Items - Datasets 11:12 PM
Hasitha SLIIT
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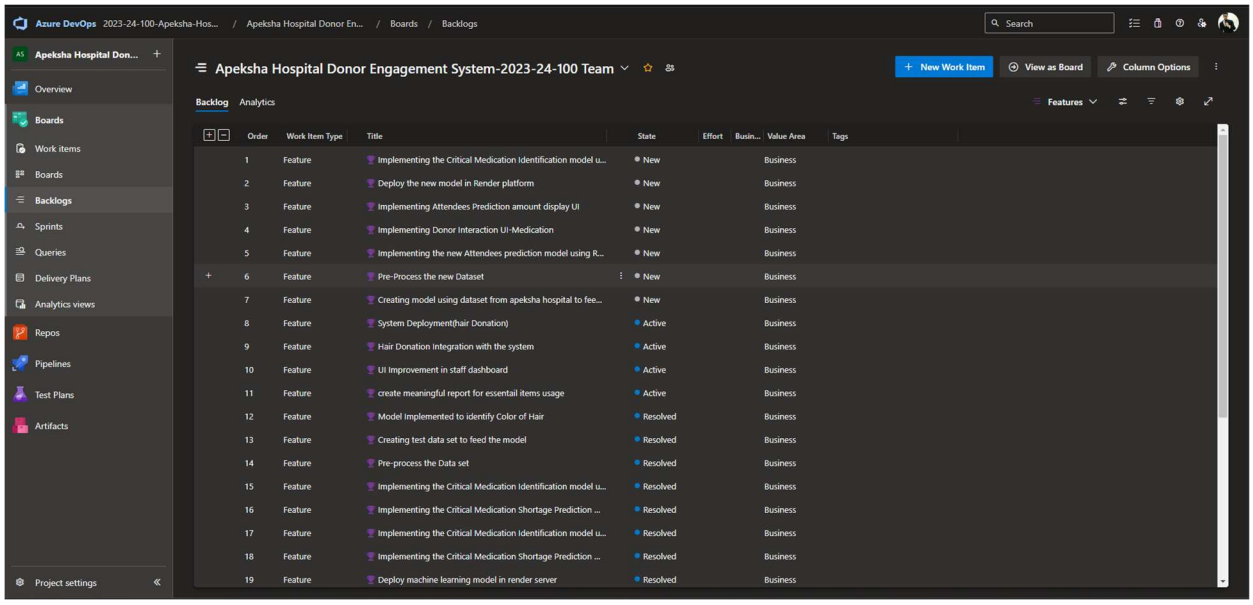
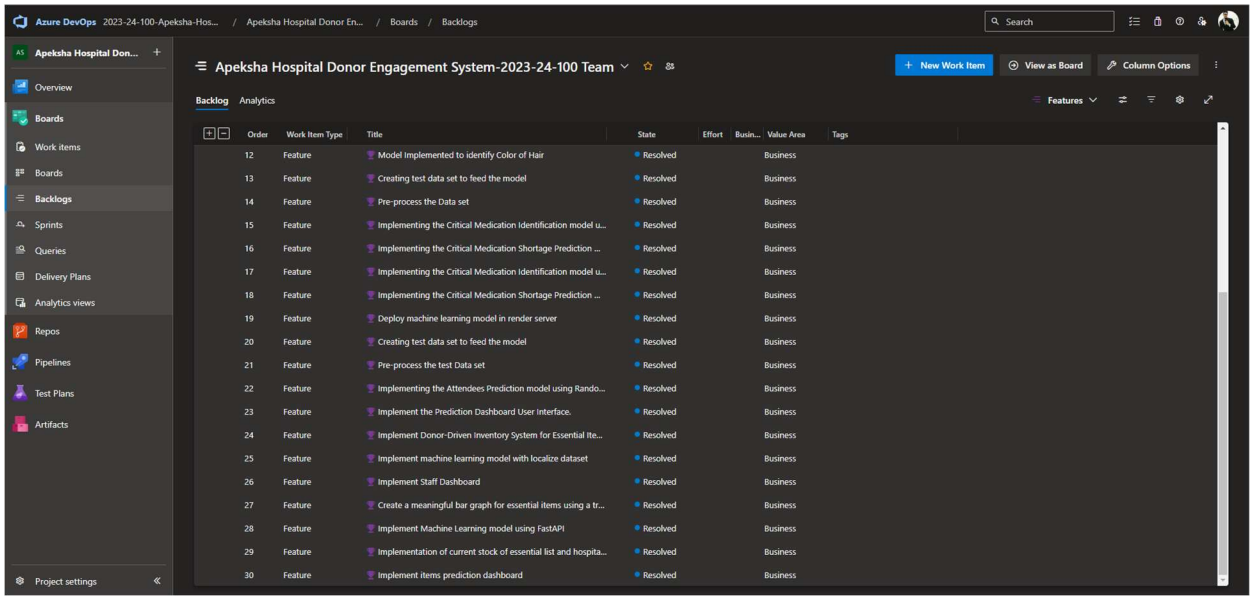
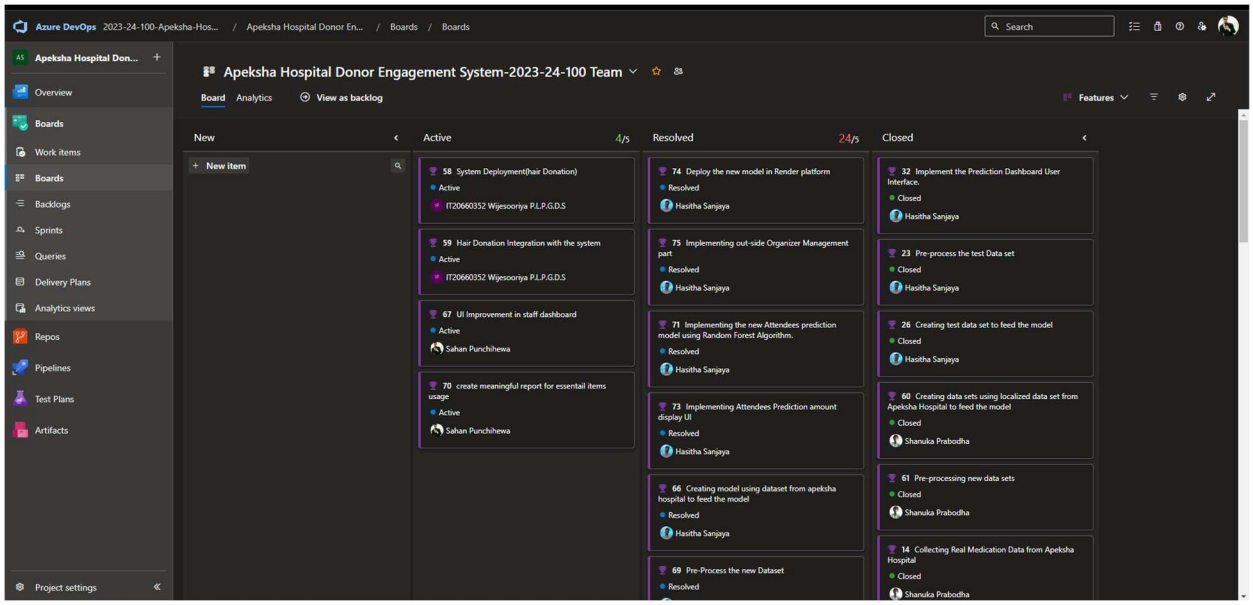
Donation camp historical data set 11:16 PM
Shanuka SLIIT
medication_shortage.csv
97 KB • csv
11:24 PM
Shanuka SLIIT
Shanuka SLIIT
medication_shortage.csv
medication shortage model data set 11:24 PM
Shanuka SLIIT
Critical_1.csv
15 KB • csv
Medication priority prediction data set 11:26 PM

6. Project Management Tools & Screenshot

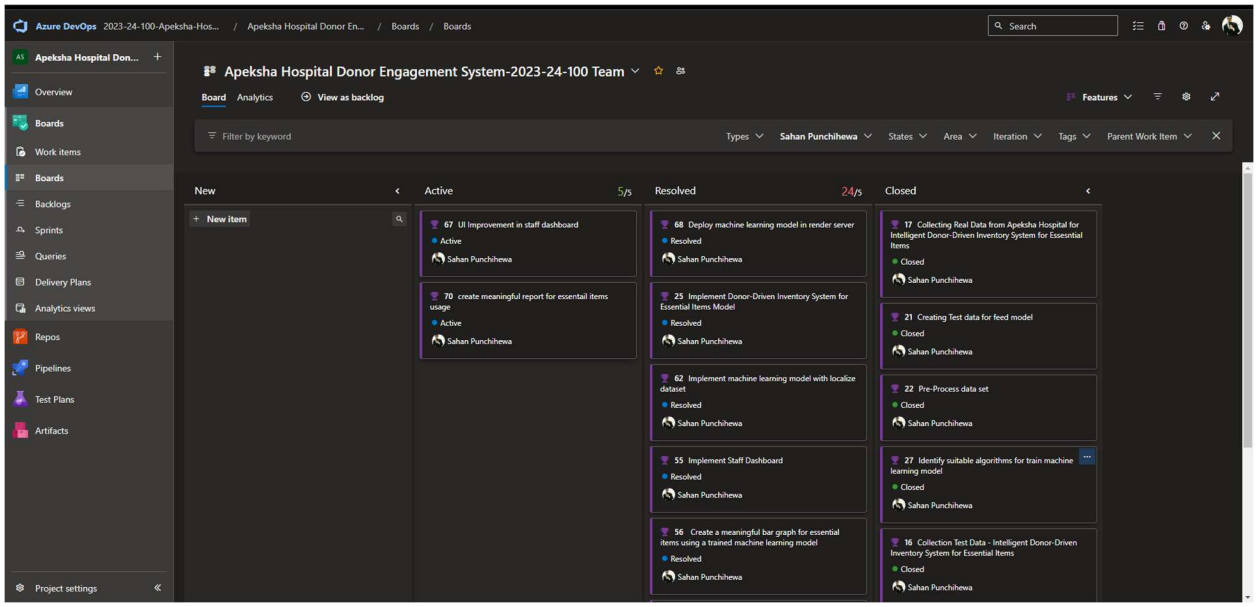
6.1 Overall Backlog

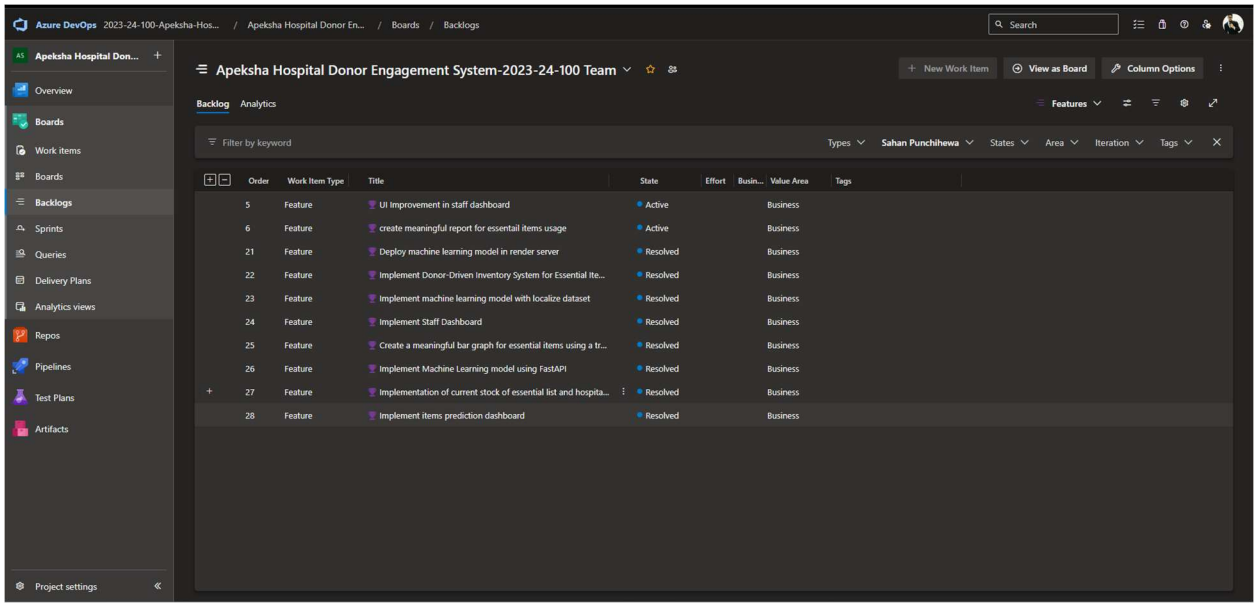






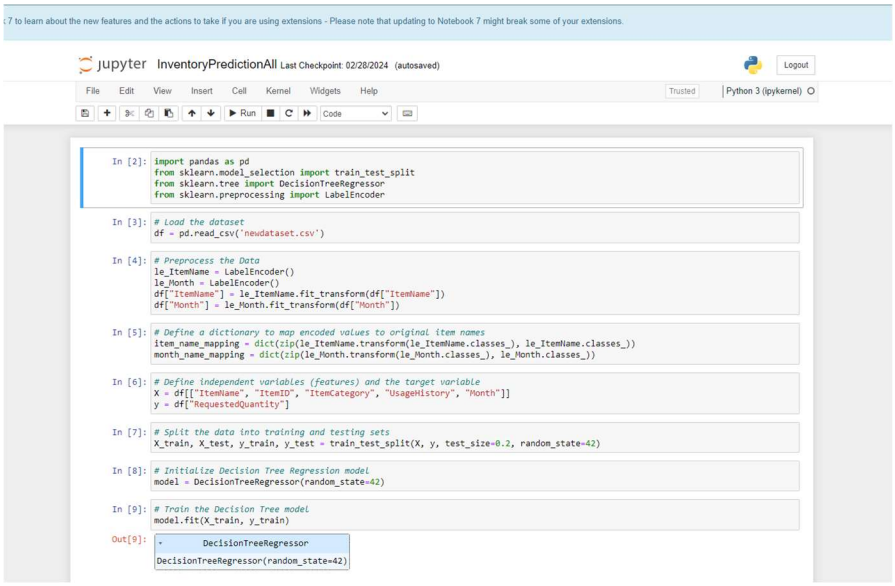
6.2 Personal Backlog



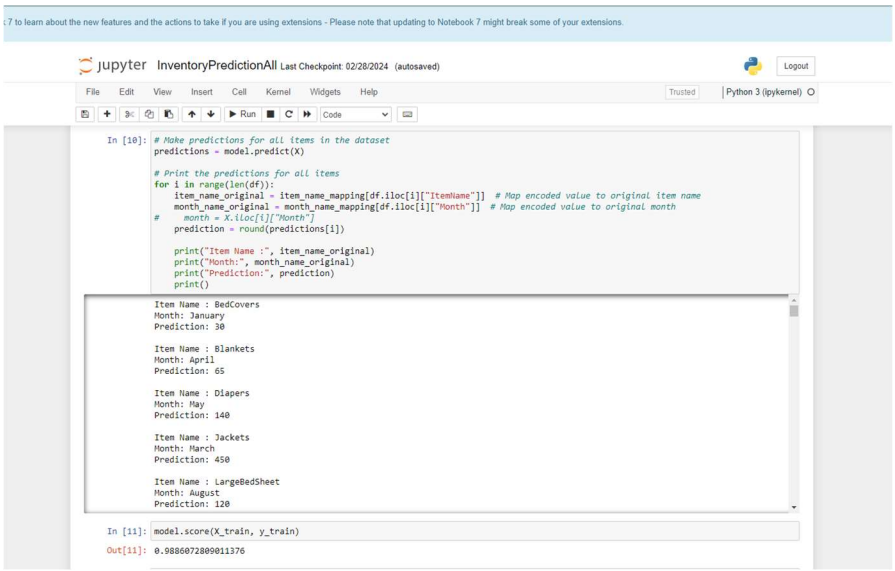

Azure DevOps 2023-24-100-Apeksha-Hos... / Apeksha Hospital Donor En... / Boards / Backlogs
Search
Apeksha Hospital Don...
Overview
Boards
Work items
Boards
Backlogs
Sprints
Queries
Delivery Plans
Analytics views
Repos
Pipelines
Test Plans
Artifacts
Project settings
Apeksha Hospital Donor Engagement System-2023-24-100 Team
New Work Item
View as Board
Column Options
Backlog
Analytics
Features
Filter by keyword
Types
Sahan Punchihewa
States
Area
Iteration
Tags
Order
Work Item Type
Title
State
Effort
Busin...
Value Area
Tags
5 Feature UI Improvement in staff dashboard Active Business
6 Feature create meaningful report for essentail items usage Active Business
21 Feature Deploy machine learning model in render server Resolved Business
22 Feature Implement Donor-Driven Inventory System for Essential Ite... Resolved Business
23 Feature Implement machine learning model with localize dataset Resolved Business
24 Feature Implement Staff Dashboard Resolved Business
25 Feature Create a meaningful bar graph for essential items using a tr... Resolved Business
26 Feature Implement Machine Learning model using FastAPI Resolved Business
27 Feature Implementation of current stock of essential list and hospita... Resolved Business
28 Feature Implement items prediction dashboard Resolved Business

7. Trained Model Screenshot

7.1 Decision Tree Regression

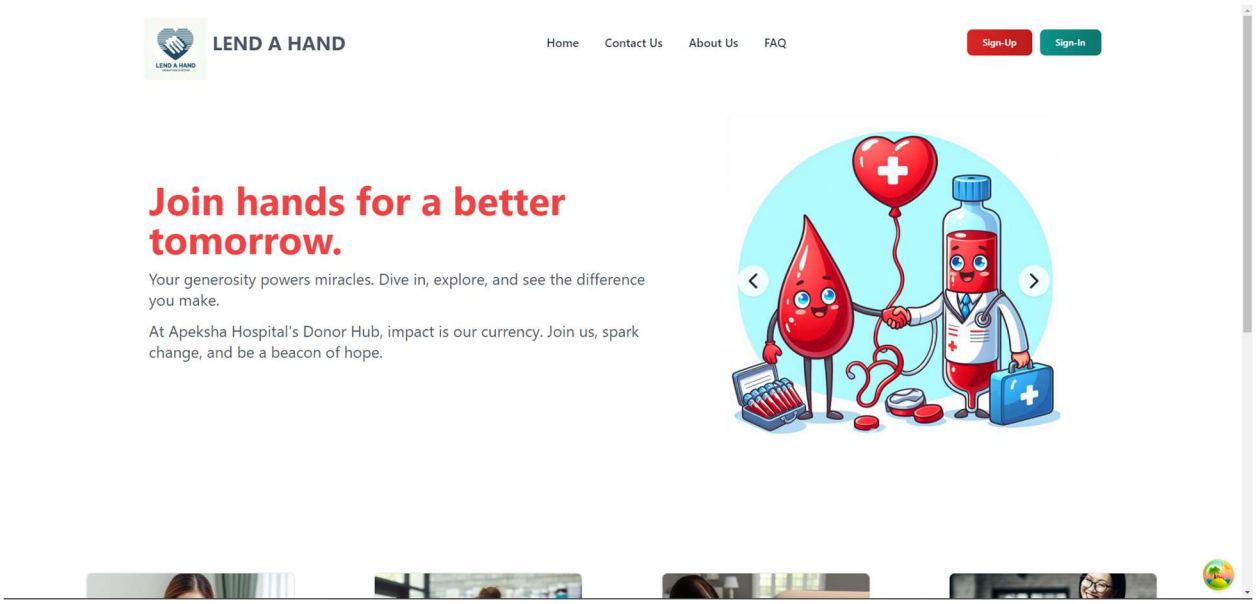


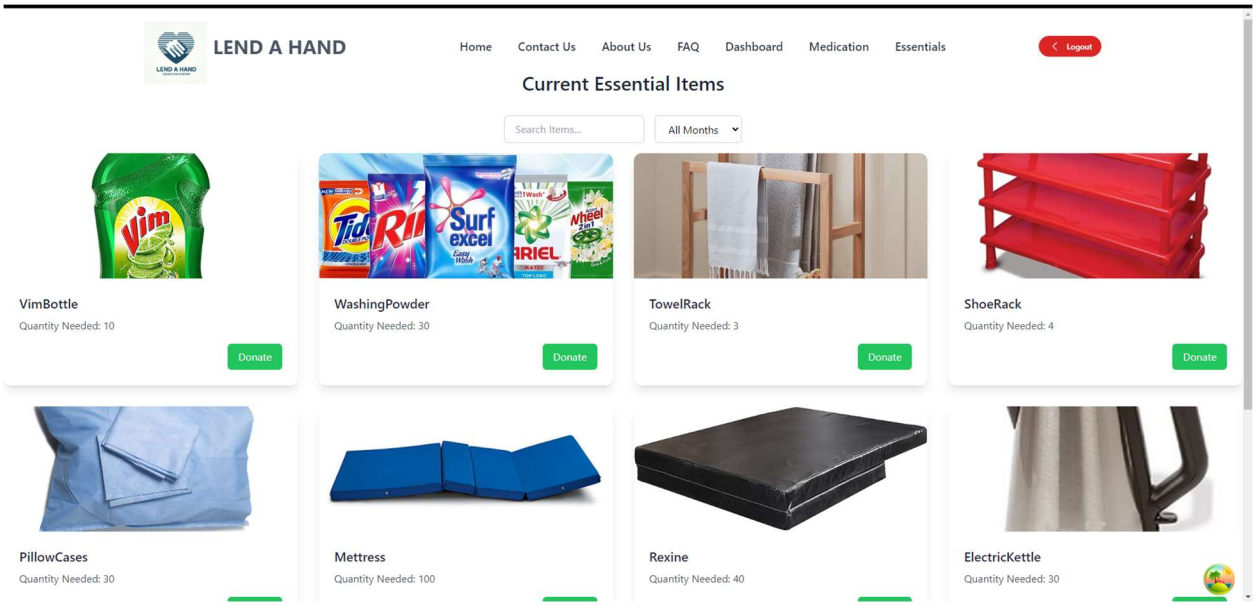
```
In [2]:
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeRegressor
from sklearn.preprocessing import LabelEncoder

In [3]:
# Load the dataset
df = pd.read_csv('newdataset.csv')

In [4]:
# Preprocess the Data
le_ItemName = LabelEncoder()
le_Month = LabelEncoder()
df["ItemName"] = le_ItemName.fit_transform(df["ItemName"])
df["Month"] = le_Month.fit_transform(df["Month"])

In [5]:
# Define a dictionary to map encoded values to original item names
item_name_mapping = dict(zip(le_ItemName.transform(le_ItemName.classes_), le_ItemName.classes_))
month_name_mapping = dict(zip(le_Month.transform(le_Month.classes_), le_Month.classes_))

In [6]:
# Define independent variables (features) and the target variable
X = df[["ItemName", "ItemID", "ItemCategory", "UsageHistory", "Month"]]
y = df["RequestedQuantity"]

In [7]:
# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

In [8]:
# Initialize Decision Tree Regression model
model = DecisionTreeRegressor(random_state=42)

In [9]:
# Train the Decision Tree model
model.fit(X_train, y_train)

Out[9]:
DecisionTreeRegressor
DecisionTreeRegressor(random_state=42)
```

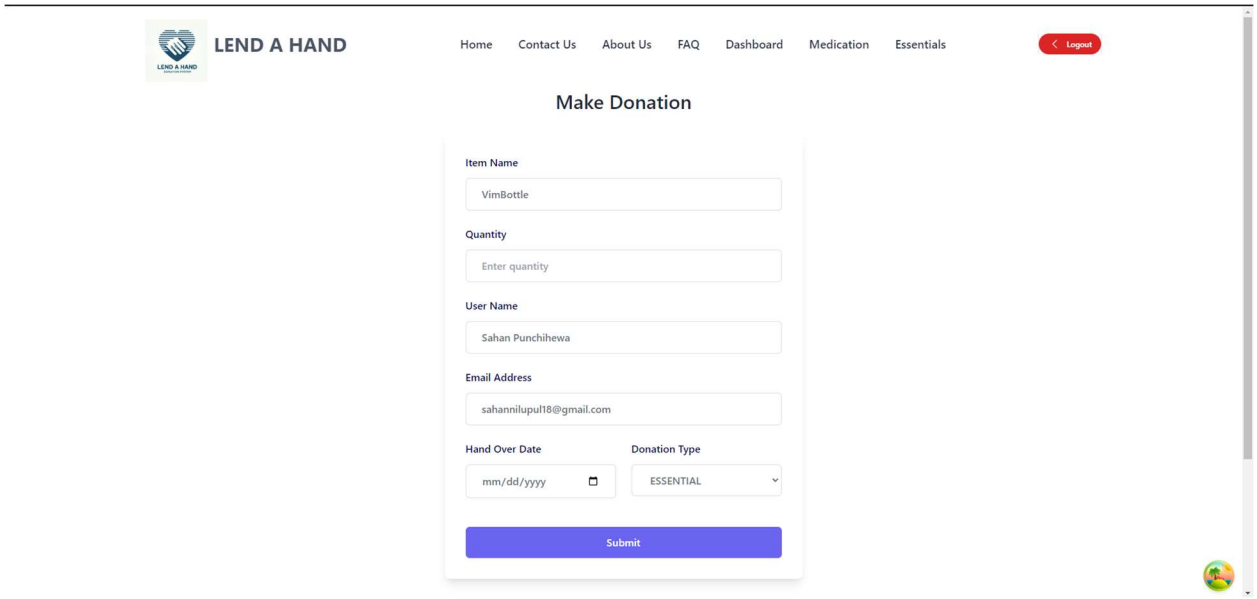


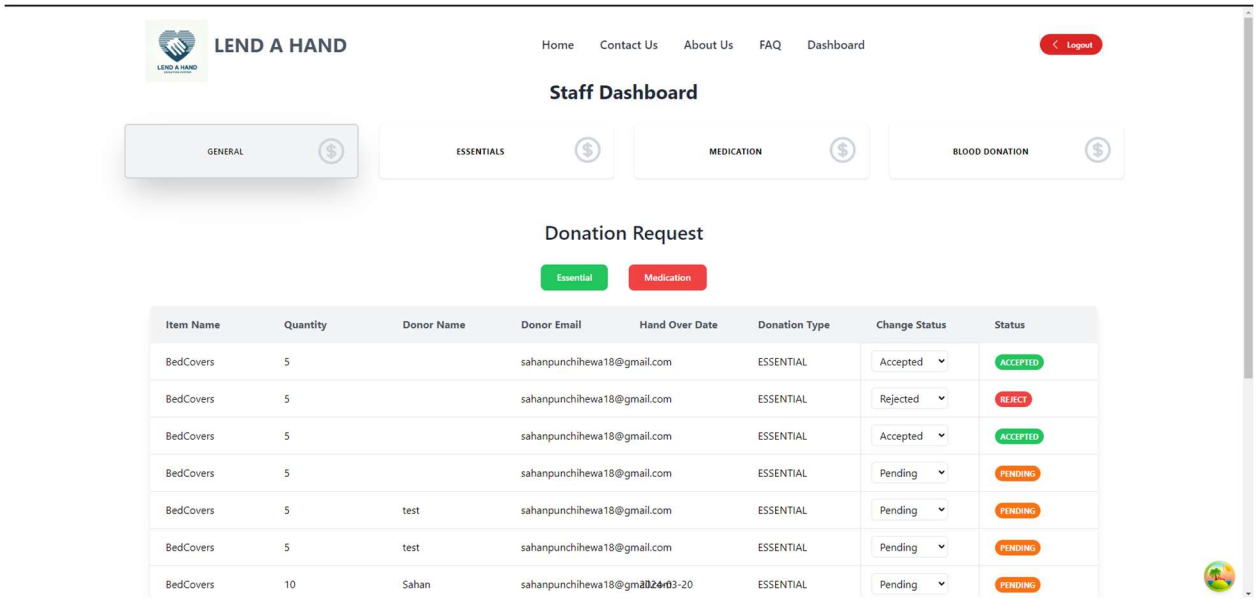
```
In [10]:
# Make predictions for all items in the dataset
predictions = model.predict(X)

# Print the predictions for all items
for i in range(len(df)):
    item_name_original = item_name_mapping[df.iloc[i]["ItemName"]]  # Map encoded value to original item name
    month_name_original = month_name_mapping[df.iloc[i]["Month"]]  # Map encoded value to original month
#     month = X.iloc[i]["Month"]
    prediction = round(predictions[i])

    print("Item Name :", item_name_original)
    print("Month:", month_name_original)
    print("Prediction:", prediction)
    print()

Item Name : BedCovers
Month: January
Prediction: 30

Item Name : Blankets
Month: April
Prediction: 65

Item Name : Diapers
Month: May
Prediction: 140

Item Name : Jackets
Month: March
Prediction: 450

Item Name : LargeBedSheet
Month: August
Prediction: 120

In [11]:
model.score(X_train, y_train)

Out[11]:
0.9886072809011376
```

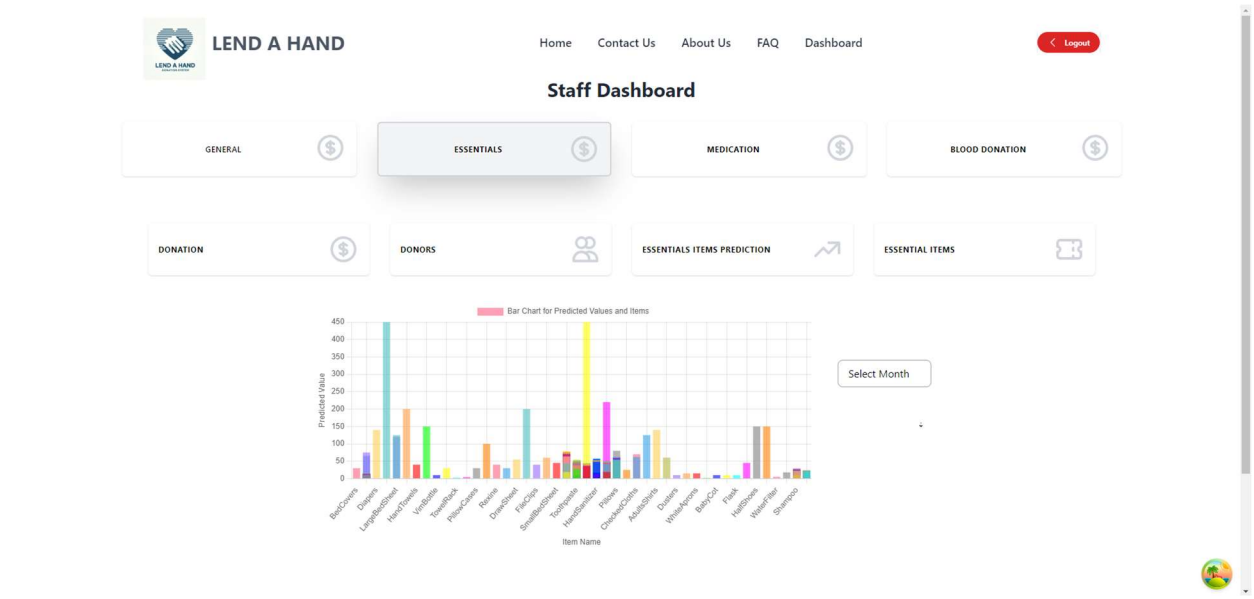
8 Web Implementation

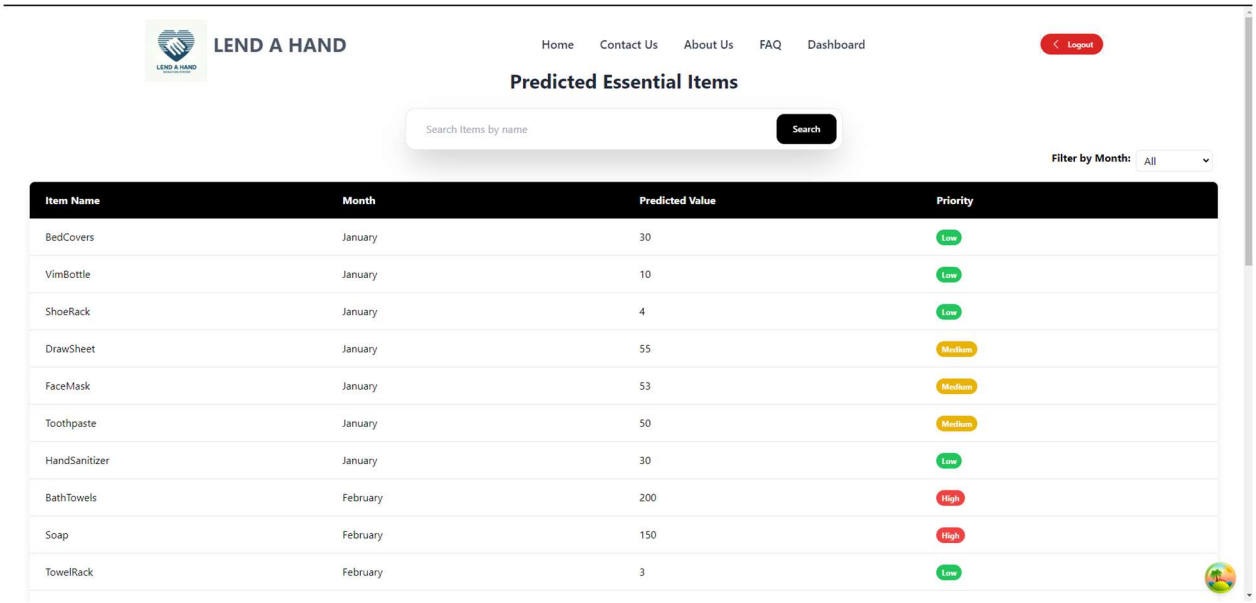




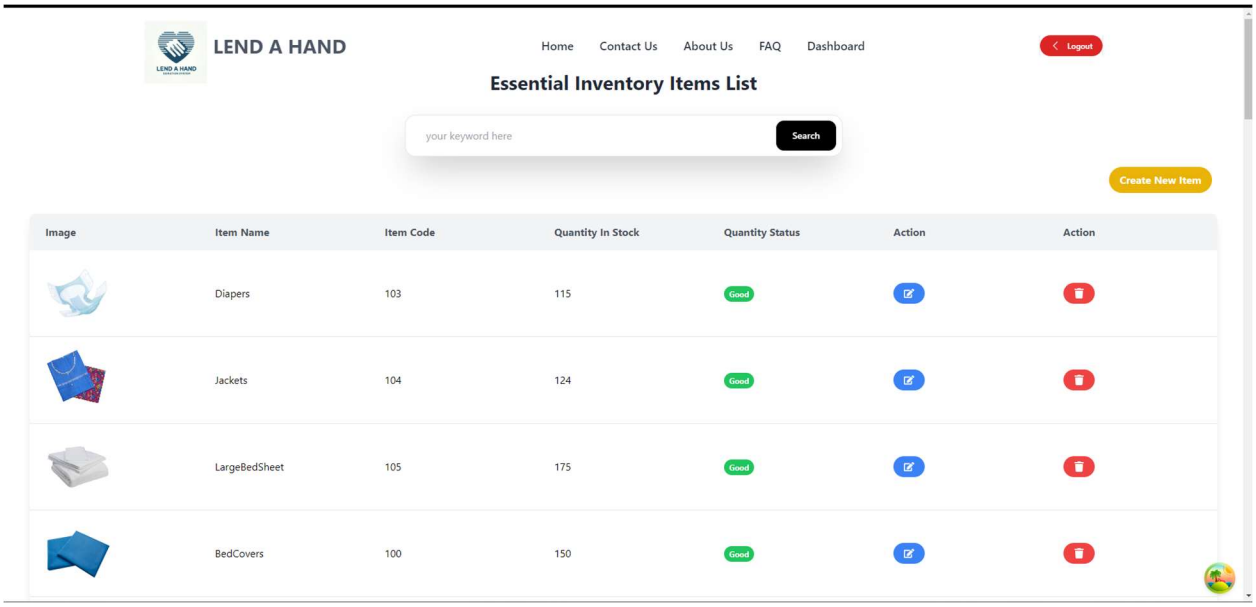

LEND A HAND
Home
Contact Us
About Us
FAQ
Dashboard
Medication
Essentials
Logout
Make Donation
Item Name
VimBottle
Quantity
Enter quantity
User Name
Sahan Punchihewa
Email Address
sahannilupul18@gmail.com
Hand Over Date
mm/dd/yyyy
Donation Type
ESSENTIAL
Submit

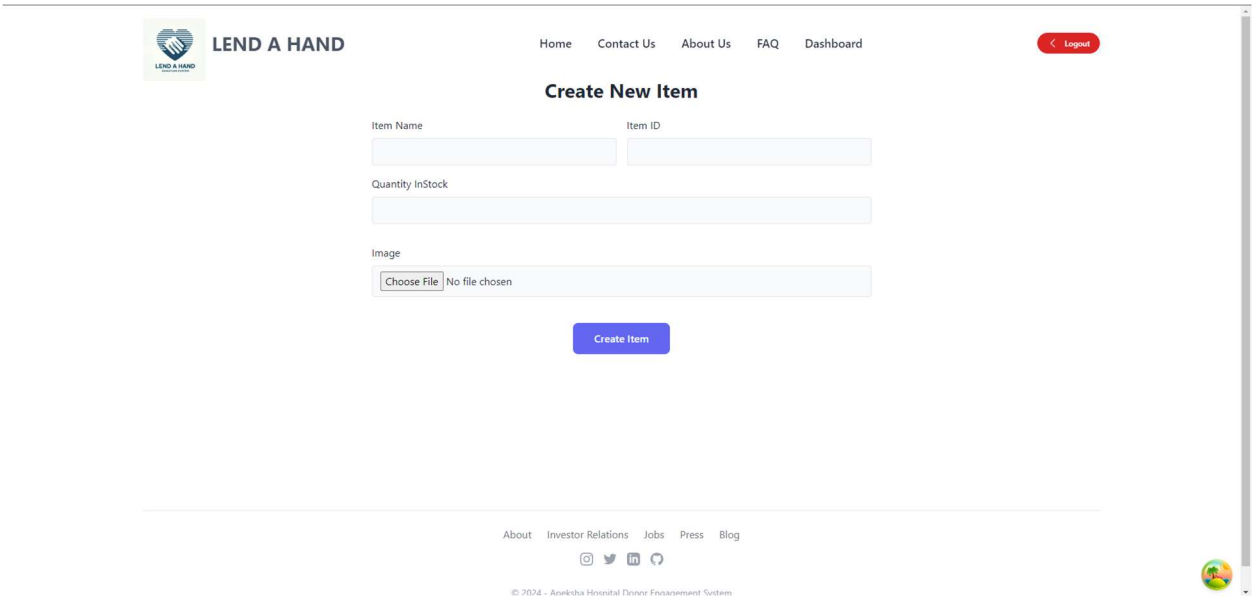

LEND A HAND
Home
Contact Us
About Us
FAQ
Dashboard
Logout
Staff Dashboard
GENERAL
ESSENTIALS
MEDICATION
BLOOD DONATION
Donation Request
Essential
Medication
Item Name
Quantity
Donor Name
Donor Email
Hand Over Date
Donation Type
Change Status
Status
BedCovers 5 sahanpunchihewa18@gmail.com ESSENTIAL Accepted ACCEPTED
BedCovers 5 sahanpunchihewa18@gmail.com ESSENTIAL Rejected REJECT
BedCovers 5 sahanpunchihewa18@gmail.com ESSENTIAL Accepted ACCEPTED
BedCovers 5 sahanpunchihewa18@gmail.com ESSENTIAL Pending PENDING
BedCovers 5 test sahanpunchihewa18@gmail.com ESSENTIAL Pending PENDING
BedCovers 5 test sahanpunchihewa18@gmail.com ESSENTIAL Pending PENDING
BedCovers 10 Sahan sahanpunchihewa18@gmail.com 2024-03-20 ESSENTIAL Pending PENDING

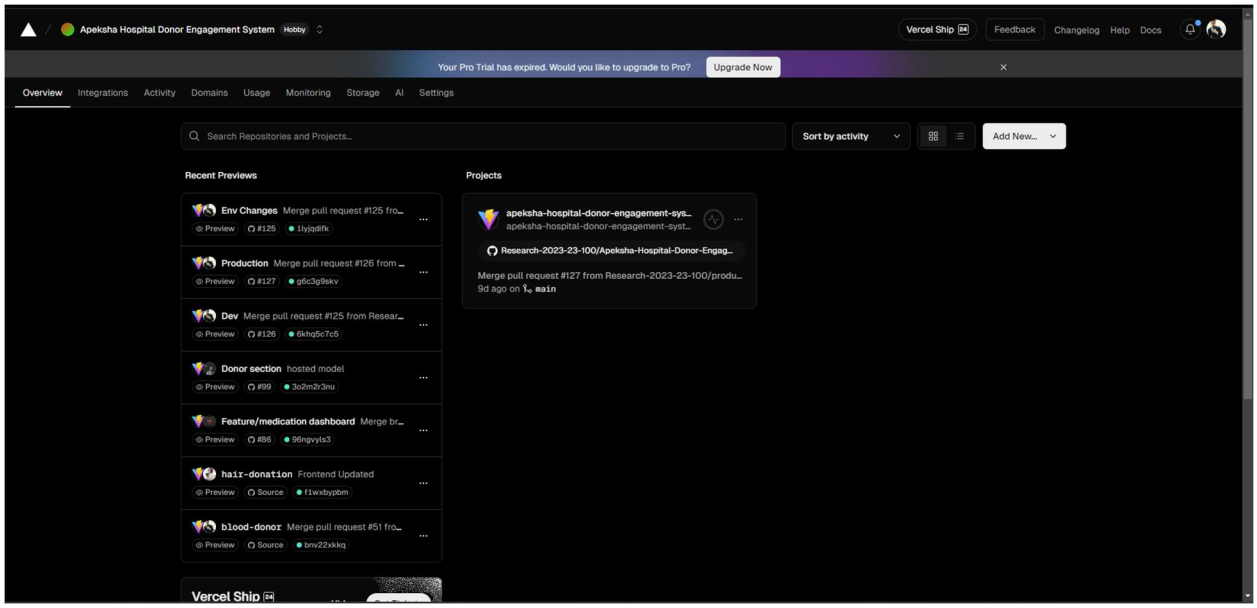




Item Name	Month	Predicted Value	Priority
BedCovers	January	30	Low
VimBottle	January	10	Low
ShoeRack	January	4	Low
DrawSheet	January	55	Medium
FaceMask	January	53	Medium
Toothpaste	January	50	Medium
HandSanitizer	January	30	Low
BathTowels	February	200	High
Soap	February	150	High
TowelRack	February	3	Low


LEND A HAND
Home
Contact Us
About Us
FAQ
Dashboard
Logout
Essential Inventory Items List
your keyword here
Search
Create New Item
Image
Item Name
Item Code
Quantity In Stock
Quantity Status
Action
Action
Diapers
103
115
Good
Jackets
104
124
Good
LargeBedSheet
105
175
Good
BedCovers
100
150
Good


LEND A HAND
Home
Contact Us
About Us
FAQ
Dashboard
Logout
Create New Item
Item Name
Item ID
Quantity InStock
Image
Choose File
No file chosen
Create Item
About
Investor Relations
Jobs
Press
Blog


Apeksha Hospital Donor Engagement System
Hobby
Vercel Ship
Feedback
Changelog
Help
Docs
Your Pro Trial has expired. Would you like to upgrade to Pro?
Upgrade Now
Overview
Integrations
Activity
Domains
Usage
Monitoring
Storage
AI
Settings
Search Repositories and Projects...
Sort by activity
Add New...
Recent Previews
Env Changes Merge pull request #125 fro...
Preview #125 1lyjqdifk
Production Merge pull request #126 from ...
Preview #127 g6c3g9skv
Dev Merge pull request #125 from Resear...
Preview #126 6khq5c7c5
Donor section hosted model
Preview #99 3o2m2r3nu
Feature/medication dashboard Merge br...
Preview #86 96ngxvyls3
hair-donation Frontend Updated
Preview Source f1wxbypbm
blood-donor Merge pull request #51 fro...
Preview Source bnv22xkkq
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apeksha-hospital-donor-engagement-syst...
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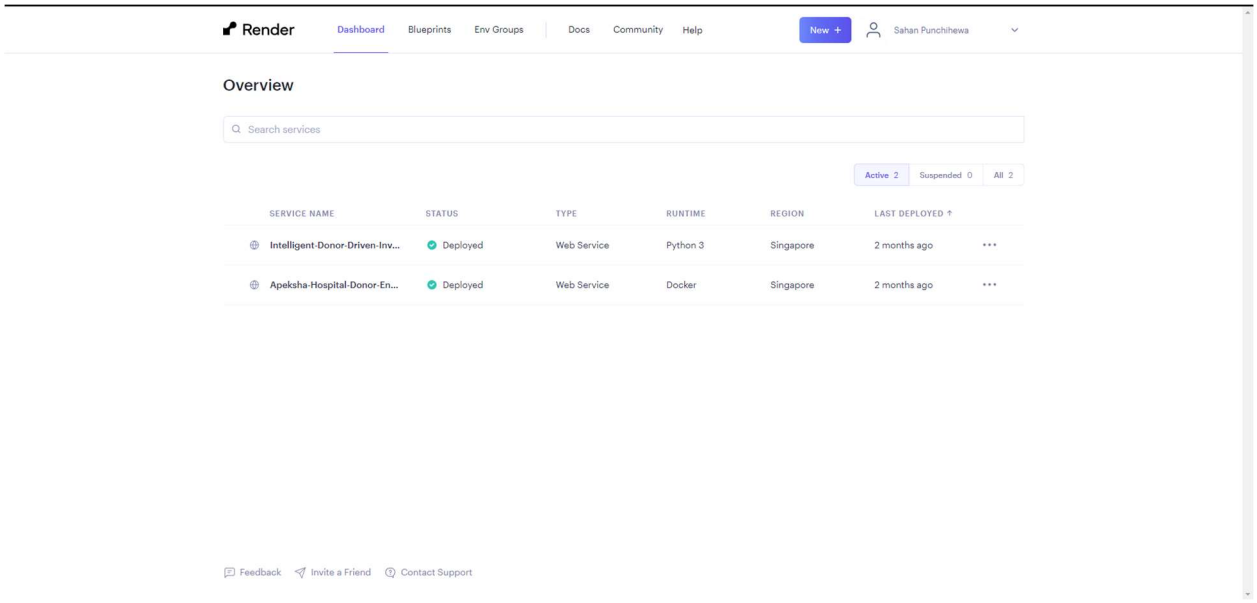
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Dashboard
Blueprints
Env Groups
Docs
Community
Help
New +
Sahan Punchihewa
Overview
Search services
Active 2
Suspended 0
All 2
SERVICE NAME
STATUS
TYPE
RUNTIME
REGION
LAST DEPLOYED
Intelligent-Donor-Driven-Inv...
Deployed
Web Service
Python 3
Singapore
2 months ago
Apeksha-Hospital-Donor-En...
Deployed
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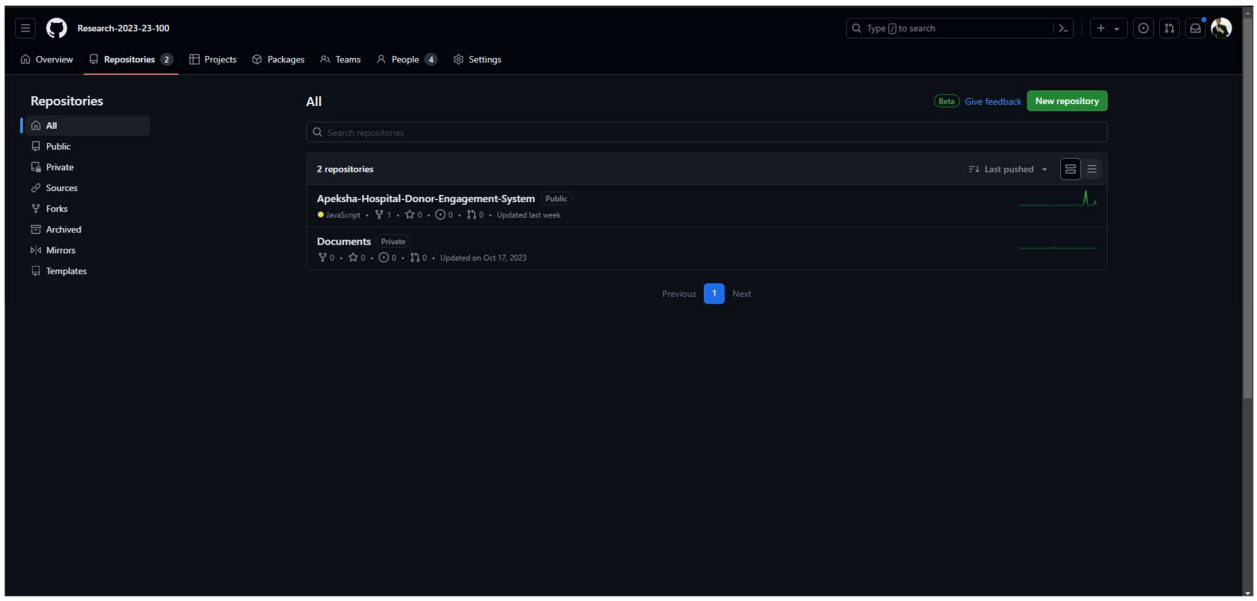
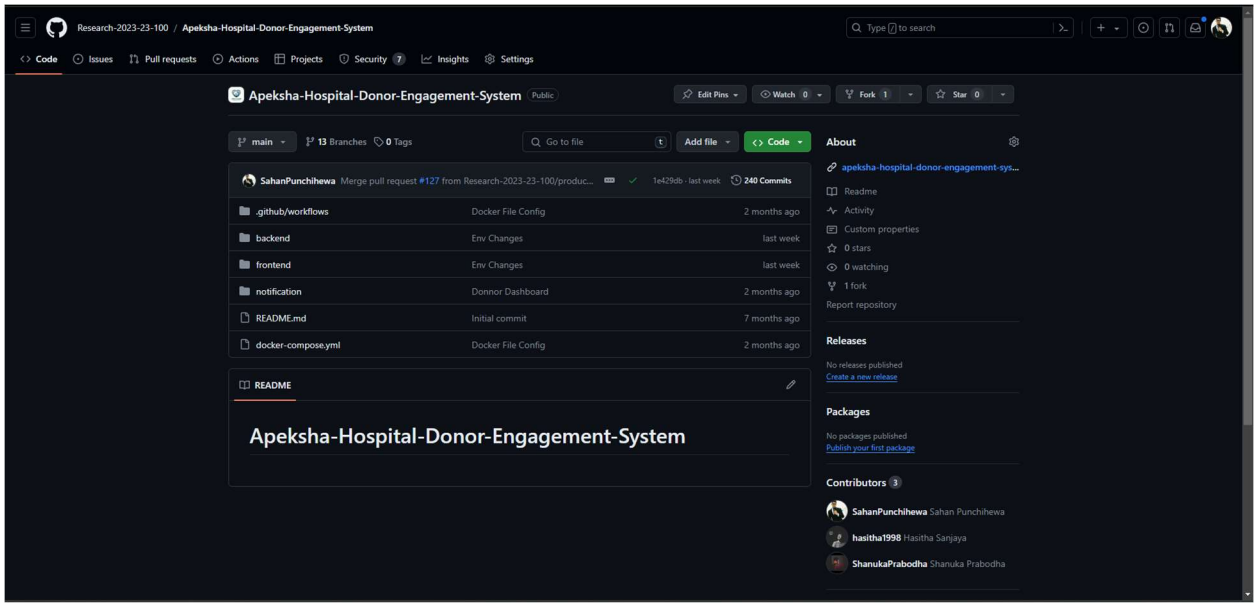
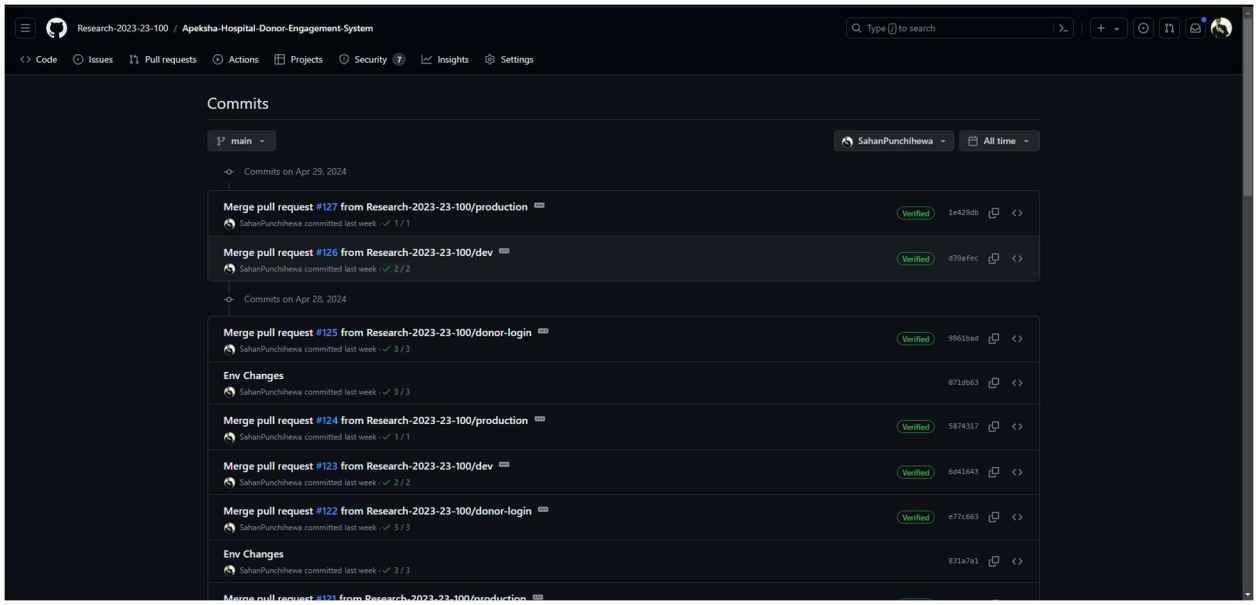
Docker
Singapore
2 months ago
Feedback
Invite a Friend
Contact Support

9 Version Control and Contribution






Research-2023-23-100 / Apeksha-Hospital-Donor-Engagement-System
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Code
Issues
Pull requests
Actions
Projects
Security 7
Insights
Settings
Commits
main
SahanPunchihewa
All time
Commits on Apr 29, 2024
Merge pull request #127 from Research-2023-23-100/production
SahanPunchihewa committed last week · 1 / 1
Verified
1e429db
Merge pull request #126 from Research-2023-23-100/dev
SahanPunchihewa committed last week · 2 / 2
Verified
d39afec
Commits on Apr 28, 2024
Merge pull request #125 from Research-2023-23-100/donor-login
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Merge pull request #123 from Research-2023-23-100/dev
SahanPunchihewa committed last week · 2 / 2
Verified
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Merge pull request #122 from Research-2023-23-100/donor-login
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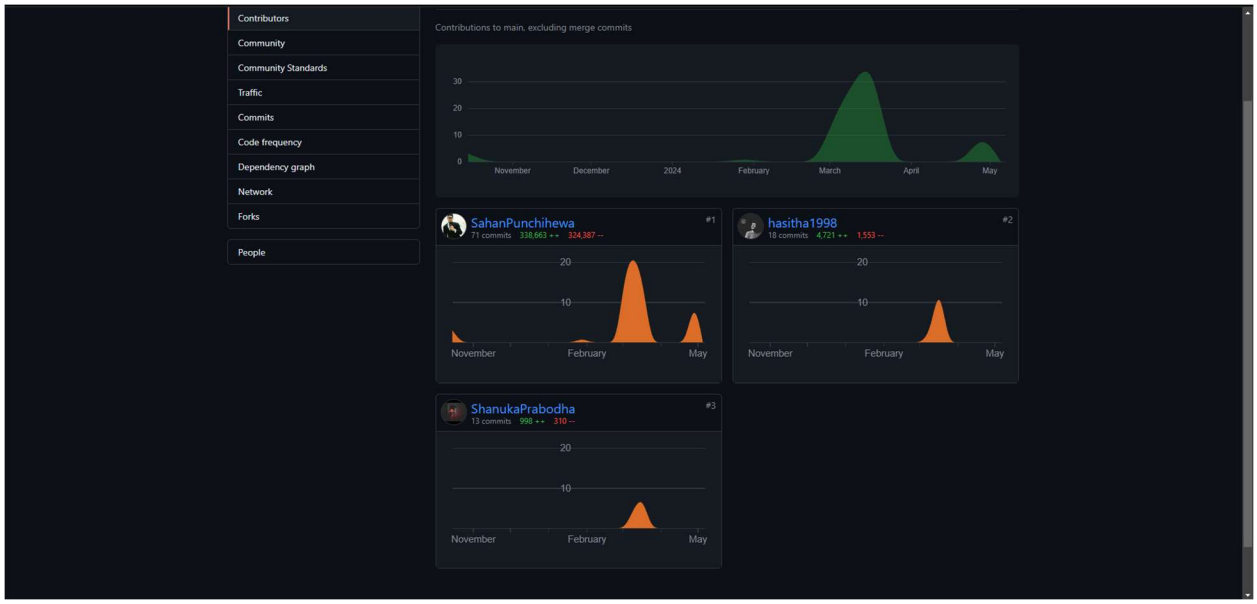
Contributors
Community
Community Standards
Traffic
Commits
Code frequency
Dependency graph
Network
Forks
People
Contributions to main, excluding merge commits
30
20
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November
December
2024
February
March
April
May
SahanPunchihewa
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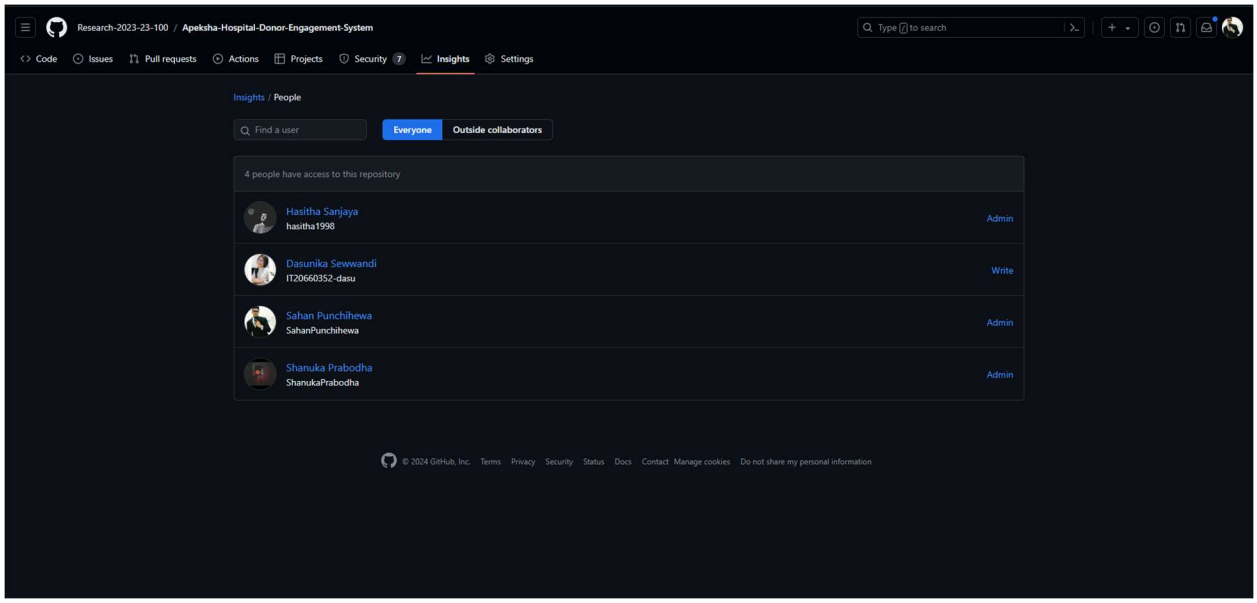
#1
hasitha1998
18 commits 4,721 ++ 1,553 --
#2
ShanukaPrabodha
13 commits 998 ++ 310 --
#3


Research-2023-23-100 / Apeksha-Hospital-Donor-Engagement-System
Type / to search
Code
Issues
Pull requests
Actions
Projects
Security 7
Insights
Settings
Insights / People
Find a user
Everyone
Outside collaborators
4 people have access to this repository
Hasitha Sanjaya
hasitha1998
Admin
Dasunika Sewwandi
IT20660352-dasu
Write
Sahan Punchihewa
SahanPunchihewa
Admin
Shanuka Prabodha
ShanukaPrabodha
Admin
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Apeksha Hospital Donor Engagement System

2023-24-100

Status Document 02

Prabodha K.W.D.S

BSc (Hons) in Information Technology specializing in Software Engineering

Department of Information Technology

Sri Lanka Institute of Information Technology Sri Lanka

August 2023

Critical Medication Priority Recommender System

2023-24-100

Status Document 02

Prabodha K.W.D.S

BSc (Hons) in Information Technology specializing in Software Engineering

Department of Information Technology

Sri Lanka Institute of Information Technology Sri Lanka

August 2023

Declaration of The Candidate & Supervisor

I declare that this is my work, and this proposal does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any other university or institute of higher learning and to the best of our knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

Name	**Student ID**	**Signature**
Prabodha K.W.D. S	IT20665098	

The above candidates are carrying out research for the undergraduate Dissertation under my supervision.

Signature of the supervisor: Date:

--- ---

Signature of the Co-supervisor: Date:

--- ---

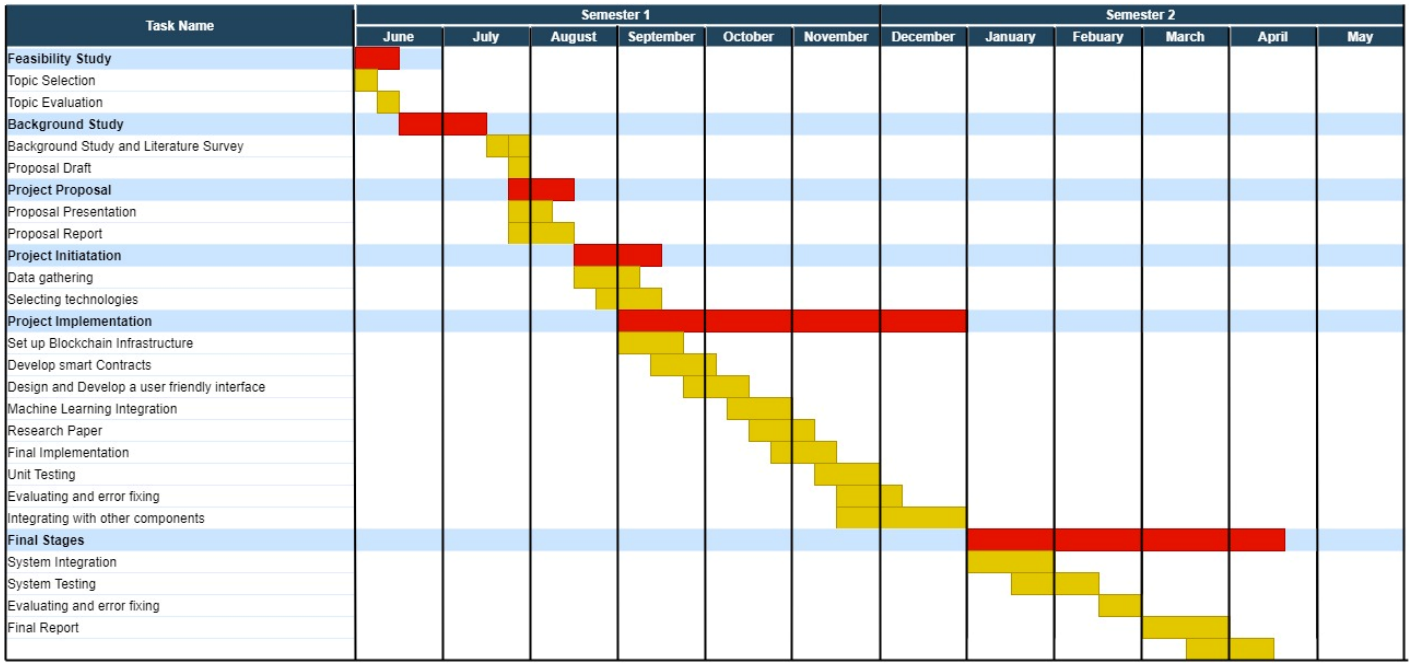
Table of Contents

Introduction

The "Critical Medication Priority Recommender System" presents a novel machine learning-based solution aimed at addressing the persistent challenge faced by Apeksha Hospital in identifying and prioritizing essential medications in low supply, ultimately affecting patient care quality. This research component outlines the development of a medication recommendation platform that strategically assesses historical medication usage, donation records, and medication attributes. The system integrates two pivotal machine learning models: a "Shortage Prediction" model to anticipate medication scarcities, a "Critical Medication Identification" model ranking medications based on medical significance. This process is further enhanced through optimization algorithms that rigorously prioritize medications by importance, availability, and expiration. Leveraging existing medication donation frameworks, this research not only fills a critical gap in medication allocation but also bolsters resource efficiency, offering a comprehensive solution for ensuring high-quality patient care in the face of limited resources.

Keywords: Medication shortage, Machine learning-based system, Shortage prediction model, Donation utilization

Gantt Chart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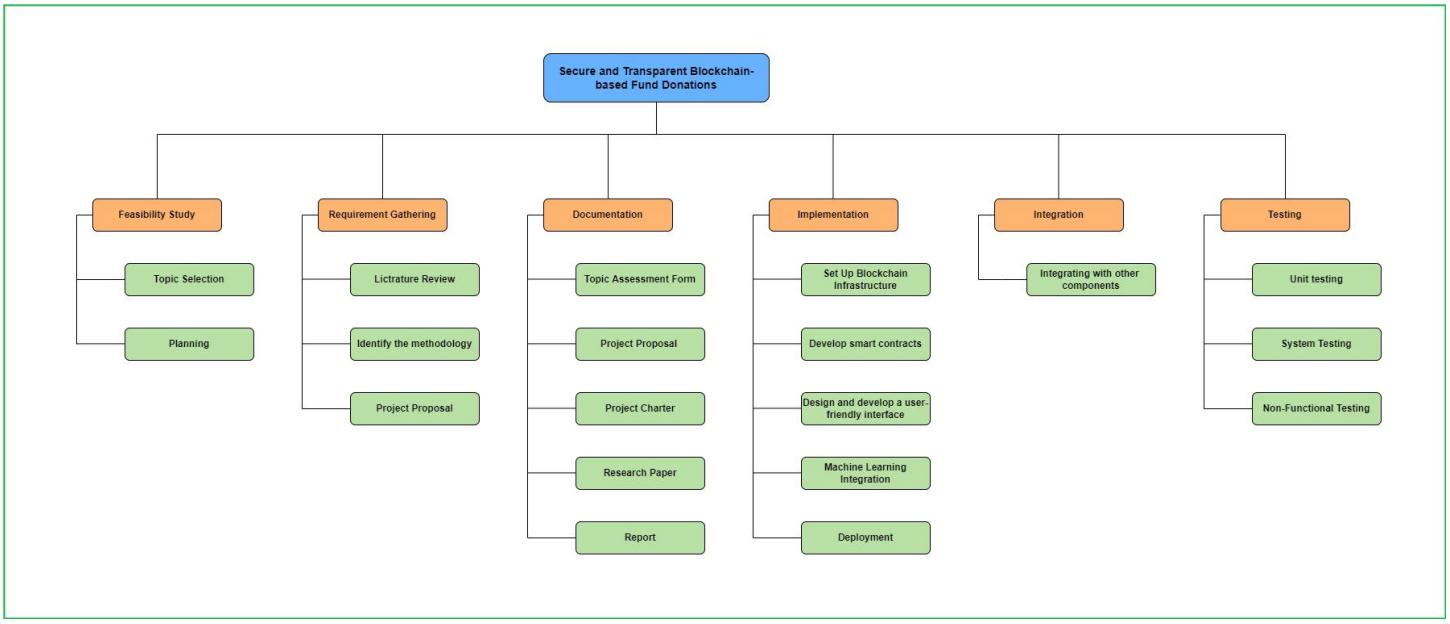
Semester 1
Semester 2
June
July
August
September
October
November
December
January
Febuary
March
April
May
Feasibility Study
Topic Selection
Topic Evaluation
Background Study
Background Study and Literature Survey
Proposal Draft
Project Proposal
Proposal Presentation
Proposal Report
Project Initiatation
Data gathering
Selecting technologies
Project Implementation
Set up Blockchain Infrastructure
Develop smart Contracts
Design and Develop a user friendly interface
Machine Learning Integration
Research Paper
Final Implementation
Unit Testing
Evaluating and error fixing
Integrating with other components
Final Stages
System Integration
System Testing
Evaluating and error fixing
Final Report

Work Break-Down Structure



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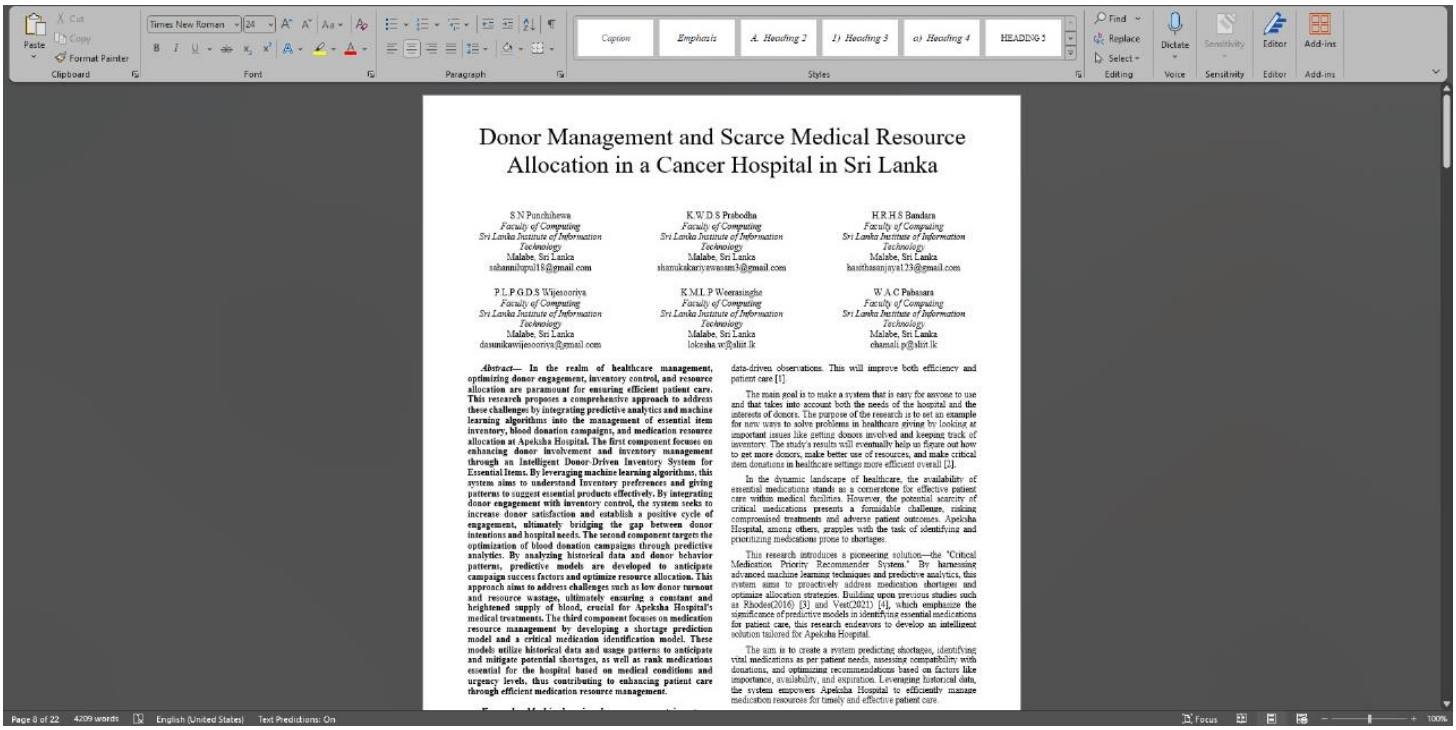

Donor Management and Scarce Medical Resource Allocation in a Cancer Hospital in Sri Lanka

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***Abstract*— In the realm of healthcare management, optimizing donor engagement, inventory control, and resource allocation are paramount for ensuring efficient patient care. This research proposes a comprehensive approach to address these challenges by integrating predictive analytics and machine learning algorithms into the management of essential item inventory, blood donation campaigns, and medication resource allocation at Apeksha Hospital. The first component focuses on enhancing donor involvement and inventory management through an Intelligent Donor-Driven Inventory System for Essential Items. By leveraging machine learning algorithms, this system aims to understand Inventory preferences and giving patterns to suggest essential products effectively. By integrating donor engagement with inventory control, the system seeks to increase donor satisfaction and establish a positive cycle of engagement, ultimately bridging the gap between donor intentions and hospital needs. The second component targets the optimization of blood donation campaigns through predictive analytics. By analyzing historical data and donor behavior patterns, predictive models are developed to anticipate campaign success factors and optimize resource allocation. This approach aims to address challenges such as low donor turnout and resource wastage, ultimately ensuring a constant and heightened supply of blood, crucial for Apeksha Hospital's medical treatments. The third component focuses on medication resource management by developing a shortage prediction model and a critical medication identification model. These models utilize historical data and usage patterns to anticipate and mitigate potential shortages, as well as rank medications essential for the hospital based on medical conditions and urgency levels, thus contributing to enhancing patient care through efficient medication resource management.**

data-driven observations. This will improve both efficiency and patient care [1].

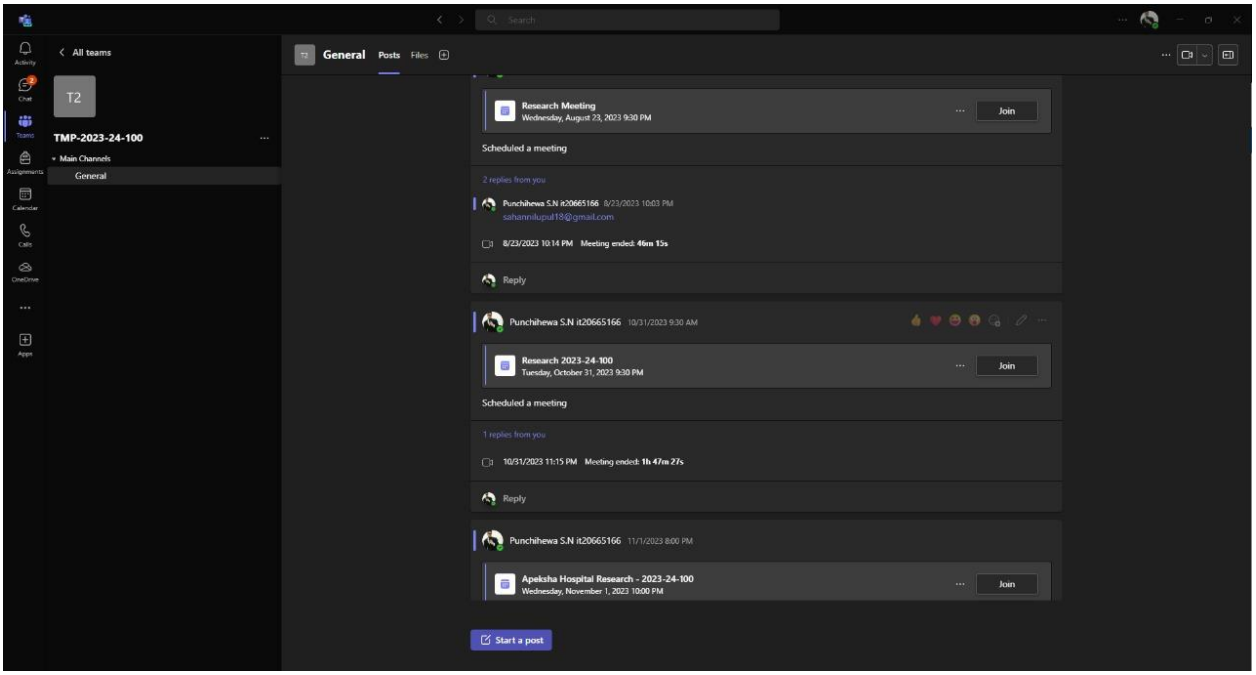
The main goal is to make a system that is easy for anyone to use and that takes into account both the needs of the hospital and the interests of donors. The purpose of the research is to set an example for new ways to solve problems in healthcare giving by looking at important issues like getting donors involved and keeping track of inventory. The study's results will eventually help us figure out how to get more donors, make better use of resources, and make critical item donations in healthcare settings more efficient overall [2].

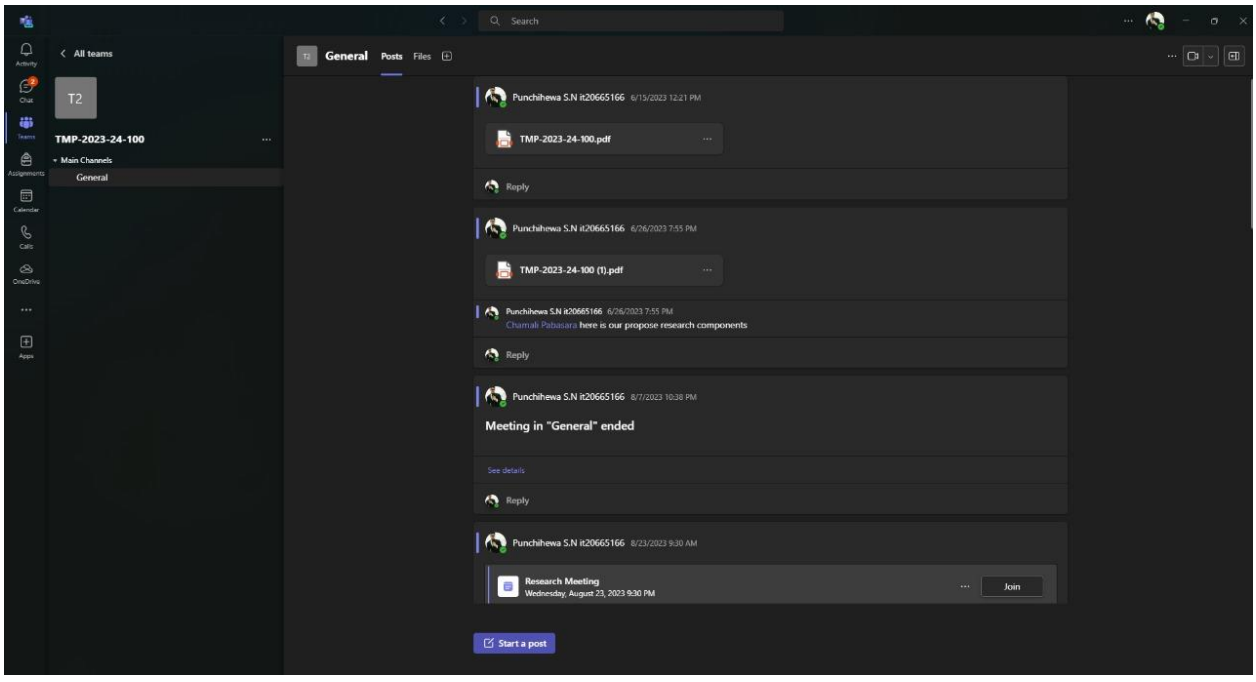
In the dynamic landscape of healthcare, the availability of essential medications stands as a cornerstone for effective patient care within medical facilities. However, the potential scarcity of critical medications presents a formidable challenge, risking compromised treatments and adverse patient outcomes. Apeksha Hospital, among others, grapples with the task of identifying and prioritizing medications prone to shortages.

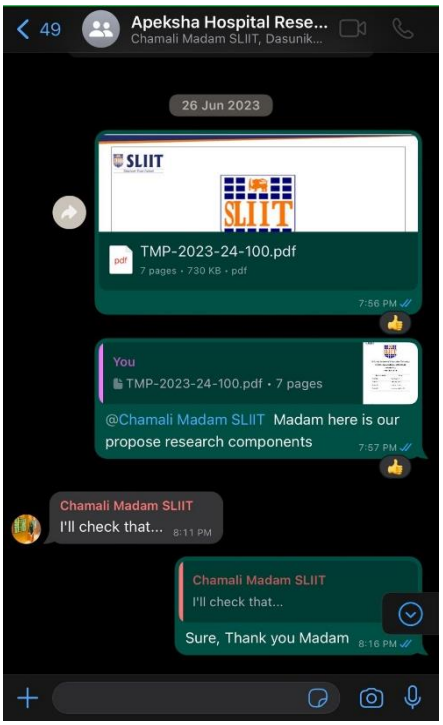
This research introduces a pioneering solution—the "Critical Medication Priority Recommender System." By harnessing advanced machine learning techniques and predictive analytics, this system aims to proactively address medication shortages and optimize allocation strategies. Building upon previous studies such as Rhodes(2016) [3] and Vest(2021) [4], which emphasize the significance of predictive models in identifying essential medications for patient care, this research endeavors to develop an intelligent solution tailored for Apeksha Hospital.

The aim is to create a system predicting shortages, identifying vital medications as per patient needs, assessing compatibility with donations, and optimizing recommendations based on factors like importance, availability, and expiration. Leveraging historical data, the system empowers Apeksha Hospital to efficiently manage medication resources for timely and effective patient care.

Screenshots of meetings and conversations with supervisor



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26 Jun 2023
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Sure, Thank you Madam
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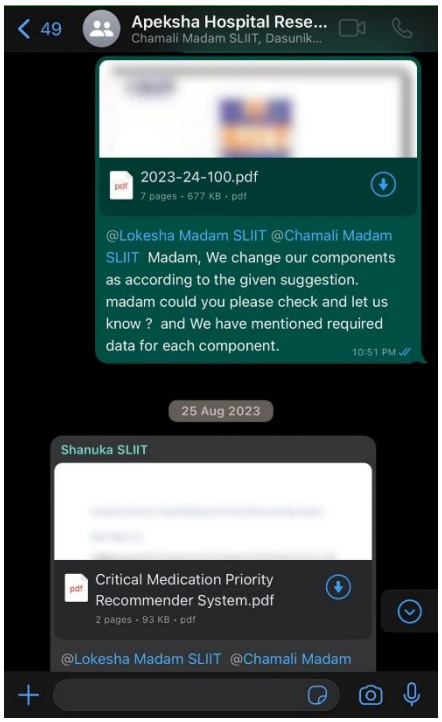
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25 Aug 2023
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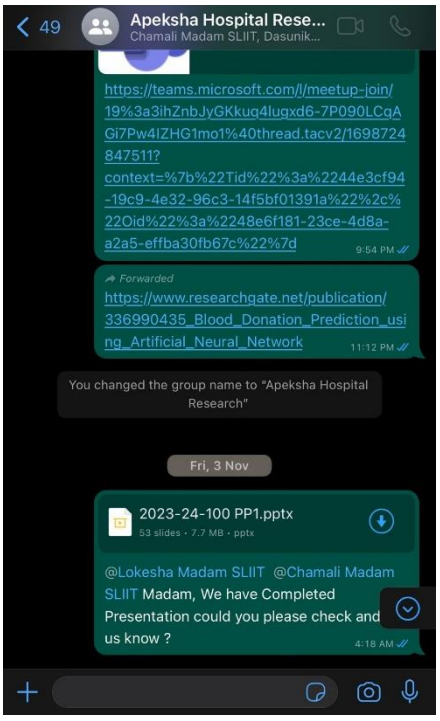
@Lokesha Madam SLIIT @Chamali Madam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Fri, 3 Nov
2023-24-100 PP1.pptx
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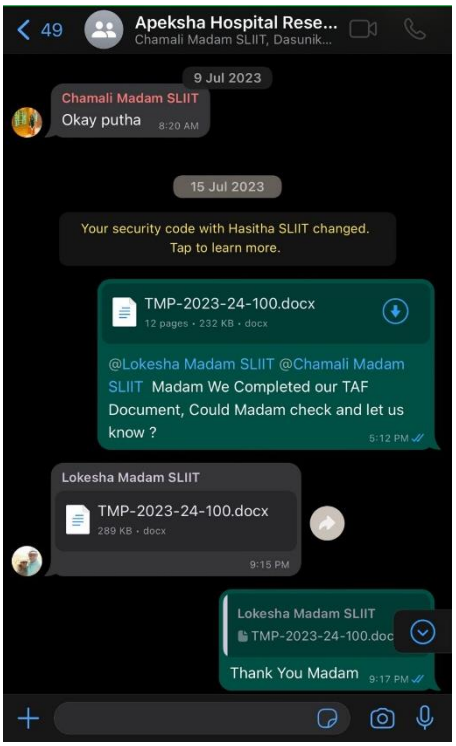
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9 Jul 2023
Chamali Madam SLIIT
Okay putha
8:20 AM
15 Jul 2023
Your security code with Hasitha SLIIT changed. Tap to learn more.
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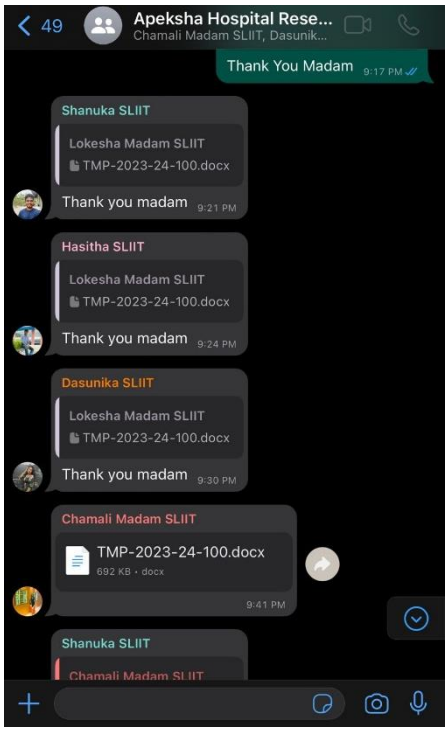
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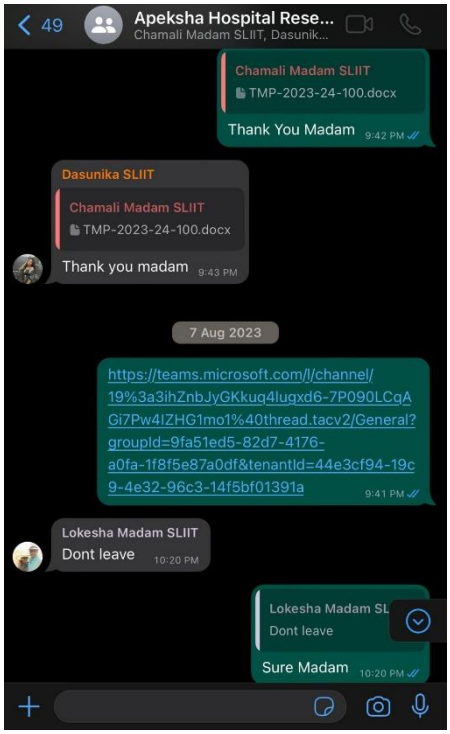
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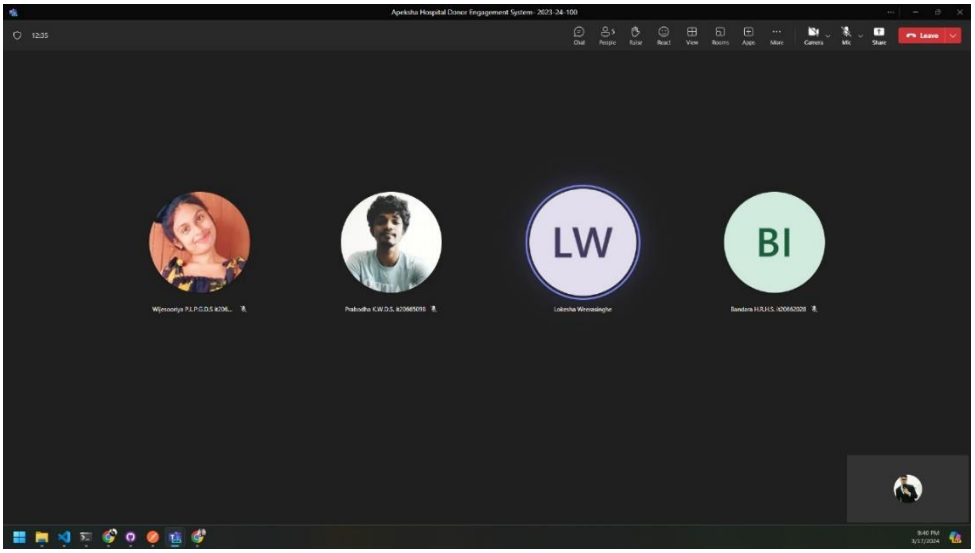
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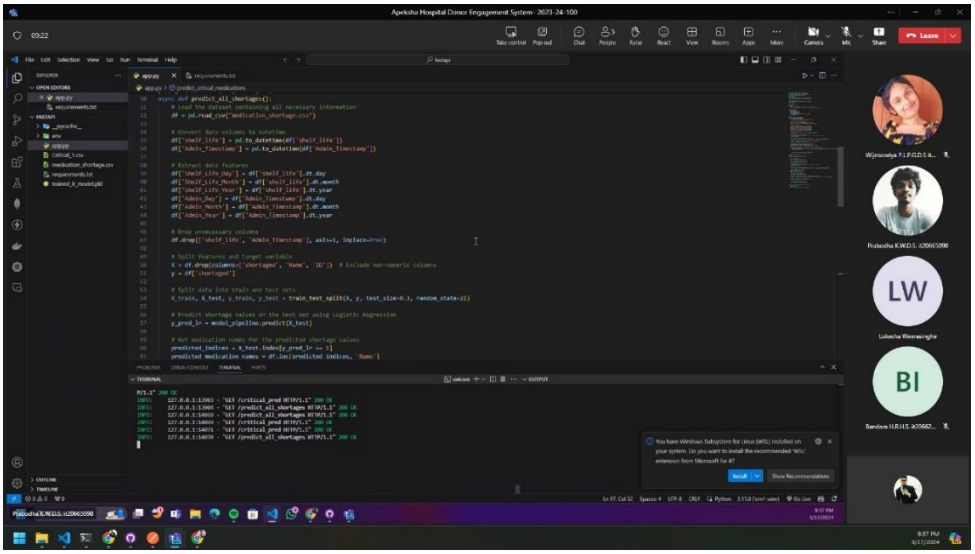
Apeksha Hospital Donor Engagement System- 2023-24-100
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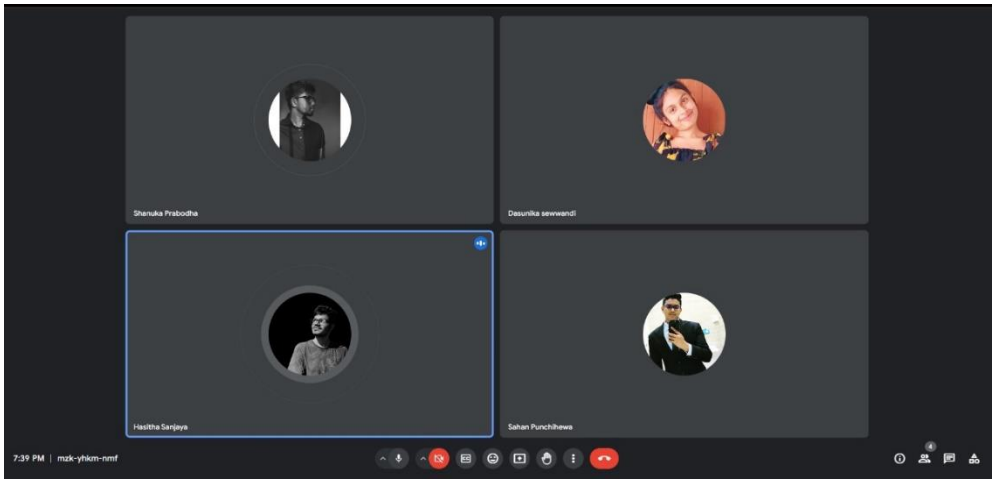
Shanuka Prabodha
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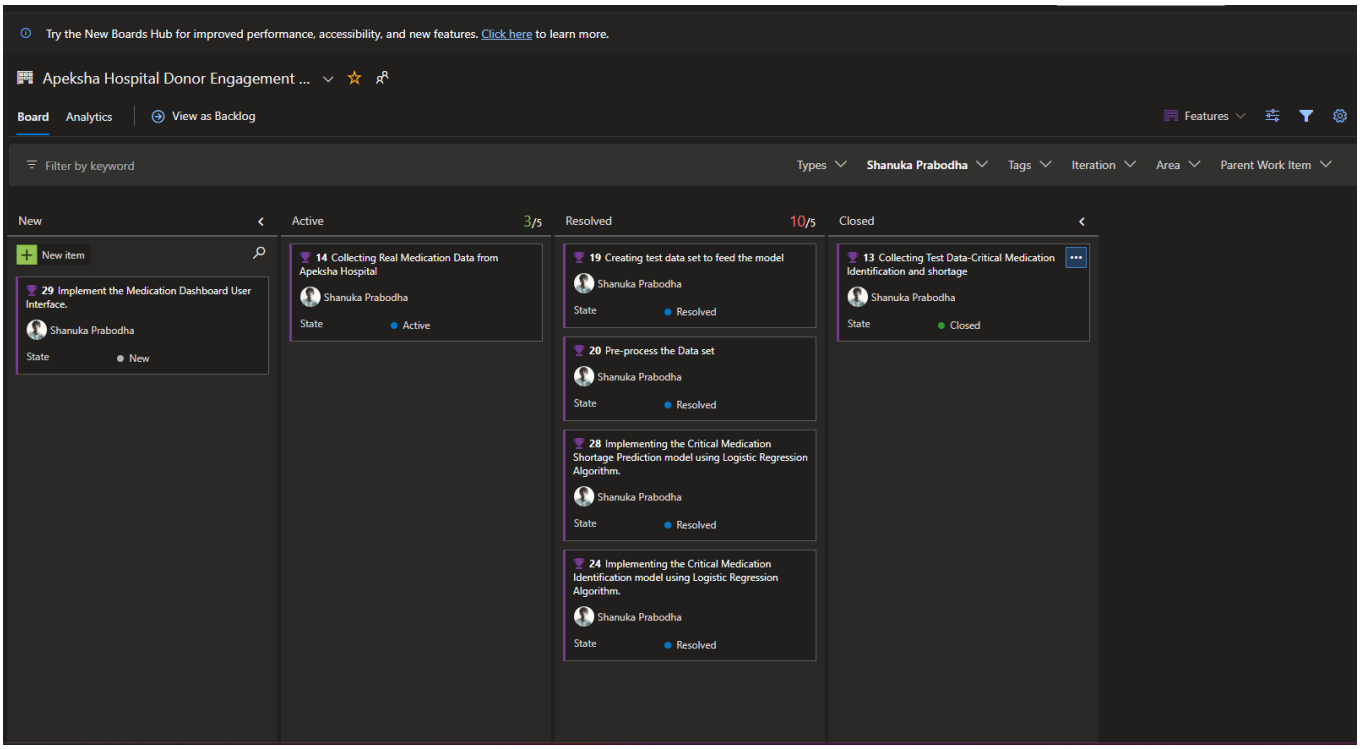
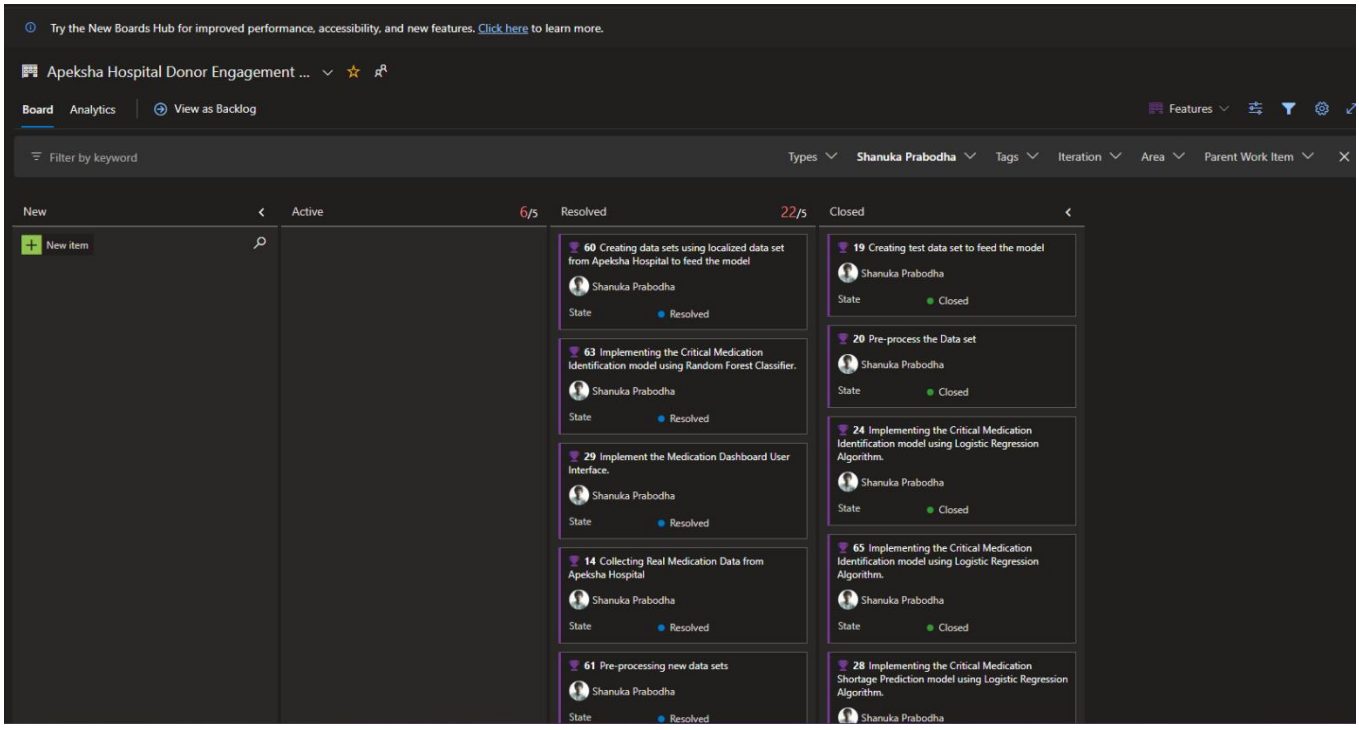
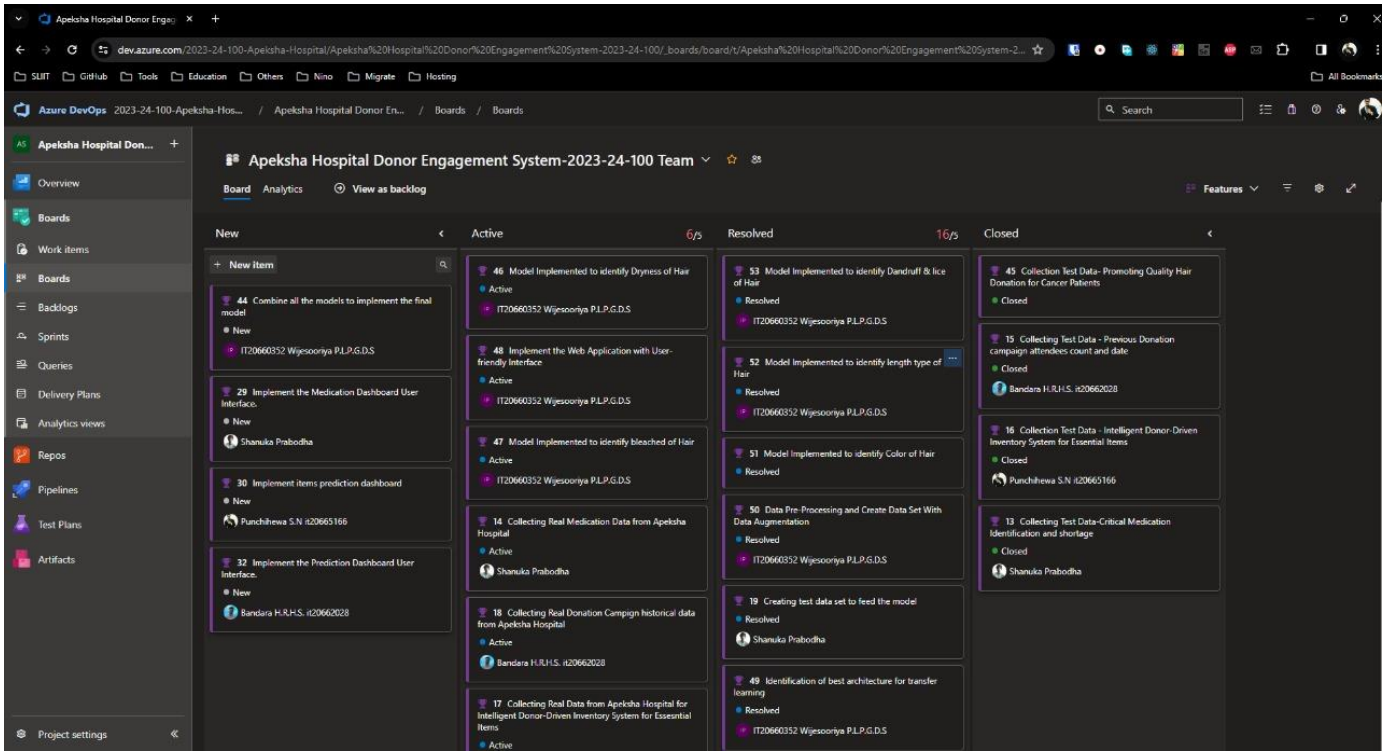
Hasitha Sanjaya
Sahan Punchihewa
7:39 PM | mzk-yhkm-nmf

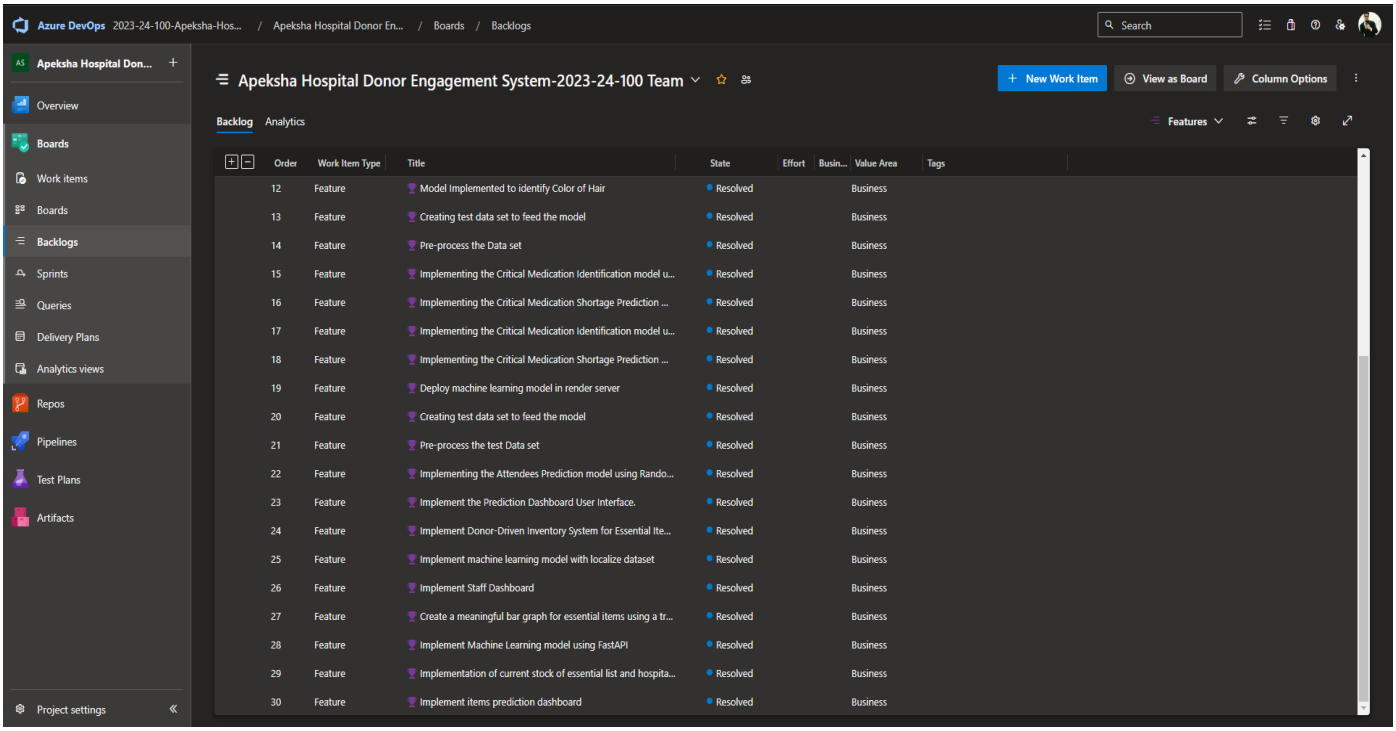
Personal Backlog





Overall Backlog





Implemented Machine Learning Models

Trained Using Test Data

Critical Medication Identification Model

```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, classification_report
from sklearn.linear_model import LogisticRegression

# Read the CSV file into a DataFrame
data = pd.read_csv('critical_medication.csv')

data['Shelf_Life'] = pd.to_datetime(data['Shelf_Life'])
data['Shelf_Life_Day'] = data['Shelf_Life'].dt.day
data['Shelf_Life_Month'] = data['Shelf_Life'].dt.month
data['Shelf_Life_Year'] = data['Shelf_Life'].dt.year

data.drop(['Shelf_Life'], axis=1, inplace=True)

# Define the features (predictors) and the target variable
X = data[['Patients', 'Usage','Emergency_Usage','Shelf_Life_Day','Shelf_Life_Month','Shelf_Life_Year']]
y = data['Importance_Level']

# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

log_reg=LogisticRegression(random_state=0).fit(X_train,y_train)

log_reg.predict(X_train)
```

Shortage Prediction Model

```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import LogisticRegression

df=pd.read_csv("shortage_data.csv")

df['Shelf_Life'] = pd.to_datetime(df['Shelf_Life'])
df['Admin_Timestamp'] = pd.to_datetime(df['Admin_Timestamp'])

df['Shelf_Life_Day'] = df['Shelf_Life'].dt.day
df['Shelf_Life_Month'] = df['Shelf_Life'].dt.month
df['Shelf_Life_Year'] = df['Shelf_Life'].dt.year

df['Admin_Day'] = df['Admin_Timestamp'].dt.day
df['Admin_Month'] = df['Admin_Timestamp'].dt.month
df['Admin_Year'] = df['Admin_Timestamp'].dt.year

df.drop(['Shelf_Life', 'Admin_Timestamp'], axis=1, inplace=True)
X=df.drop(columns='Medication Shortage')

y=df['Medication Shortage']
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.3,random_state=21)
X_train

scaler=StandardScaler()
X_train_scaled = scaler.fit_transform(X_train)
X_test_scaled=scaler.transform(X_test)
X_train_scaled

log_reg=LogisticRegression(random_state=0).fit(X_train_scaled,y_train)
log_reg.predict(X_train_scaled)
log_reg.score(X_train_scaled, y_train)
```

Trained Using Localized Dataset Collected from Apeksha Hospital

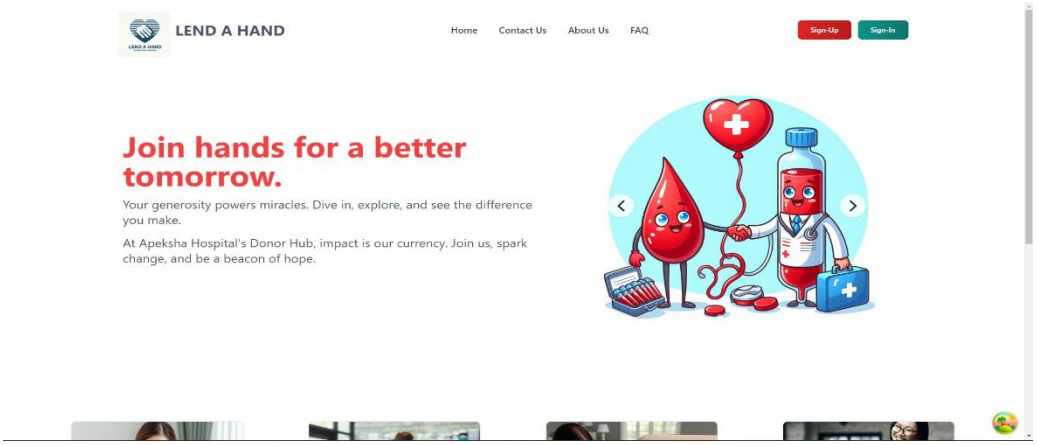
Critical Medication Identification Model

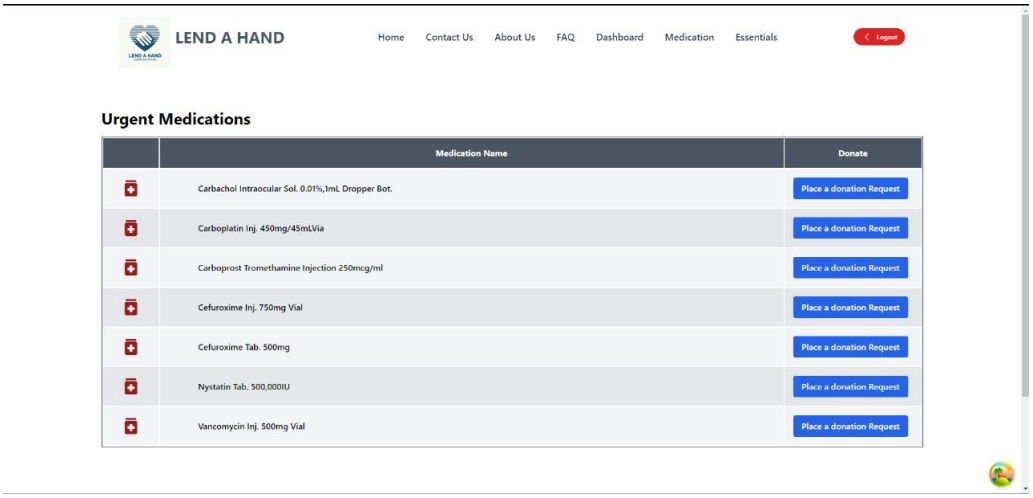
```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score

# Load the dataset
data = pd.read_csv("hospital_dataset.csv")

# Drop rows with missing target values
data = data.dropna(subset=['Priority'])

# Separate features (X) and target (y)
X = data.drop(columns=['SR No', 'Item Name', 'Group', 'Priority'])
y = data['Priority']

# Split data into train and test sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# Train a Random Forest classifier
model = RandomForestClassifier()
model.fit(X_train, y_train)

# Make predictions on the test set
predictions = model.predict(X_test)

# Calculate accuracy
accuracy = accuracy_score(y_test, predictions)

# Create a DataFrame with item names and predicted priority values
output_df = pd.DataFrame({'Item Name': data.loc[X_test.index, 'Item Name'], 'Predicted Priority': predictions})

# Display the output and accuracy
print("Predicted values:")
print(output_df)
print("\nAccuracy:", accuracy)

print("Train set shape:", X_train.shape)
print("Test set shape:", X_test.shape)

```

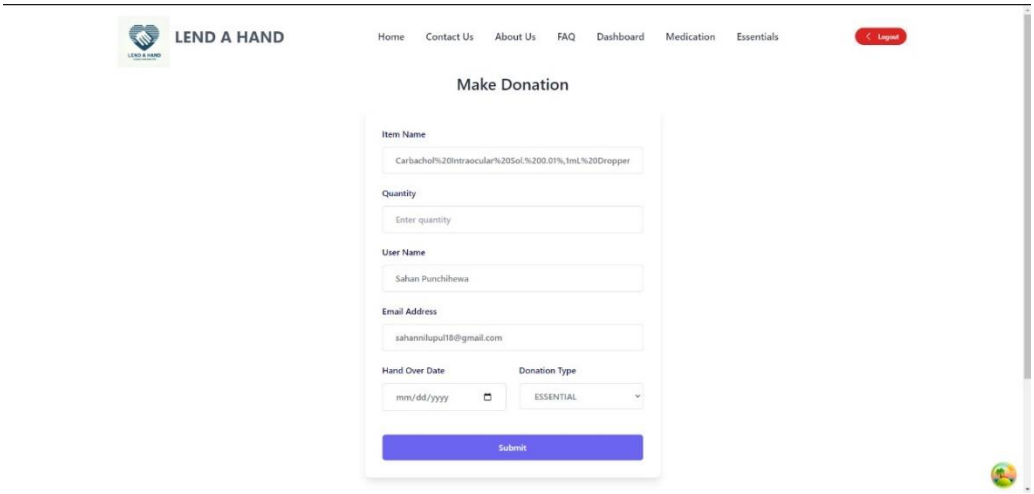
Shortage Prediction Model

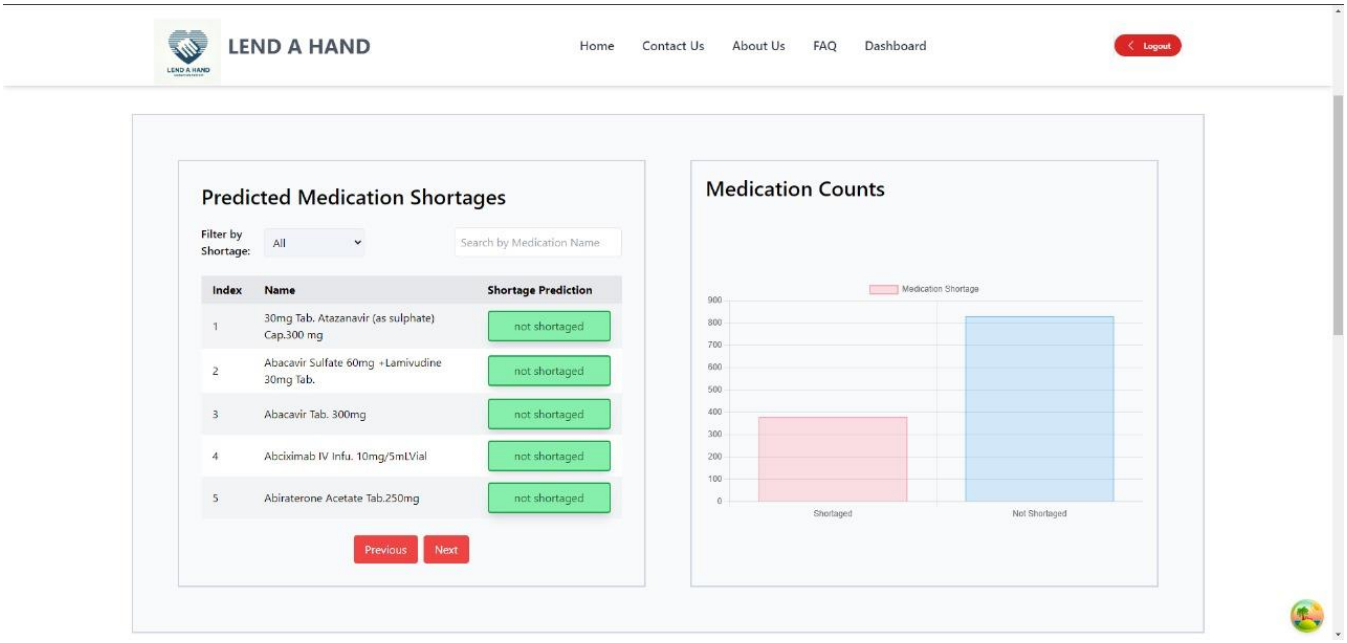
```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler, OneHotEncoder
from sklearn.compose import ColumnTransformer
from sklearn.pipeline import Pipeline
from sklearn.ensemble import RandomForestClassifier  # Change
from sklearn.impute import SimpleImputer
from sklearn.metrics import accuracy_score

# Load the dataset containing all necessary information
df = pd.read_csv("medication_shortage.csv")

# Convert date columns to datetime
df['shelf_life'] = pd.to_datetime(df['shelf_life'])
df['Admin_Timestamp'] = pd.to_datetime(df['Admin_Timestamp'])

# Extract date features
df['Shelf_Life_Day'] = df['shelf_life'].dt.day
df['Shelf_Life_Month'] = df['shelf_life'].dt.month
df['Shelf_Life_Year'] = df['shelf_life'].dt.year
df['Admin_Day'] = df['Admin_Timestamp'].dt.day
df['Admin_Month'] = df['Admin_Timestamp'].dt.month
df['Admin_Year'] = df['Admin_Timestamp'].dt.year

# Drop unnecessary columns
df.drop(['shelf_life', 'Admin_Timestamp'], axis=1, inplace=True)

# Split features and target variable
X = df.drop(columns=['shortaged', 'Name','ID'])  # Exclude non-numeric columns
y = df['shortaged']

# Split data into train and test sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# Define column transformer to handle numeric and categorical features
numeric_features = X.select_dtypes(include=['int64', 'float64']).columns
numeric_transformer = Pipeline(steps=[
    ('imputer', SimpleImputer(strategy='median')),
    ('scaler', StandardScaler())])

categorical_features = X.select_dtypes(include=['object']).columns
```

Web Implementation








LEND A HAND
Home
Contact Us
About Us
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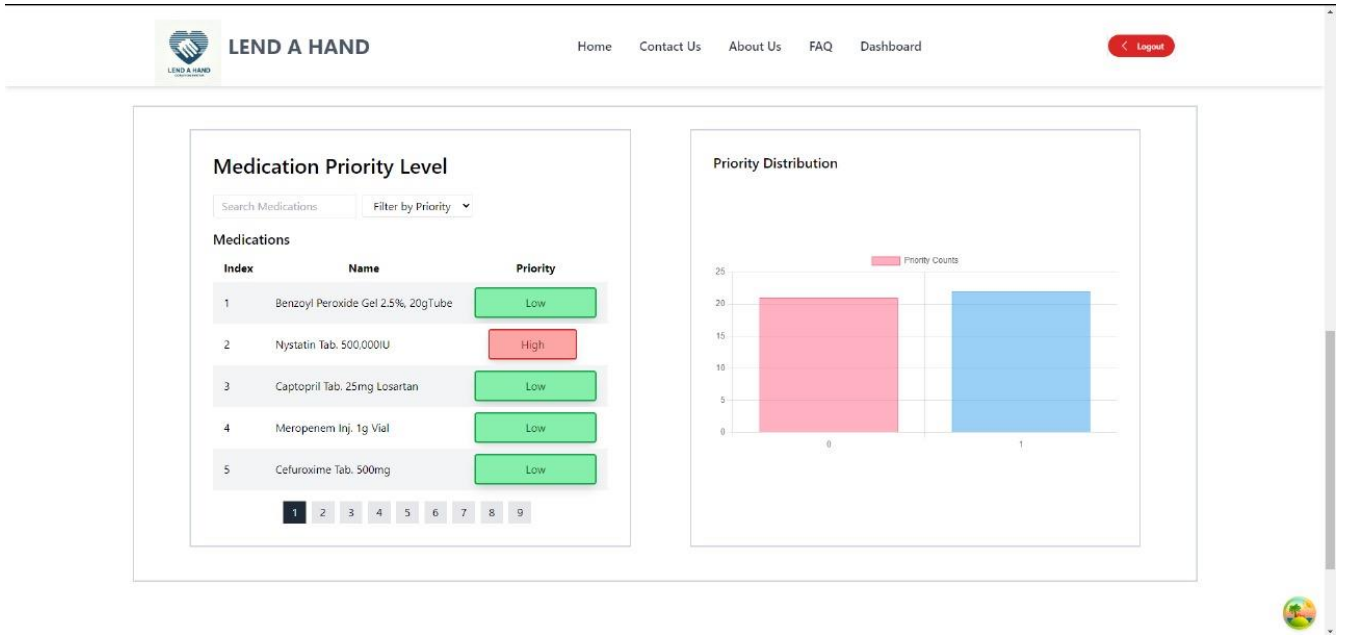
Logout
Predicted Medication Shortages
Filter by Shortage:
All
Search by Medication Name
Index
Name
Shortage Prediction
1
30mg Tab. Atazanavir (as sulphate) Cap.300 mg
not shortaged
2
Abacavir Sulfate 60mg +Lamivudine 30mg Tab.
not shortaged
3
Abacavir Tab. 300mg
not shortaged
4
Abciximab IV Infu. 10mg/5mLVial
not shortaged
5
Abiraterone Acetate Tab.250mg
not shortaged
Previous
Next
Medication Counts
Medication Shortage
900
800
700
600
500
400
300
200
100
0
Shortaged
Not Shortaged


LEND A HAND
Home
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FAQ
Dashboard
Logout
Medication Priority Level
Search Medications
Filter by Priority
Medications
Index
Name
Priority
1
Benzoyl Peroxide Gel 2.5%, 20gTube
Low
2
Nystatin Tab. 500,000IU
High
3
Captopril Tab. 25mg Losartan
Low
4
Meropenem Inj. 1g Vial
Low
5
Cefuroxime Tab. 500mg
Low
1
2
3
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6
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Priority Distribution
Priority Counts
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15
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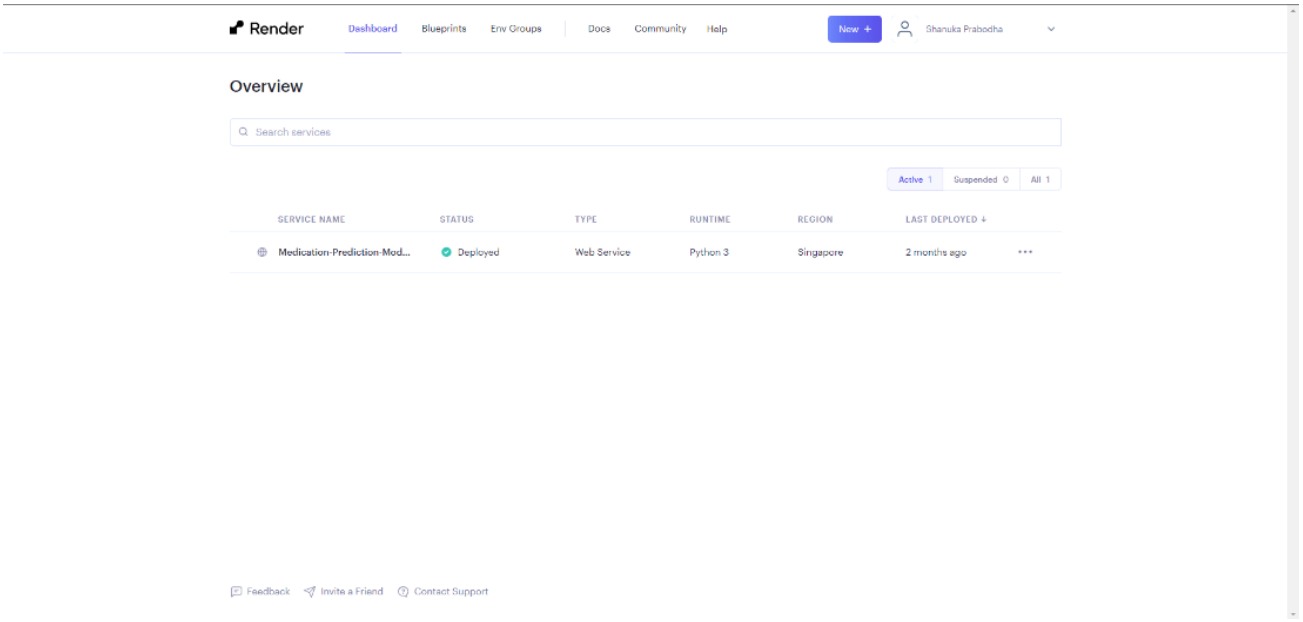
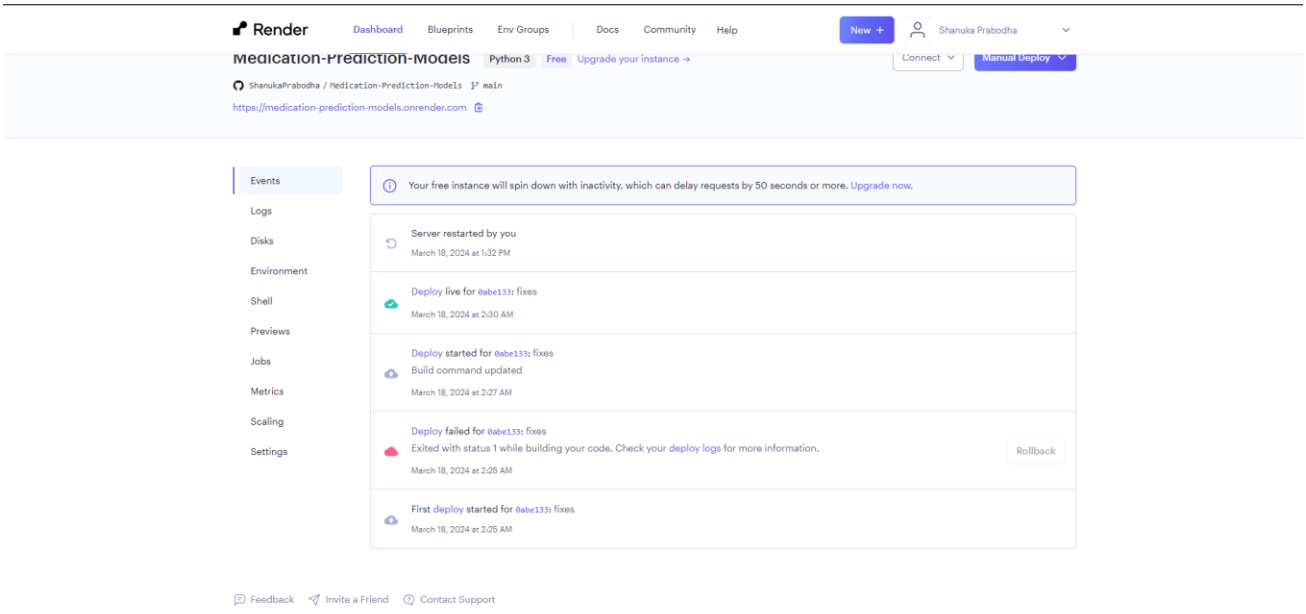
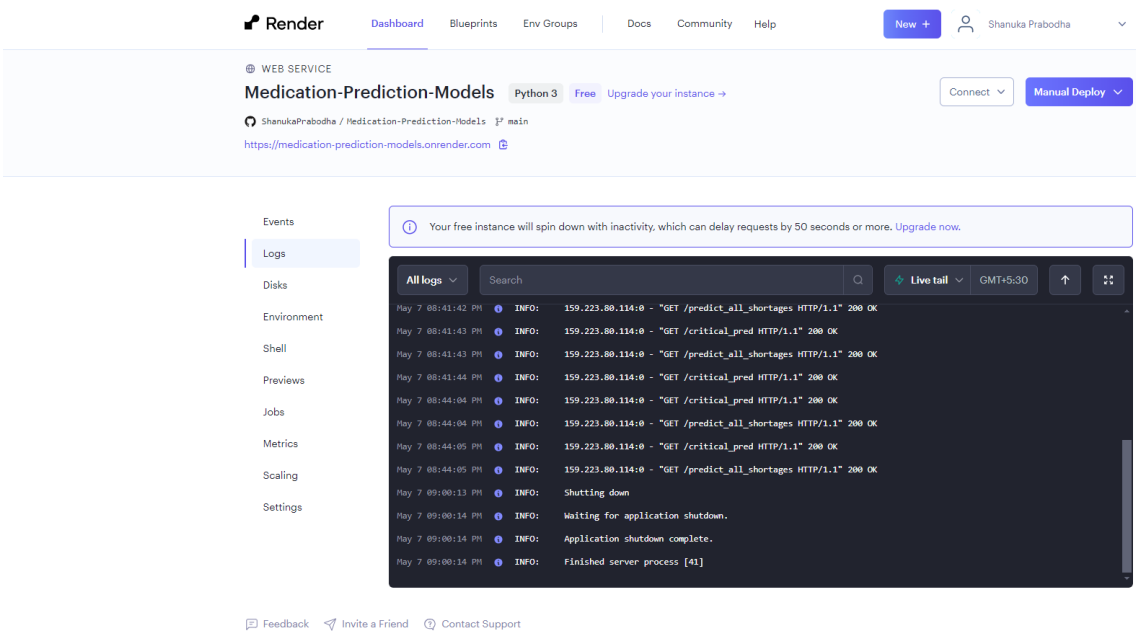
1

Deployment and Hosting

Python Model-Render






Render
Dashboard
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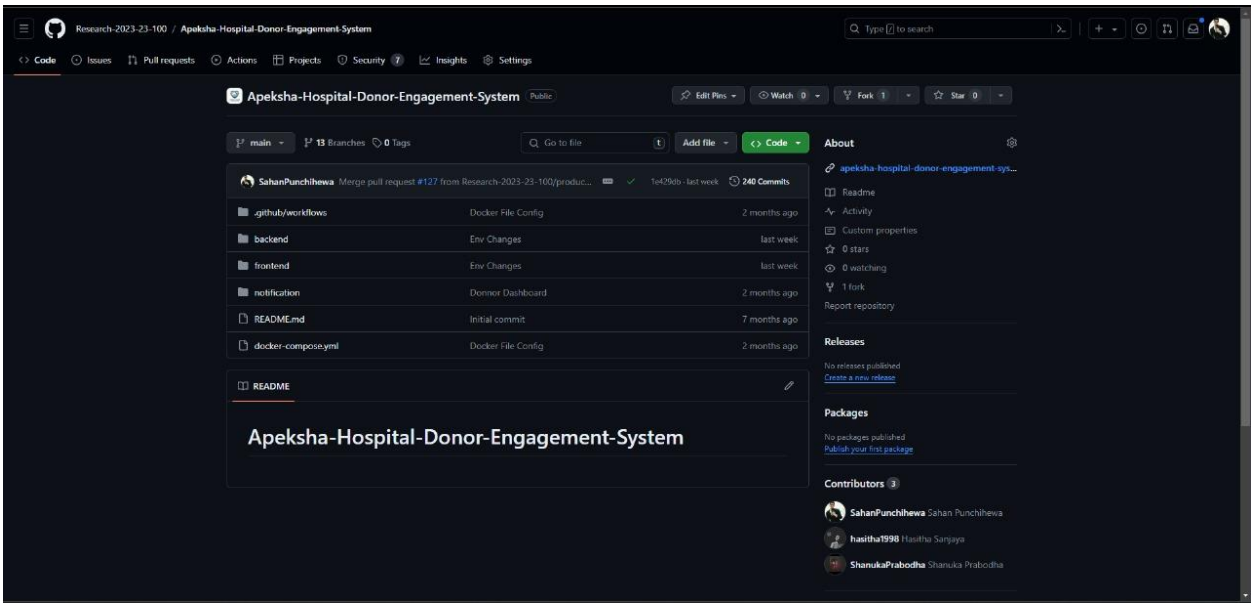
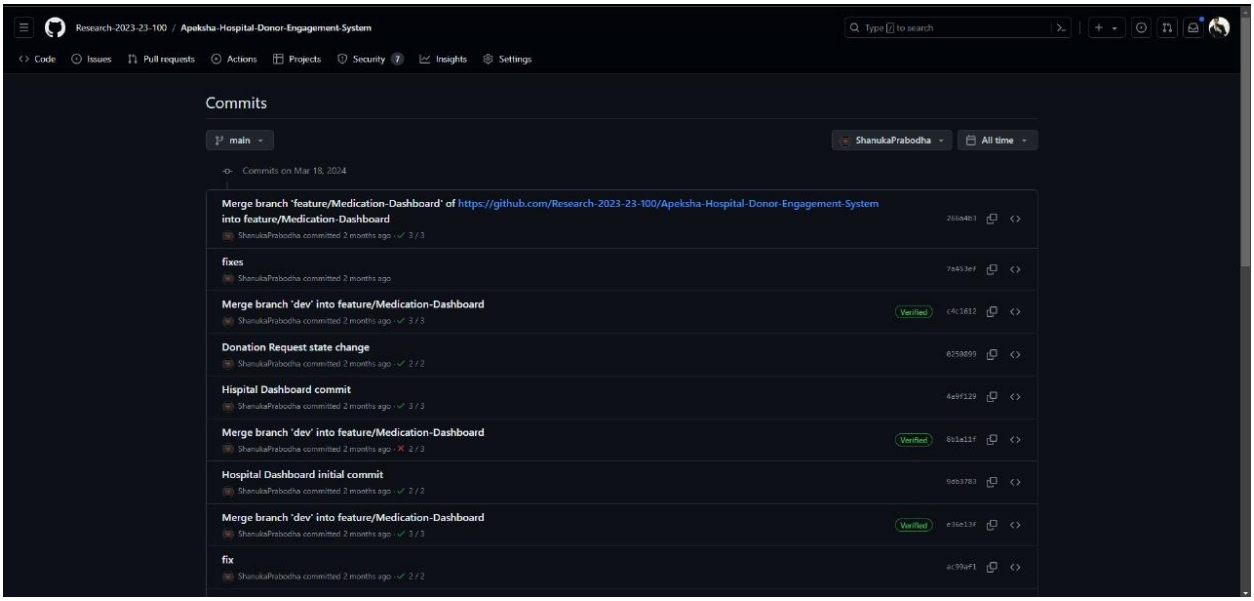
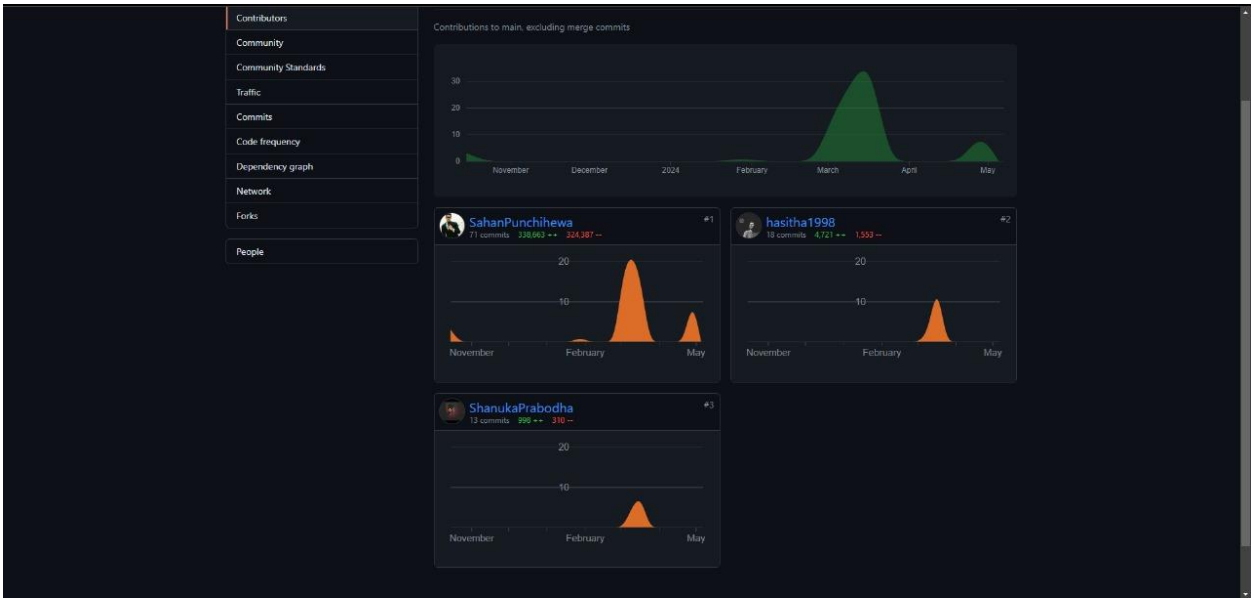
Env Groups
Docs
Community
Help
New +
Shanuka Prabodha
WEB SERVICE
Medication-Prediction-Models
Python 3
Free
Upgrade your instance →
Connect
Manual Deploy
ShanukaPrabodha / Medication-Prediction-Models main
https://medication-prediction-models.onrender.com
Events
Logs
Disks
Environment
Shell
Previews
Jobs
Metrics
Scaling
Settings
Your free instance will spin down with inactivity, which can delay requests by 50 seconds or more. Upgrade now.
All logs
Search
Live tail
GMT+5:30
May 7 08:41:42 PM INFO: 159.223.80.114:0 - "GET /predict_all_shortages HTTP/1.1" 200 OK
May 7 08:41:43 PM INFO: 159.223.80.114:0 - "GET /critical_pred HTTP/1.1" 200 OK
May 7 08:41:43 PM INFO: 159.223.80.114:0 - "GET /predict_all_shortages HTTP/1.1" 200 OK
May 7 08:41:44 PM INFO: 159.223.80.114:0 - "GET /critical_pred HTTP/1.1" 200 OK
May 7 08:44:04 PM INFO: 159.223.80.114:0 - "GET /critical_pred HTTP/1.1" 200 OK
May 7 08:44:04 PM INFO: 159.223.80.114:0 - "GET /predict_all_shortages HTTP/1.1" 200 OK
May 7 08:44:05 PM INFO: 159.223.80.114:0 - "GET /critical_pred HTTP/1.1" 200 OK
May 7 08:44:05 PM INFO: 159.223.80.114:0 - "GET /predict_all_shortages HTTP/1.1" 200 OK
May 7 09:00:13 PM INFO: Shutting down
May 7 09:00:14 PM INFO: Waiting for application shutdown.
May 7 09:00:14 PM INFO: Application shutdown complete.
May 7 09:00:14 PM INFO: Finished server process [41]
Feedback
Invite a Friend
Contact Support

Version Control and Contribution



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Community
Community Standards
Traffic
Commits
Code frequency
Dependency graph
Network
Forks
People
Contributions to main, excluding merge commits
30
20
10
0
November
December
2024
February
March
April
May
SahanPunchihewa
#1
71 commits 338,663 ++ 324,387 --
20
10
November
February
May
hasitha1998
#2
18 commits 4,721 ++ 1,553 --
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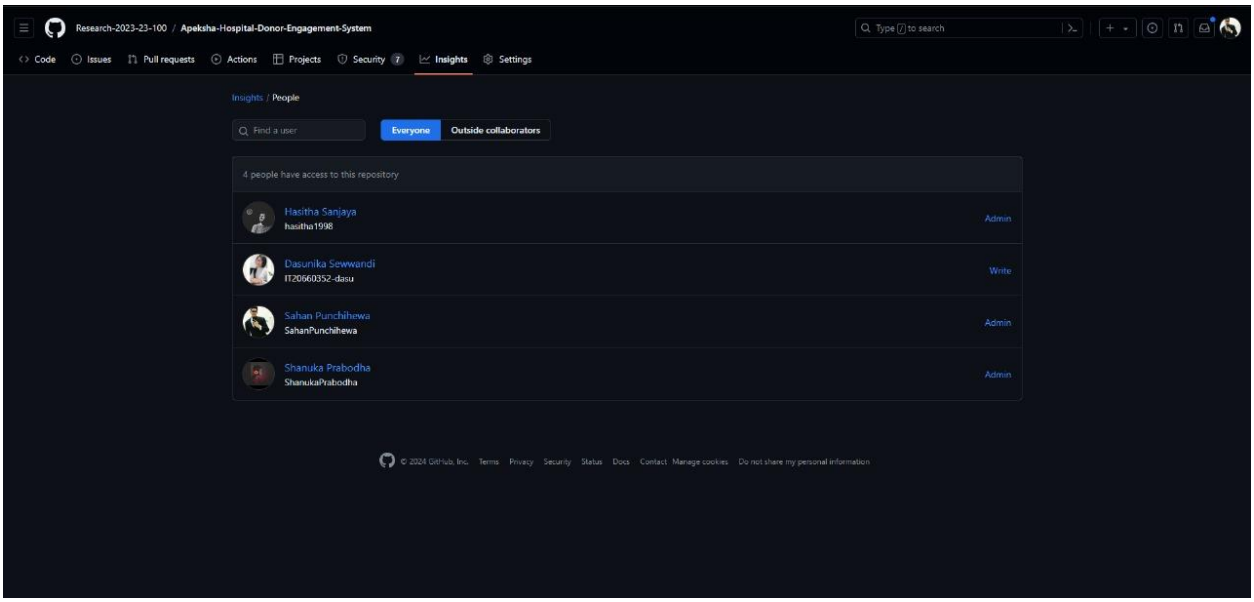
February
May
ShanukaPrabodha
#3
13 commits 998 ++ 310 --
20
10
November
February
May


Research-2023-23-100 / Apeksha-Hospital-Donor-Engagement-System
Type / to search
Code
Issues
Pull requests
Actions
Projects
Security 7
Insights
Settings
Insights / People
Find a user
Everyone
Outside collaborators
4 people have access to this repository
Hasitha Sanjaya
hasitha1998
Admin
Dasunika Sewwandi
IT20660352-dasu
Write
Sahan Punchihewa
SahanPunchihewa
Admin
Shanuka Prabodha
ShanukaPrabodha
Admin
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Apeksha Hospital Donor Engagement System

2023-24-100

Status Document 2

Bandara H.R.H.S

BSc (Hons) in Information Technology specializing in Software Engineering

Department of Information Technology

Sri Lanka Institute of Information Technology Sri Lanka

August 2023

Predictive Analytics for Donation Campaign Success

2023-24-100

Status Document 2

Bandara H.R.H.S

BSc (Hons) in Information Technology specializing in Software Engineering

Department of Information Technology

Sri Lanka Institute of Information Technology Sri Lanka

August 2023

Declaration of The Candidate & Supervisor

I declare that this is my work, and this proposal does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any other university or institute of higher learning and to the best of our knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

Name	**Student ID**	**Signature**
Bandara H.R.H.S	IT20662028	

The above candidates are carrying out research for the undergraduate Dissertation under my supervision.

Signature of the supervisor: Date:

---------- ----------

Signature of the Co-supervisor: Date:

---------- ----------

Table of Contents

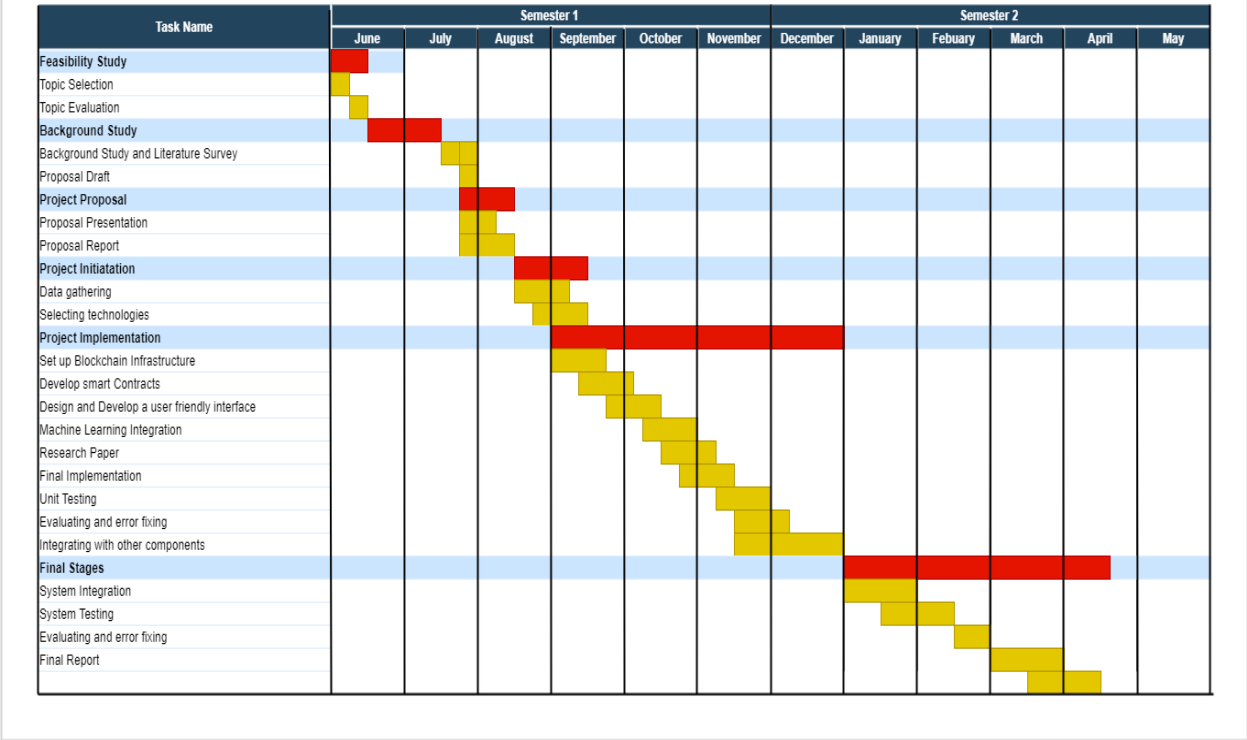
1.Introduction

Blood holds paramount significance for human well-being, particularly among individuals afflicted with blood-related disorders such as leukemia and blood cancer. The pivotal role of blood in medical treatments, especially within Apeksha hospitals, underscores the constant and heightened need for blood donations. However, blood donation campaigns encounter multifaceted challenges impeding their success. Issues like low donor turnout, resource wastage including food, and insufficient medical equipment such as needles, blood collection bags, blood pressure monitors, and donor beds or chairs, along with inadequate medical staff, contribute to the inefficacy of these campaigns.

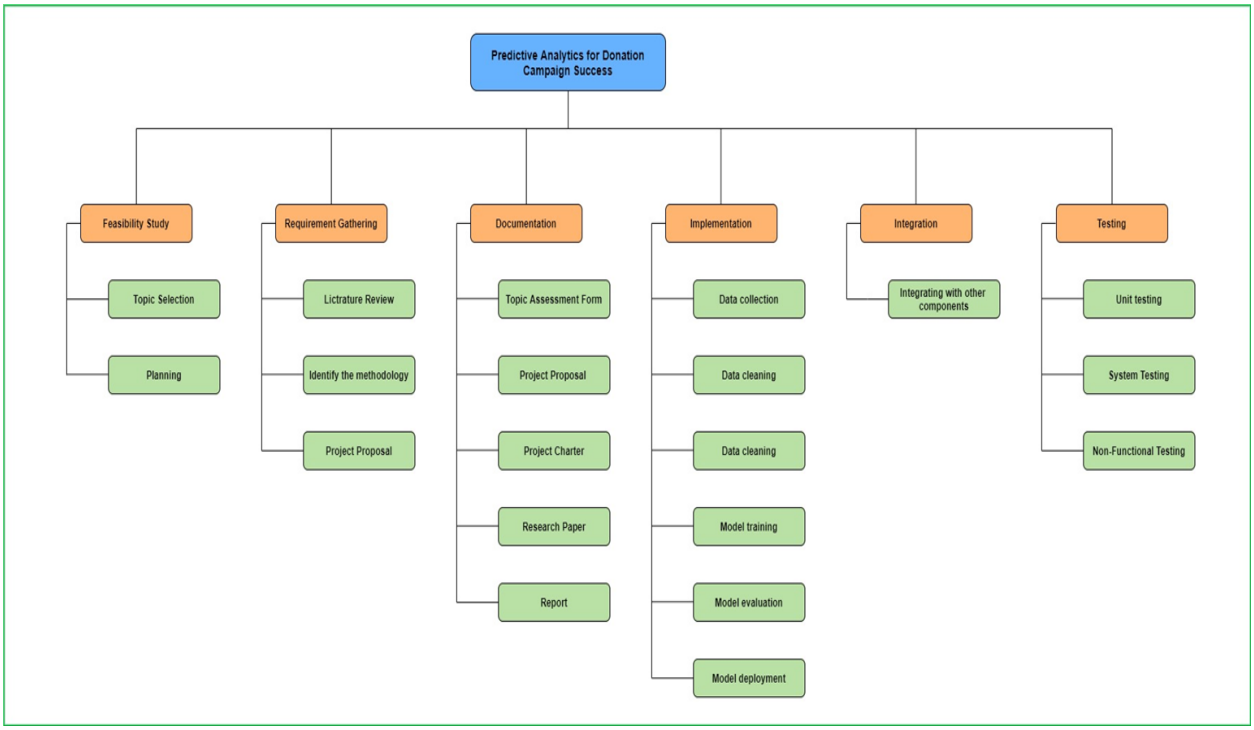
To surmount these obstacles and optimize the allocation of resources, this research advocates for the integration of predictive analytics empowered by machine learning. By harnessing historical data, predictive models can be devised to anticipate the likelihood of campaign success. These models would take into account an array of variables, including donor engagement patterns, external factors, and resource availability. By providing insights into donor behavior trends and optimal campaign conditions, machine learning could profoundly refine the strategic planning and execution of blood donation initiatives, leading to resource optimization. This impact is particularly crucial for Apeksha hospitals, where a constant and heightened supply of blood is indispensable.

Keywords: Machine learning, blood donation campaigns, donor turnout, resource optimization, campaign success, predictive analytics.

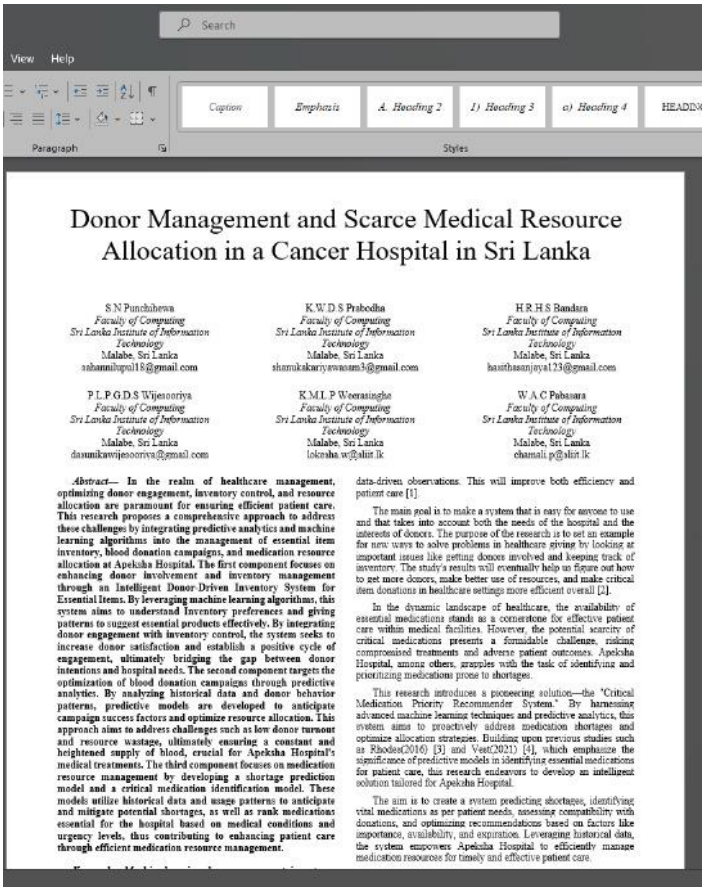
2.Gantt chart



3.Work Break down Chart



4.Research Paper



Donor Management and Scarce Medical Resource Allocation in a Cancer Hospital in Sri Lanka

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***Abstract*— In the realm of healthcare management, optimizing donor engagement, inventory control, and resource allocation are paramount for ensuring efficient patient care. This research proposes a comprehensive approach to address these challenges by integrating predictive analytics and machine learning algorithms into the management of essential item inventory, blood donation campaigns, and medication resource allocation at Apeksha Hospital. The first component focuses on enhancing donor involvement and inventory management through an Intelligent Donor-Driven Inventory System for Essential Items. By leveraging machine learning algorithms, this system aims to understand Inventory preferences and giving patterns to suggest essential products effectively. By integrating donor engagement with inventory control, the system seeks to increase donor satisfaction and establish a positive cycle of engagement, ultimately bridging the gap between donor intentions and hospital needs. The second component targets the optimization of blood donation campaigns through predictive analytics. By analyzing historical data and donor behavior patterns, predictive models are developed to anticipate campaign success factors and optimize resource allocation. This approach aims to address challenges such as low donor turnout and resource wastage, ultimately ensuring a constant and heightened supply of blood, crucial for Apeksha Hospital's medical treatments. The third component focuses on medication resource management by developing a shortage prediction model and a critical medication identification model. These models utilize historical data and usage patterns to anticipate and mitigate potential shortages, as well as rank medications essential for the hospital based on medical conditions and urgency levels, thus contributing to enhancing patient care through efficient medication resource management.**

data-driven observations. This will improve both efficiency and patient care [1].

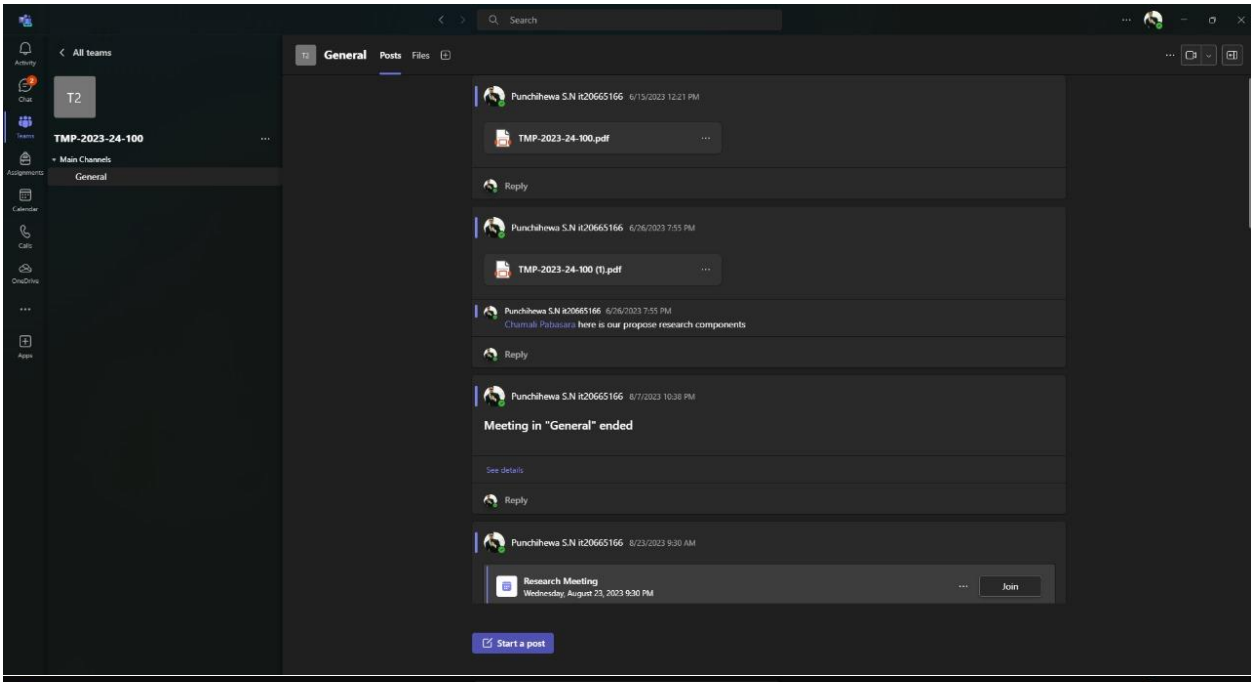
The main goal is to make a system that is easy for anyone to use and that takes into account both the needs of the hospital and the interests of donors. The purpose of the research is to set an example for new ways to solve problems in healthcare giving by looking at important issues like getting donors involved and keeping track of inventory. The study's results will eventually help us figure out how to get more donors, make better use of resources, and make critical item donations in healthcare settings more efficient overall [2].

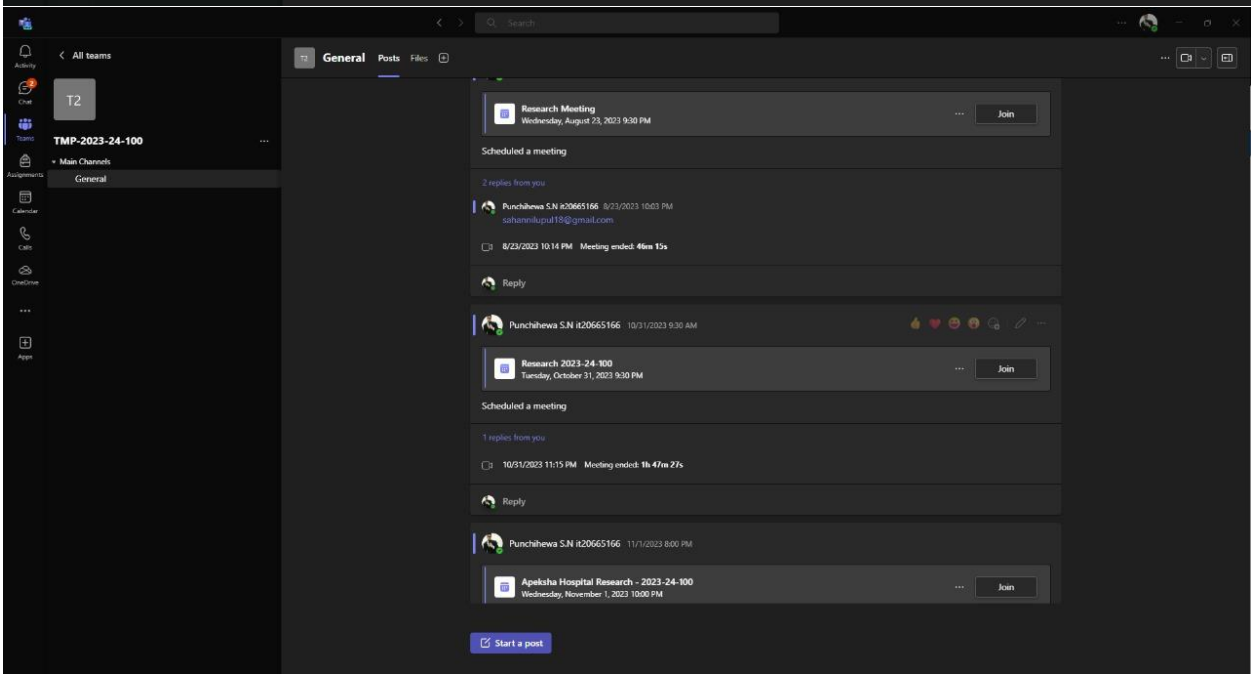
In the dynamic landscape of healthcare, the availability of essential medications stands as a cornerstone for effective patient care within medical facilities. However, the potential scarcity of critical medications presents a formidable challenge, risking compromised treatments and adverse patient outcomes. Apeksha Hospital, among others, grapples with the task of identifying and prioritizing medications prone to shortages.

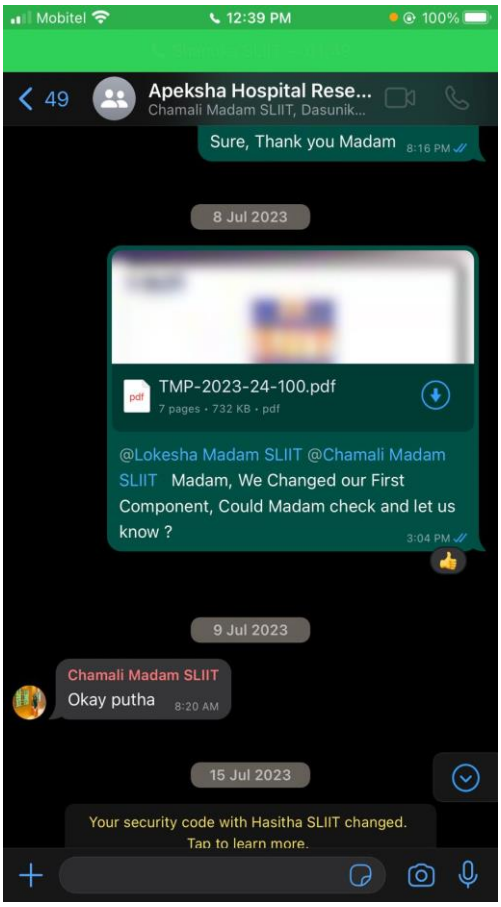
This research introduces a pioneering solution—the "Critical Medication Priority Recommender System." By harnessing advanced machine learning techniques and predictive analytics, this system aims to proactively address medication shortages and optimize allocation strategies. Building upon previous studies such as Rhodes(2016) [3] and Vest(2021) [4], which emphasize the significance of predictive models in identifying essential medications for patient care, this research endeavors to develop an intelligent solution tailored for Apeksha Hospital.

The aim is to create a system predicting shortages, identifying vital medications as per patient needs, assessing compatibility with donations, and optimizing recommendations based on factors like importance, availability, and expiration. Leveraging historical data, the system empowers Apeksha Hospital to efficiently manage medication resources for timely and effective patient care.

5.Screenshots of meetings and conversations with supervisor



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Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
Sure, Thank you Madam 8:16 PM
8 Jul 2023
TMP-2023-24-100.pdf
7 pages • 732 KB • pdf
@Lokesha Madam SLIIT @Chamali Madam SLIIT Madam, We Changed our First Component, Could Madam check and let us know ? 3:04 PM
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Chamali Madam SLIIT
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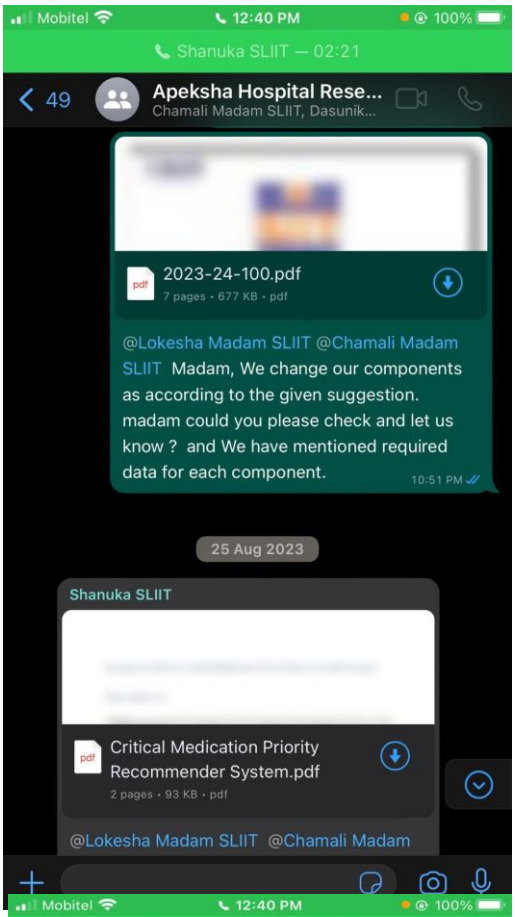
15 Jul 2023
Your security code with Hasitha SLIIT changed. Tap to learn more.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Shanuka SLIIT — 02:21
49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
2023-24-100.pdf
7 pages • 677 KB • pdf
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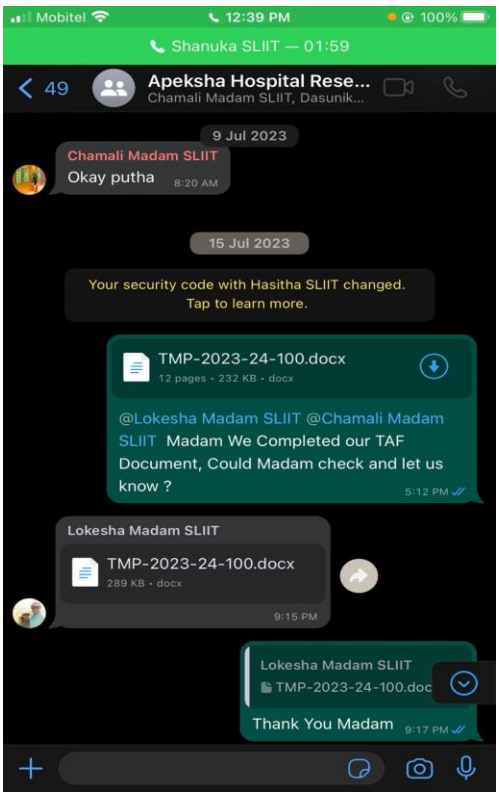
25 Aug 2023
Shanuka SLIIT
Critical Medication Priority Recommender System.pdf
2 pages • 93 KB • pdf
@Lokesha Madam SLIIT @Chamali Madam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Chamali Madam SLIIT, Dasunik...
9 Jul 2023
Chamali Madam SLIIT
Okay putha 8:20 AM
15 Jul 2023
Your security code with Hasitha SLIIT changed. Tap to learn more.
TMP-2023-24-100.docx
12 pages • 232 KB • docx
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Lokesha Madam SLIIT
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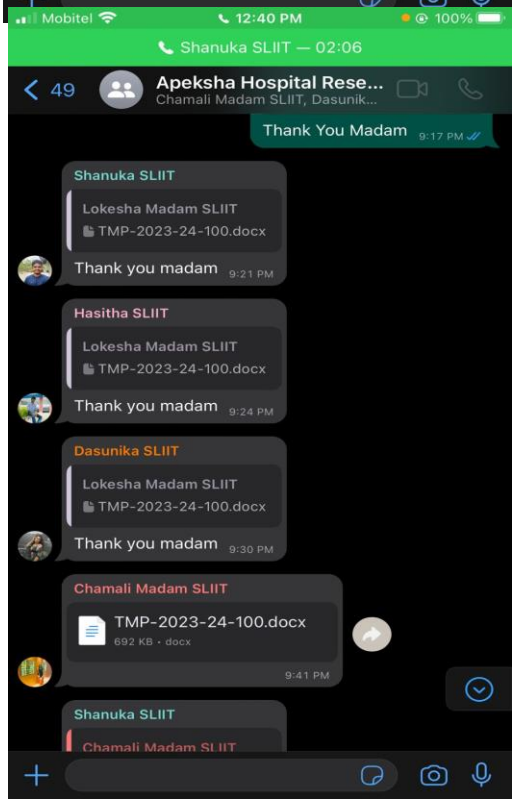
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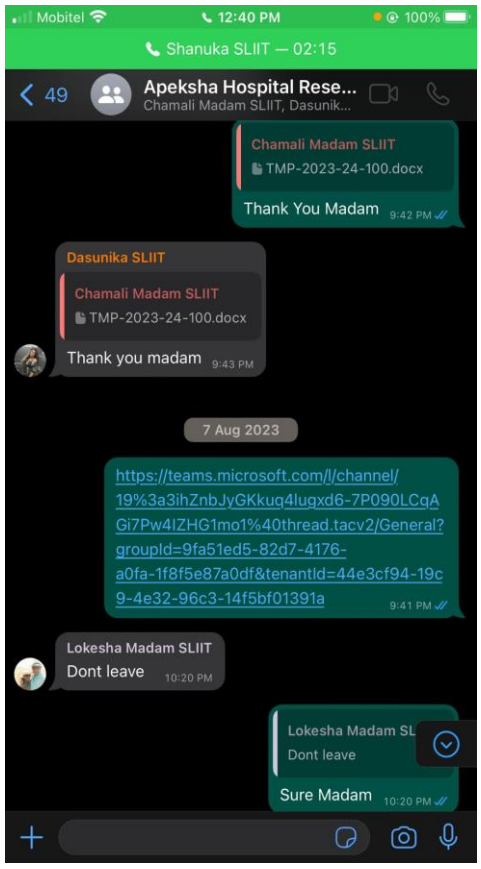
Shanuka SLIIT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Thank You Madam 9:42 PM
Dasunika SLIIT
Chamali Madam SLIIT
TMP-2023-24-100.docx
Thank you madam 9:43 PM
7 Aug 2023
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Dont leave
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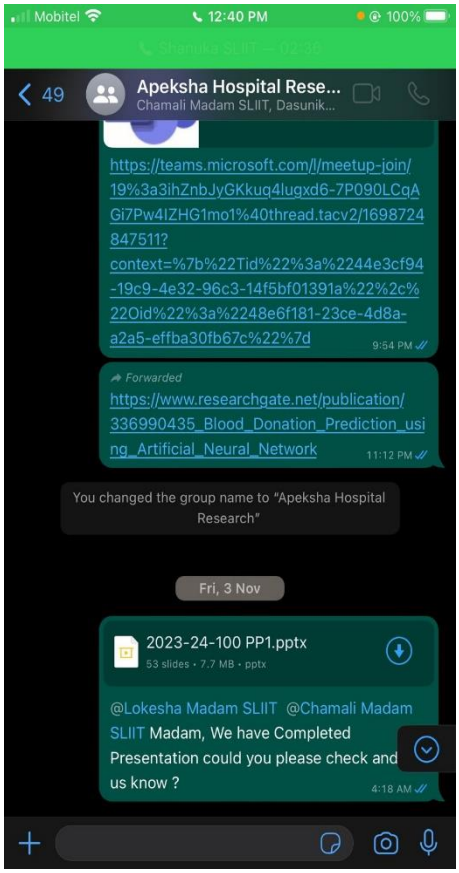
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Forwarded
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You changed the group name to "Apeksha Hospital Research"
Fri, 3 Nov
2023-24-100 PP1.pptx
53 slides • 7.7 MB • pptx
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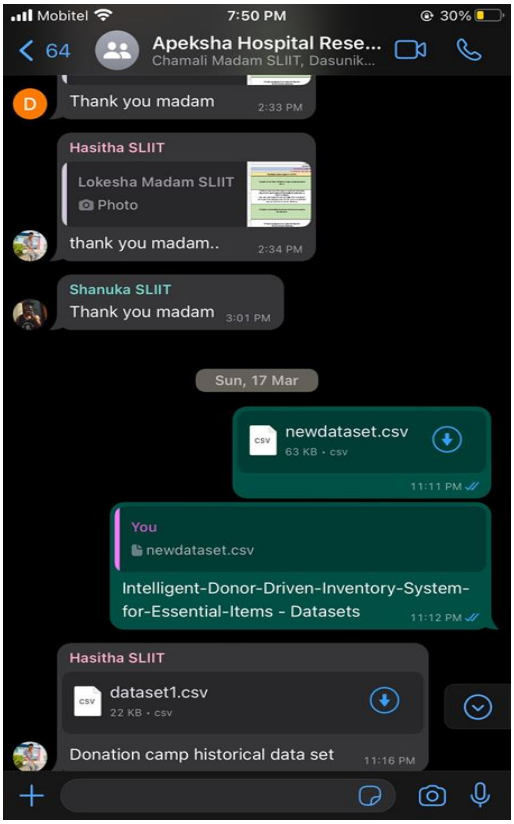
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64
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
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Shanuka SLIIT
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Sun, 17 Mar
newdataset.csv
63 KB • csv
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newdataset.csv
Intelligent-Donor-Driven-Inventory-System-for-Essential-Items - Datasets 11:12 PM
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dataset1.csv
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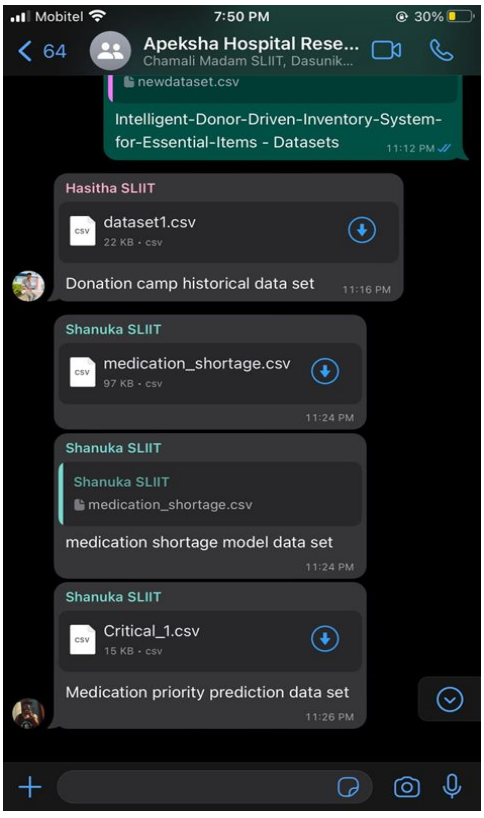
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Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
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Donation camp historical data set 11:16 PM
Shanuka SLIIT
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Shanuka SLIIT
Shanuka SLIIT
medication_shortage.csv
medication shortage model data set 11:24 PM
Shanuka SLIIT
Critical_1.csv
15 KB • csv
Medication priority prediction data set 11:26 PM

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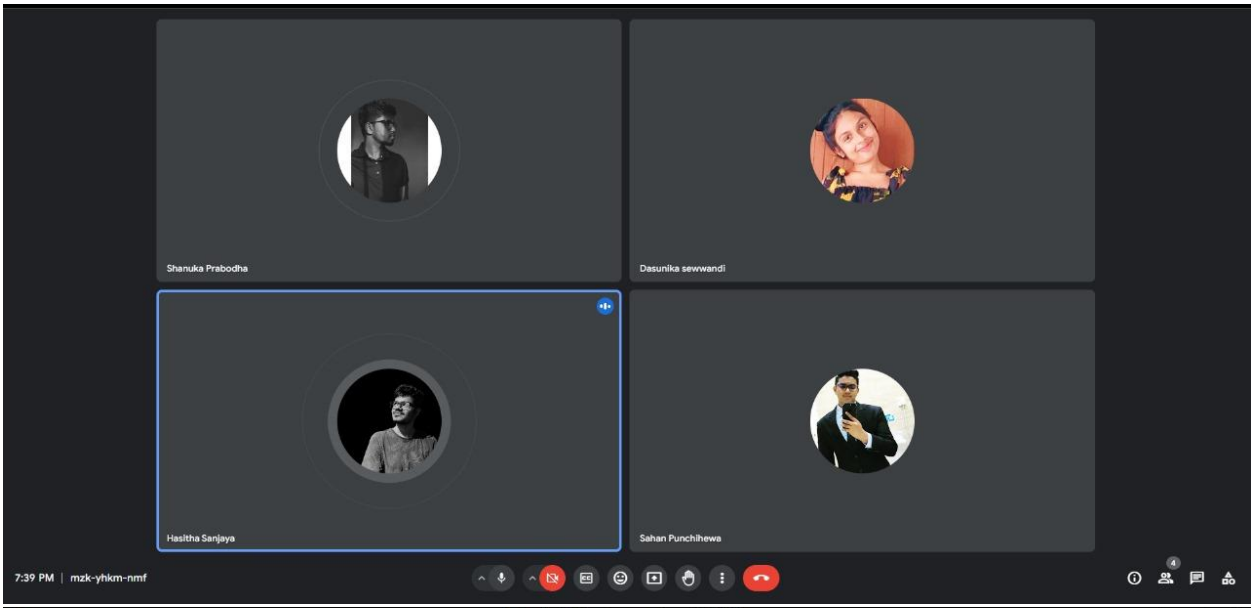
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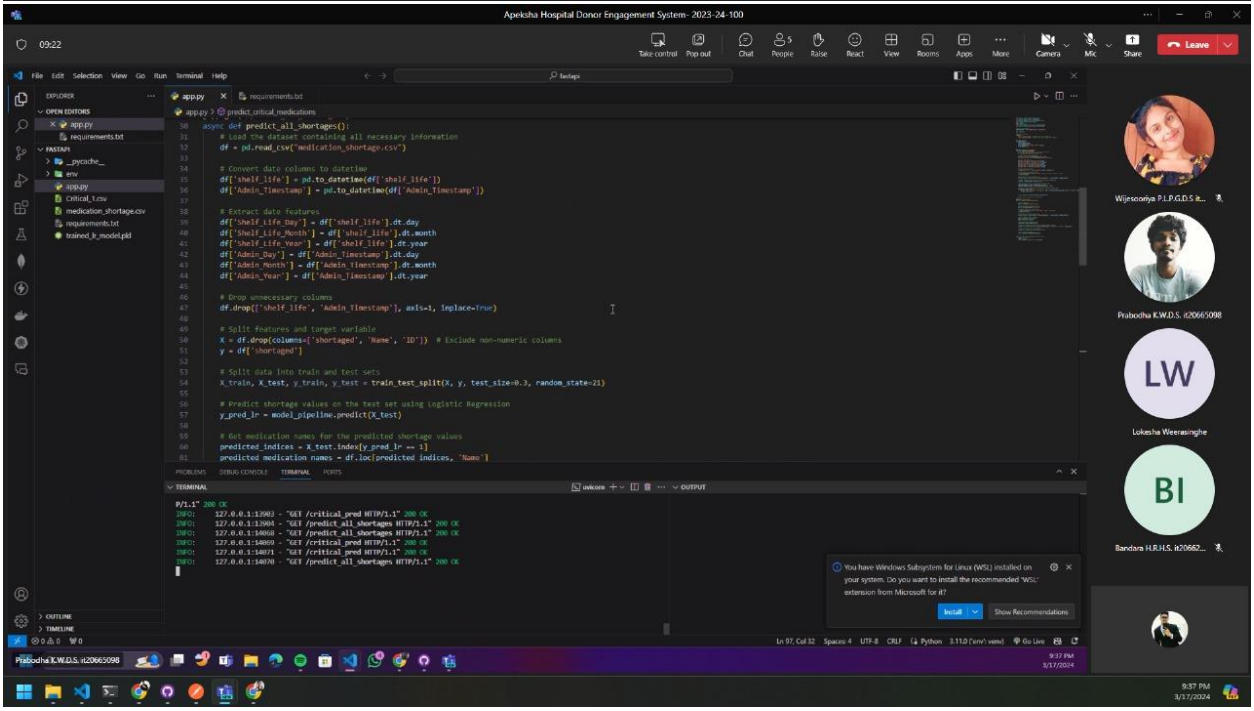
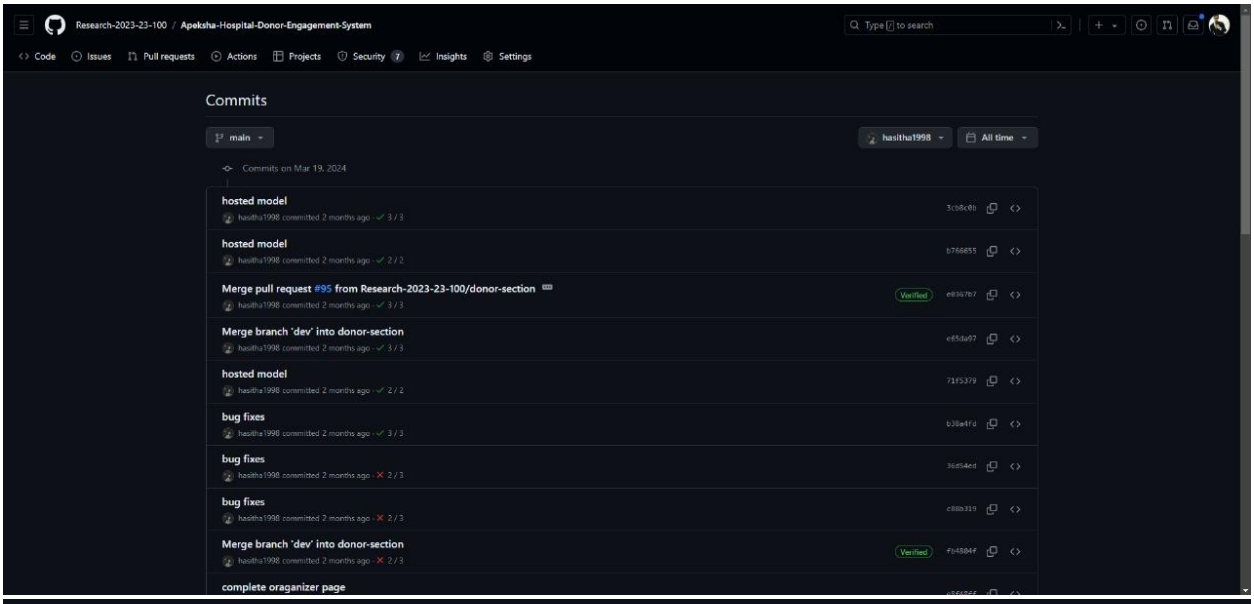
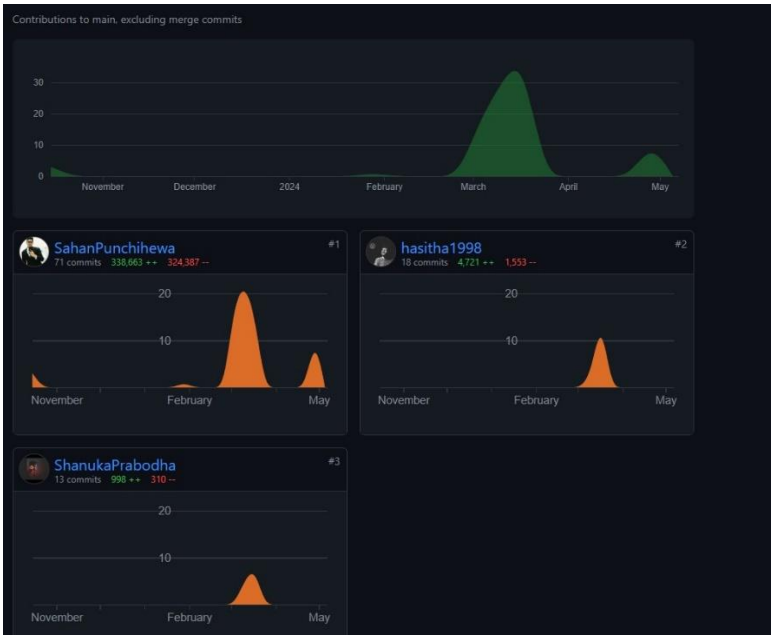
Dasunika sewwandi
Hasitha Sanjaya
Sahan Punchihewa
7:39 PM | mzk-yhkm-nmf


Apeksha Hospital Donor Engagement System- 2023-24-100
09:22
Leave
Wijesooriya P.L.P.G.D.S it...
Prabodha K.W.D.S. it20665098
LW
Lokesha Weerasinghe
BI
Bandara H.R.H.S. it20662...

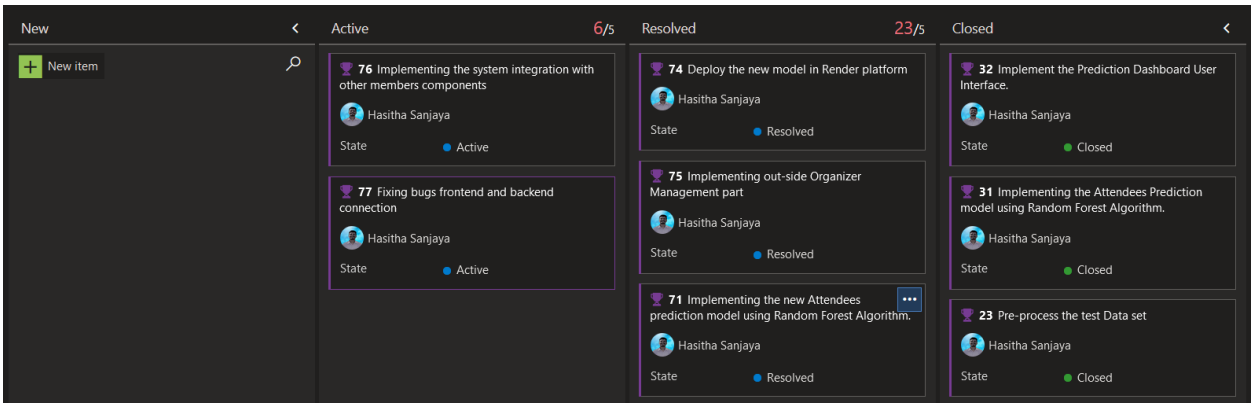
6.Version Controller and Contribution

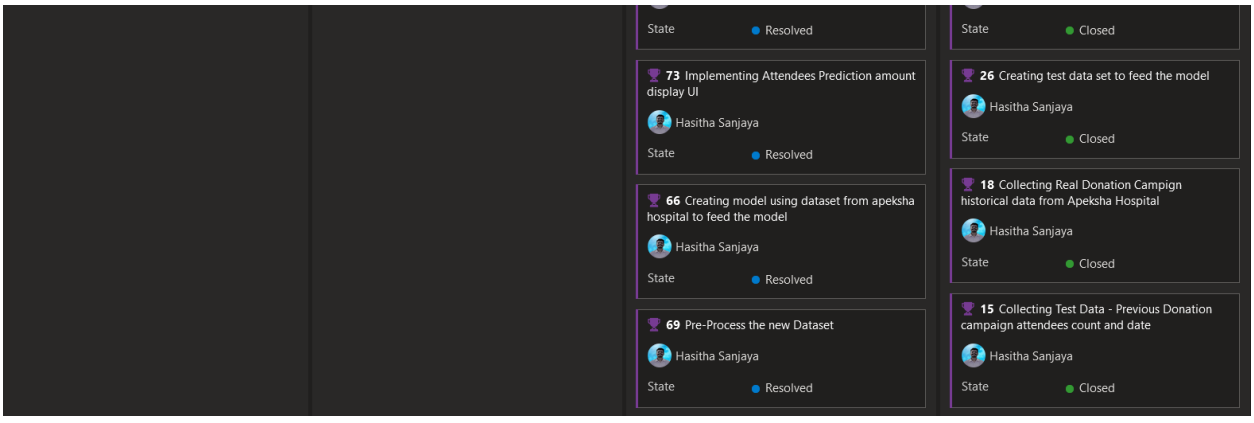




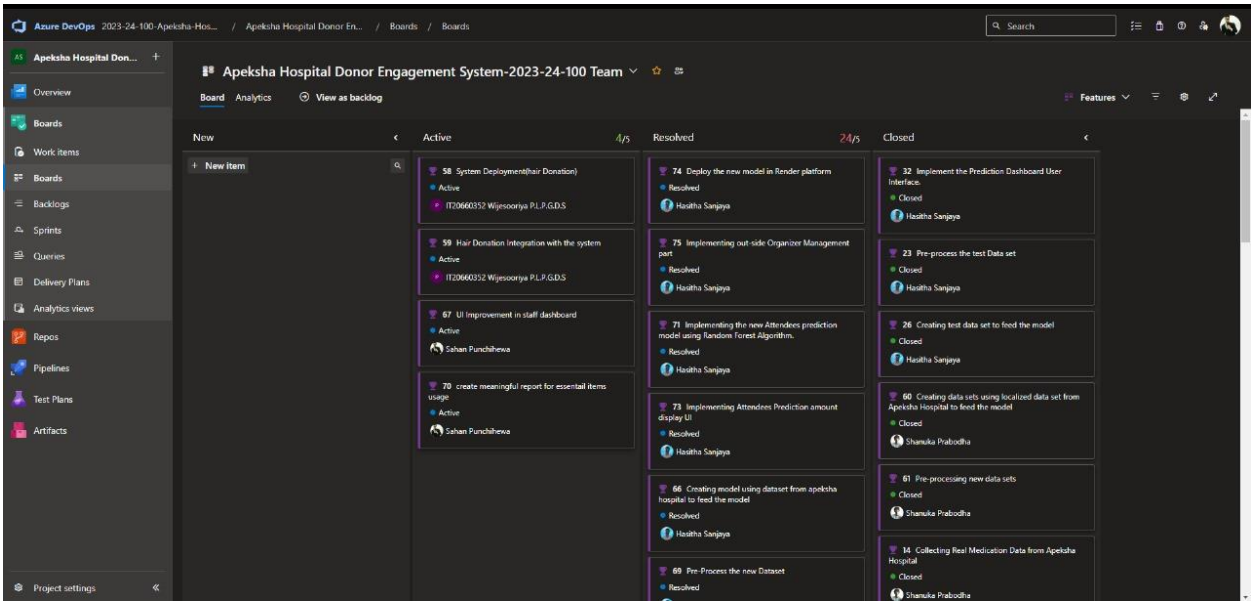
7. Project Management Tools & Screenshot

7.1Personal Backlog



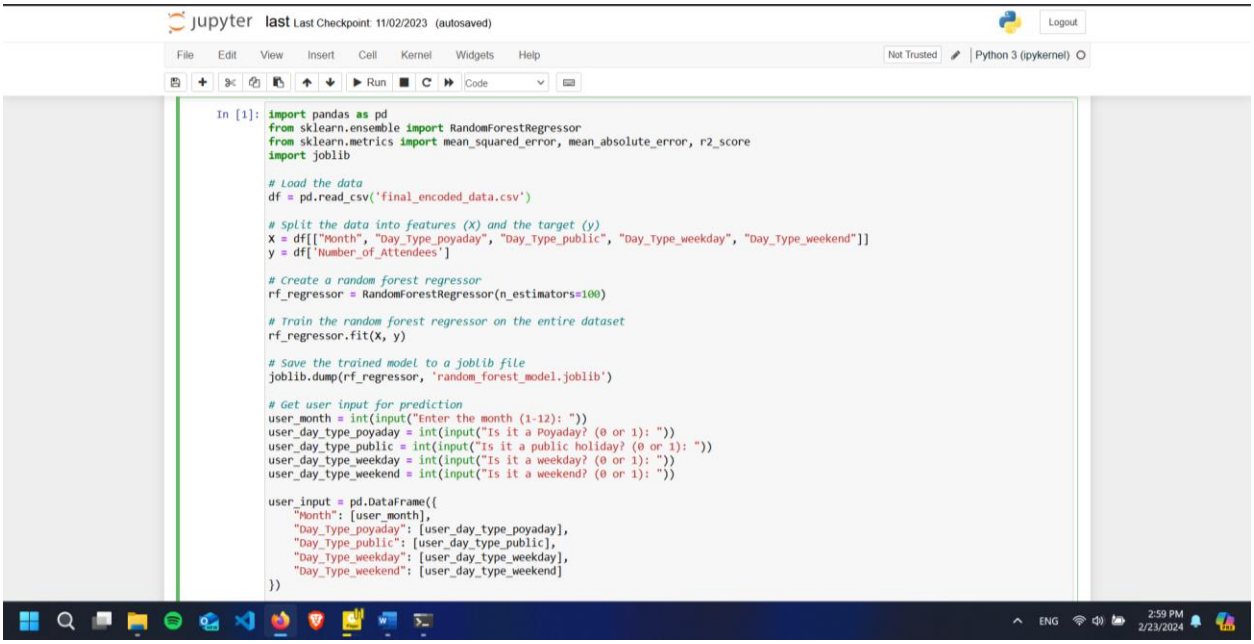


7.2Overall backlog



8.Trained New Model Screenshot

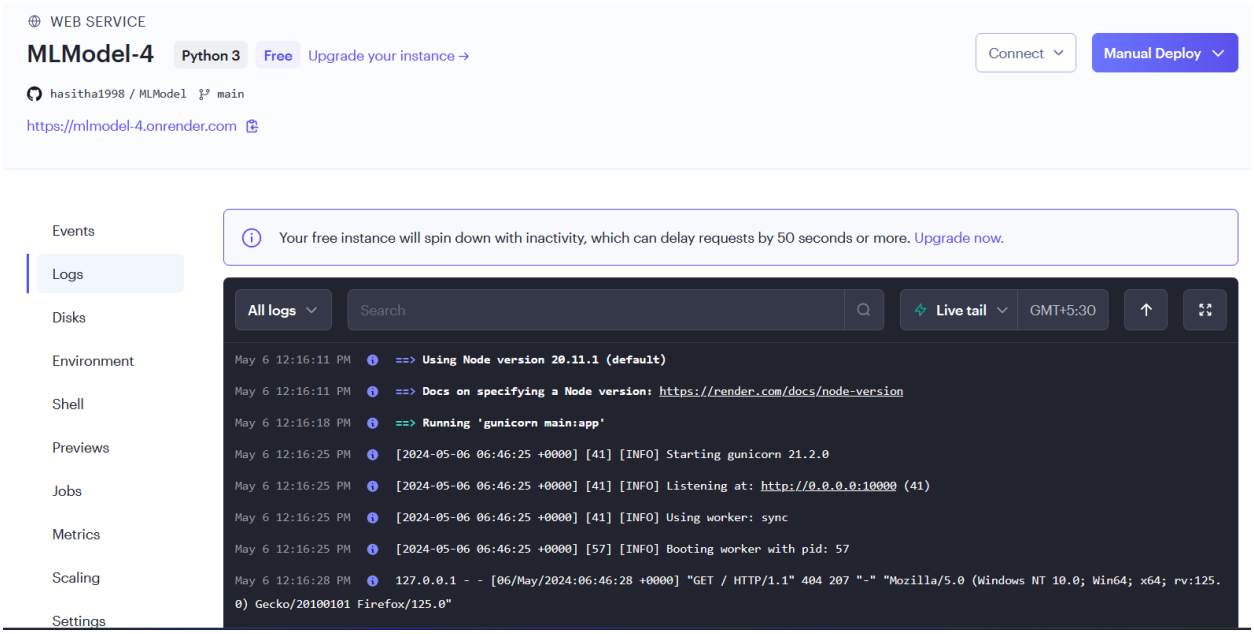
8.1Trained model python code



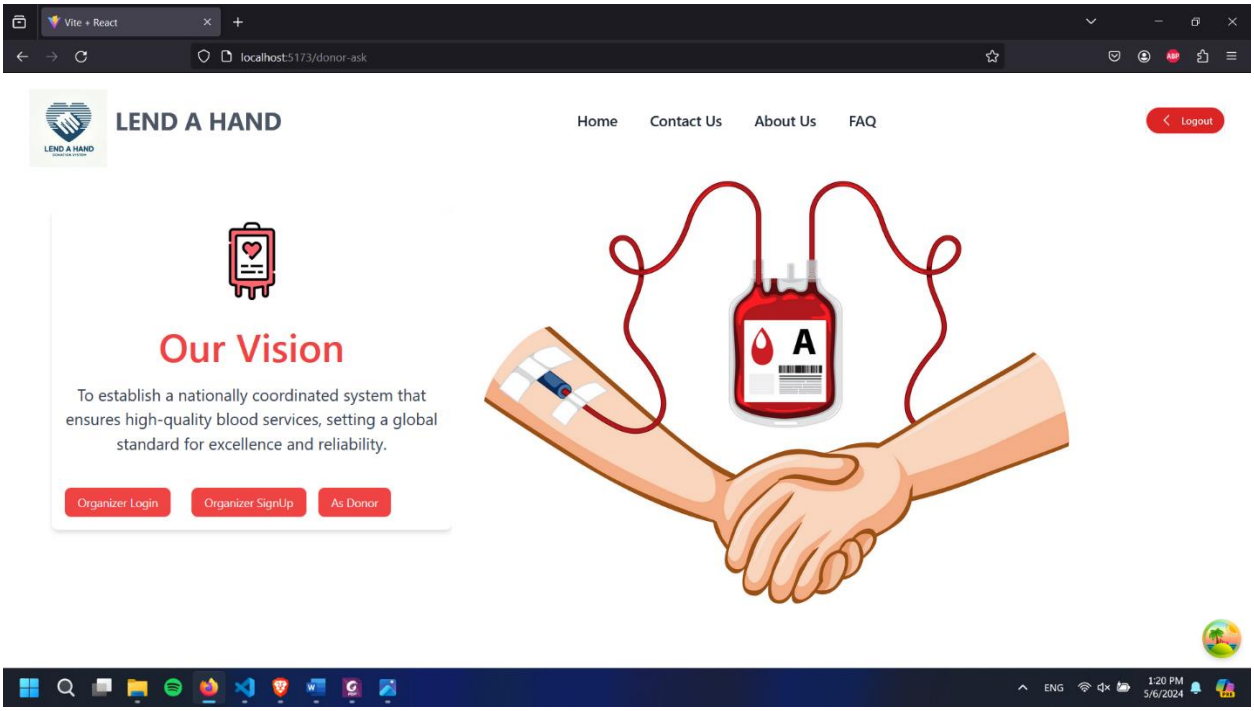
8.2Trained model accuracy

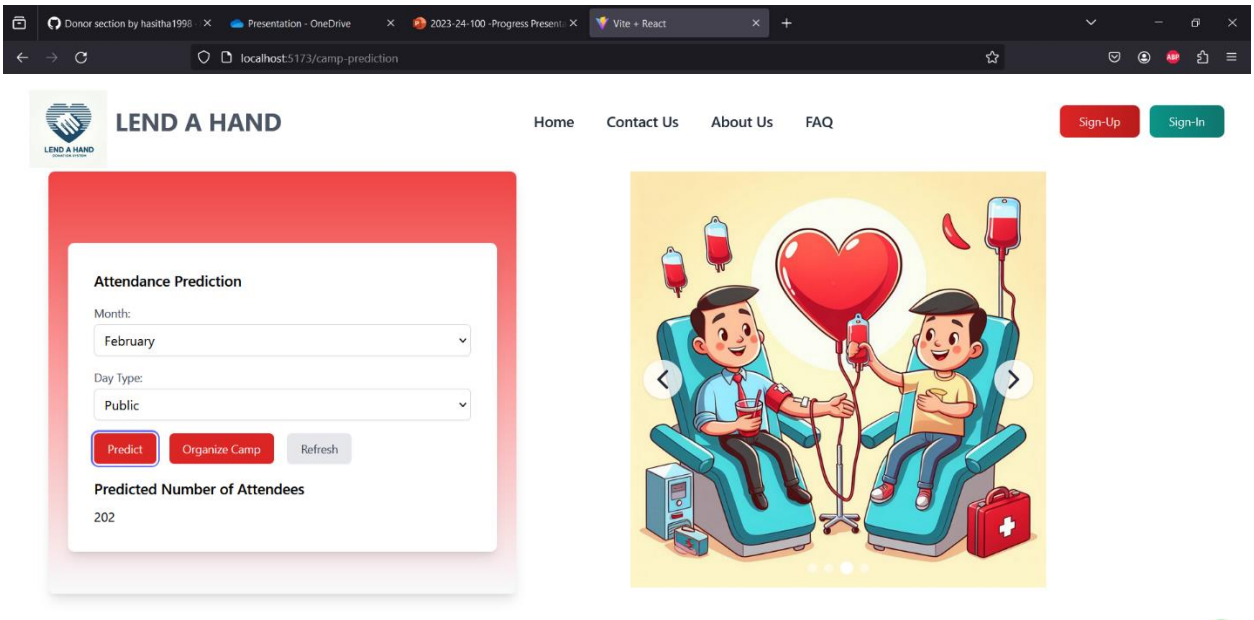
```
Enter the month (1-12): 2
Is it a Poyaday? (0 or 1): 0
Is it a public holiday? (0 or 1): 1
Is it a weekday? (0 or 1): 0
Is it a weekend? (0 or 1): 0
Predicted Number of Attendees: 230.52119047619047
R-squared (R²) on the entire dataset: 0.9294346305592395
```

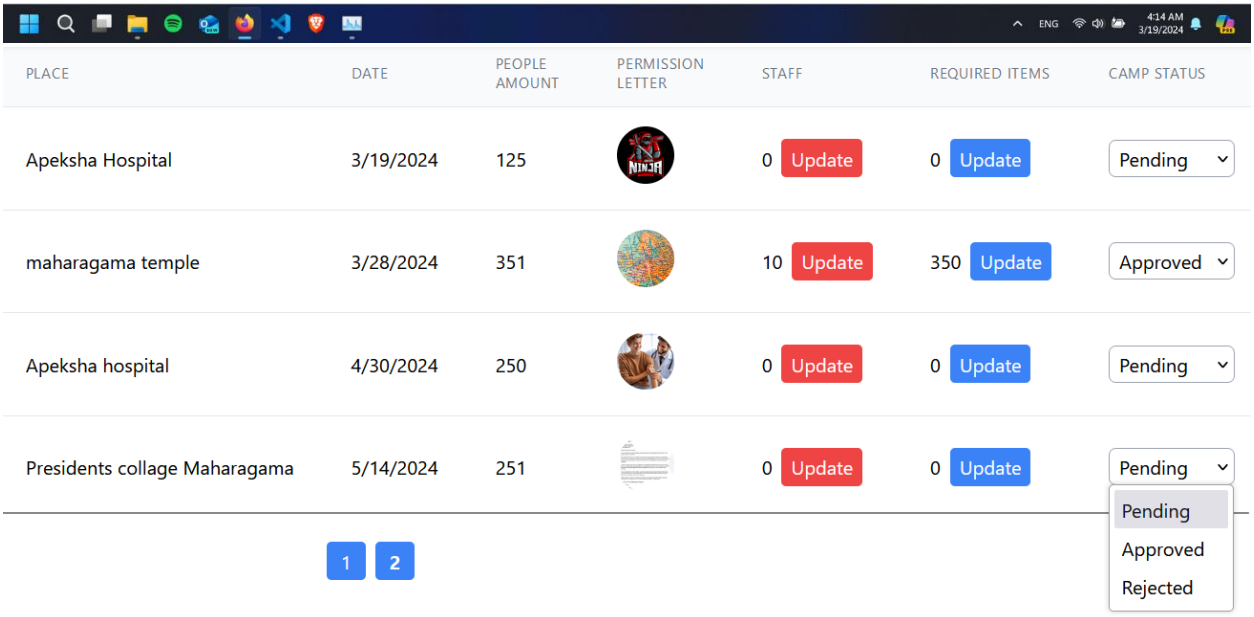
8.3Hosted model in Render

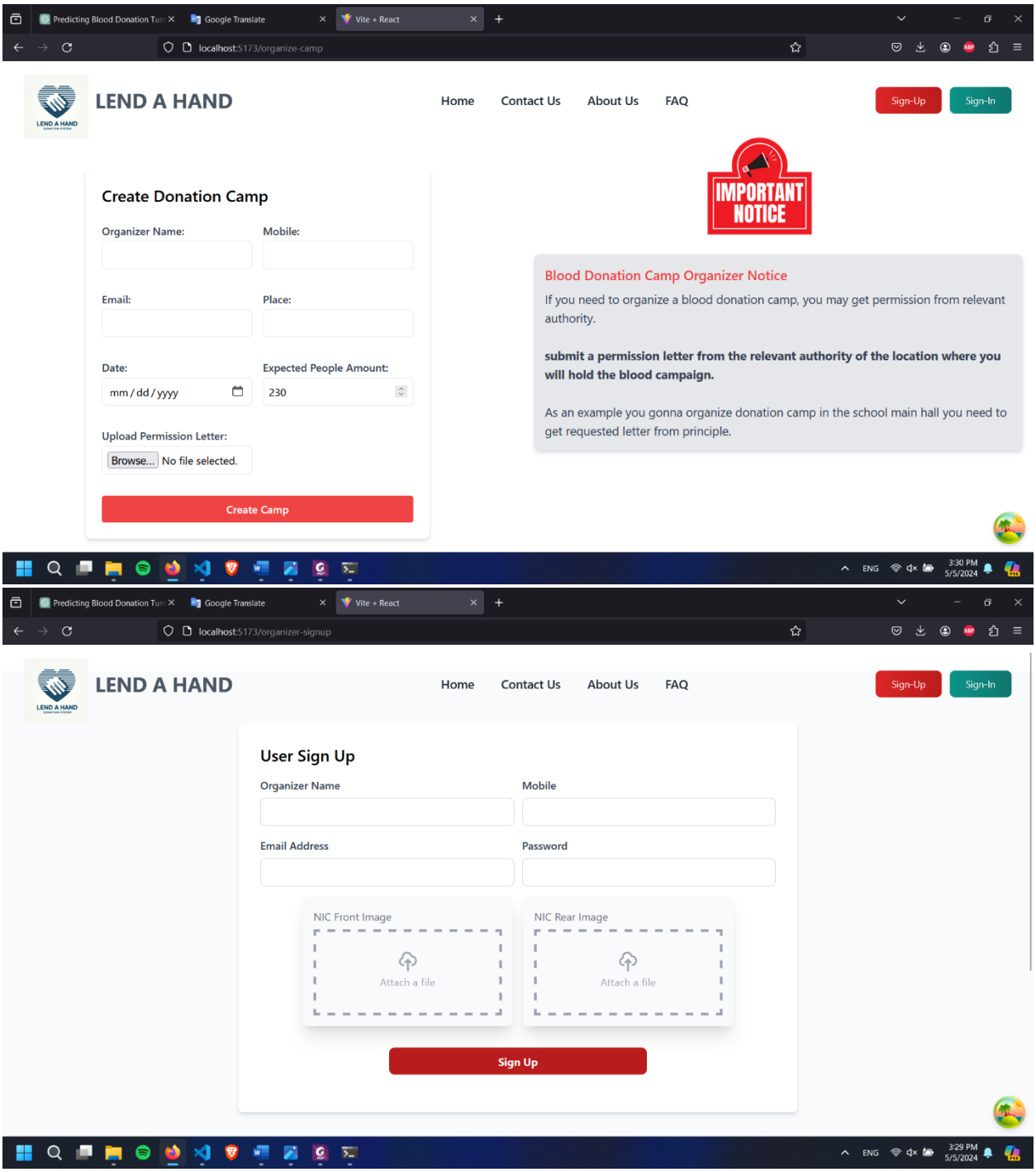


9.Web Implementation




Donor section by hasitha1998
Presentation - OneDrive
2023-24-100 -Progress Presenta
Vite + React
localhost:5173/camp-prediction
LEND A HAND
Home
Contact Us
About Us
FAQ
Sign-Up
Sign-In
Attendance Prediction
Month:
February
Day Type:
Public
Predict
Organize Camp
Refresh
Predicted Number of Attendees
202


ENG
4:14 AM
3/19/2024
PLACE
DATE
PEOPLE AMOUNT
PERMISSION LETTER
STAFF
REQUIRED ITEMS
CAMP STATUS
Apeksha Hospital
3/19/2024
125
0 Update
0 Update
Pending
maharagama temple
3/28/2024
351
10 Update
350 Update
Approved
Apeksha hospital
4/30/2024
250
0 Update
0 Update
Pending
Presidents collage Maharagama
5/14/2024
251
0 Update
0 Update
Pending
Pending
Approved
Rejected
1
2


Predicting Blood Donation Turn
Google Translate
Vite + React
localhost:5173/organize-camp
LEND A HAND
Home
Contact Us
About Us
FAQ
Sign-Up
Sign-In
Create Donation Camp
Organizer Name:
Mobile:
Email:
Place:
Date:
mm / dd / yyyy
Expected People Amount:
230
Upload Permission Letter:
Browse...
No file selected.
Create Camp
IMPORTANT NOTICE
Blood Donation Camp Organizer Notice
If you need to organize a blood donation camp, you may get permission from relevant authority.
submit a permission letter from the relevant authority of the location where you will hold the blood campaign.
As an example you gonna organize donation camp in the school main hall you need to get requested letter from principle.
ENG
3:30 PM
5/5/2024
Predicting Blood Donation Turn
Google Translate
Vite + React
localhost:5173/organizer-signup
LEND A HAND
Home
Contact Us
About Us
FAQ
Sign-Up
Sign-In
User Sign Up
Organizer Name
Mobile
Email Address
Password
NIC Front Image
Attach a file
NIC Rear Image
Attach a file
Sign Up
ENG
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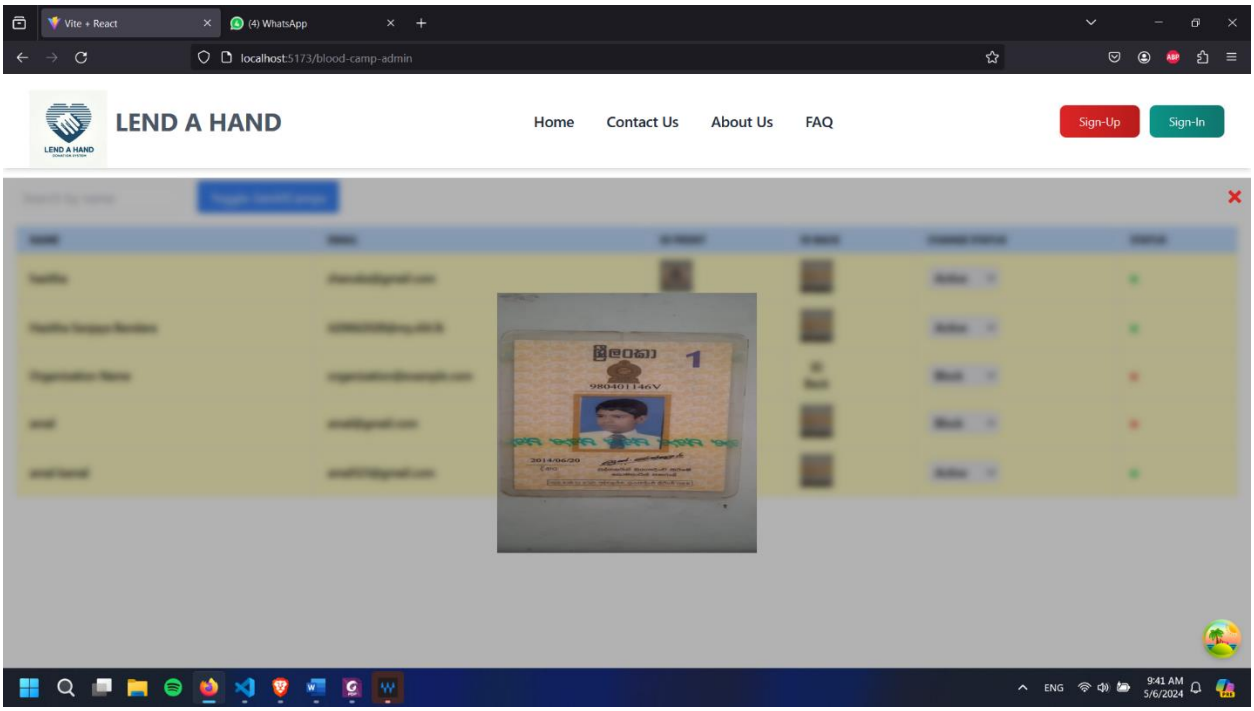
5/5/2024


Vite + React
(4) WhatsApp
localhost:5173/blood-camp-admin
LEND A HAND
Home
Contact Us
About Us
FAQ
Sign-Up
Sign-In
ENG
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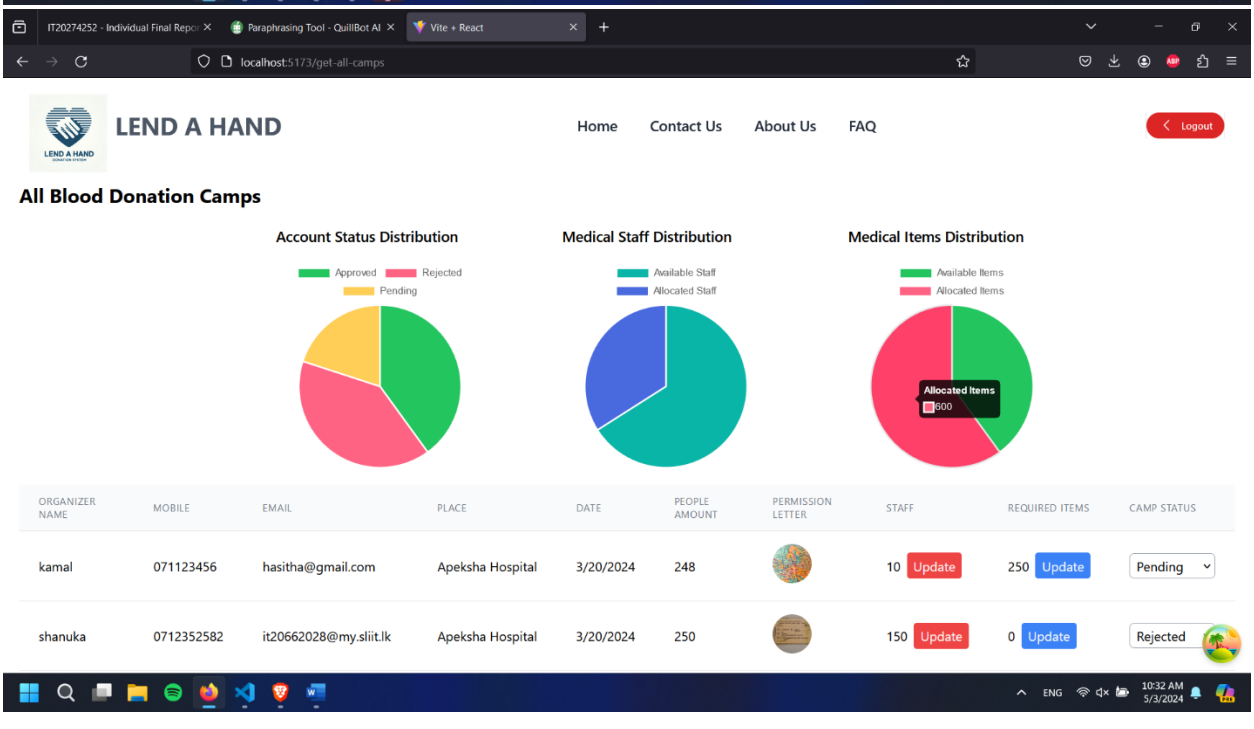
5/6/2024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Paraphrasing Tool - QuillBot AI
Vite + React
localhost:5173/get-all-camps
LEND A HAND
Home
Contact Us
About Us
FAQ
Logout
All Blood Donation Camps
Account Status Distribution
Approved
Rejected
Pending
Medical Staff Distribution
Available Staff
Allocated Staff
Medical Items Distribution
Available Items
Allocated Items
Allocated Items
600
ORGANIZER NAME
MOBILE
EMAIL
PLACE
DATE
PEOPLE AMOUNT
PERMISSION LETTER
STAFF
REQUIRED ITEMS
CAMP STATUS
kamal
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hasitha@gmail.com
Apeksha Hospital
3/20/2024
248
10
Update
250
Update
Pending
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Apeksha Hospital
3/20/2024
250
150
Update
0
Update
Rejected
ENG
10:32 AM
5/3/2024

Apeksha Hospital Donor Engagement System

2023-24-100

Status Document 2

Wijesooriya PLPGDS

BSc (Hons) in Information Technology specializing in Software Engineering

Department of Information Technology

Sri Lanka Institute of Information Technology Sri Lanka

August 2023

Promoting Quality Hair Donation for Cancer Patients

2023-24-100

Status Document 2

Wijesooriya PLPGDS

BSc (Hons) in Information Technology specializing in Software Engineering

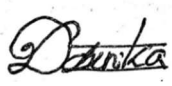
Department of Information Technology

Sri Lanka Institute of Information Technology Sri Lanka

August 2023

Declaration of The Candidate & Supervisor

I declare that this is my work, and this proposal does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any other university or institute of higher learning and to the best of our knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

Name	**Student ID**	**Signature**
Wijesooriya PLPGDS	IT20660352	

The above candidates are carrying out research for the undergraduate Dissertation under my supervision.

Signature of the supervisor: Date:

---------- ----------

Signature of the Co-supervisor: Date:

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Contents

1. Introduction

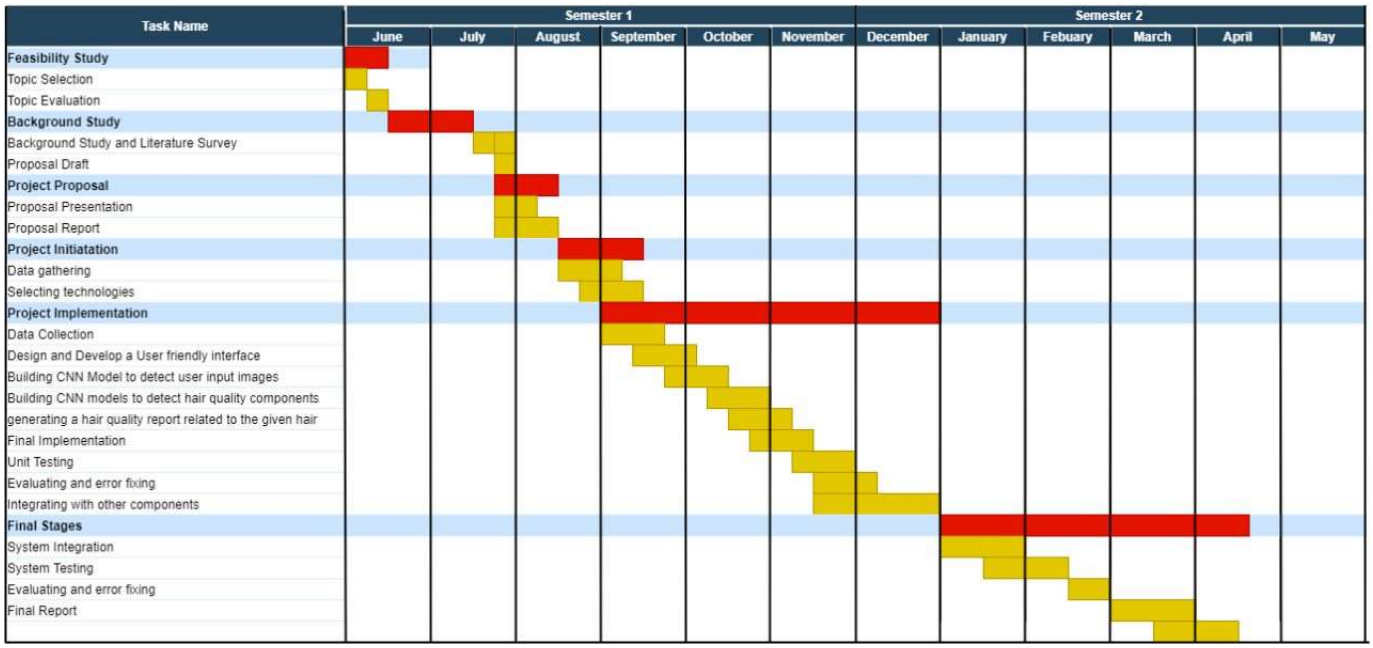
In the realm of cancer care, maintaining a sense of normalcy and confidence is paramount for patients undergoing treatment. One aspect often overlooked yet crucial for their well-being is the provision of high-quality wigs or hairpieces. However, the absence of a structured hair donation program at Apeksha Hospital poses a significant challenge in ensuring the availability of suitable hairpieces for cancer patients. To address this gap, it is imperative to establish a robust framework for assessing and promoting the quality of donated hair.

The research problem at hand revolves around determining whether donated hair meets the stringent standards and qualities mandated by Apeksha Hospital. This entails evaluating various characteristics of donated hair, including length, absence of split ends, and overall condition. Traditional methods of inspection may not suffice in ensuring the requisite quality standards. Therefore, leveraging cutting-edge image processing techniques emerges as a promising avenue to enhance the efficacy and accuracy of hair quality assessment.

By employing image processing algorithms, donors can meticulously scrutinize donated hair for imperfections such as bleaching, dyeing, dryness, and split ends. This technology-driven approach not only streamlines the screening process but also minimizes the likelihood of substandard hair being utilized for crafting wigs or hairpieces. Moreover, promoting adherence to hospital standards fosters a culture of responsibility and accountability among potential donors, thereby augmenting the overall quality of donated hair.

In essence, this research endeavors to bridge the gap between hair donation and cancer patient care by establishing a comprehensive framework for evaluating and promoting the quality of donated hair. By integrating advanced image processing techniques with stringent quality criteria, Apeksha Hospital can ensure that cancer patients receive superior wigs or hairpieces, thereby enhancing their sense of confidence and well-being throughout the rigors of treatment.

2. Gantt Chart



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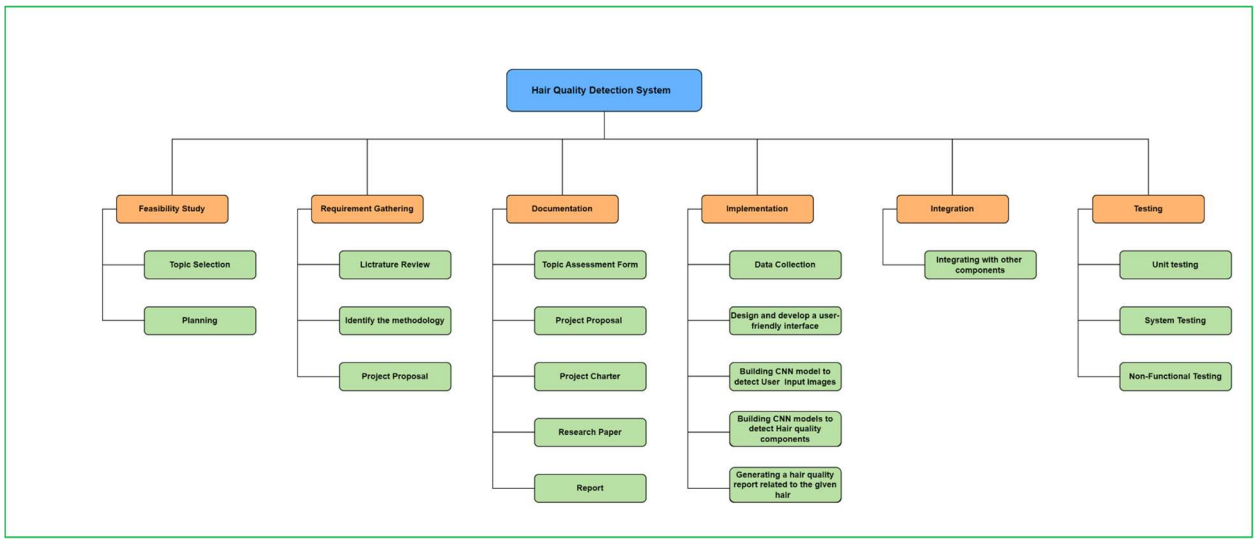
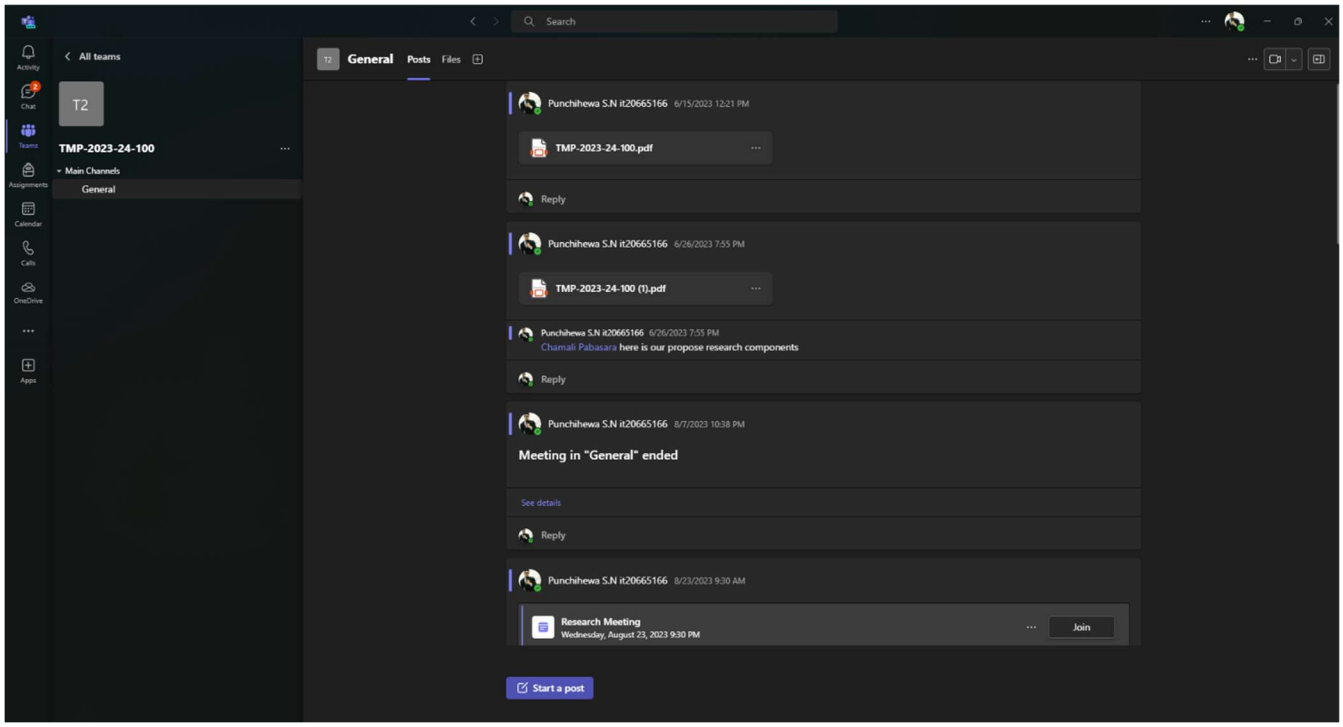
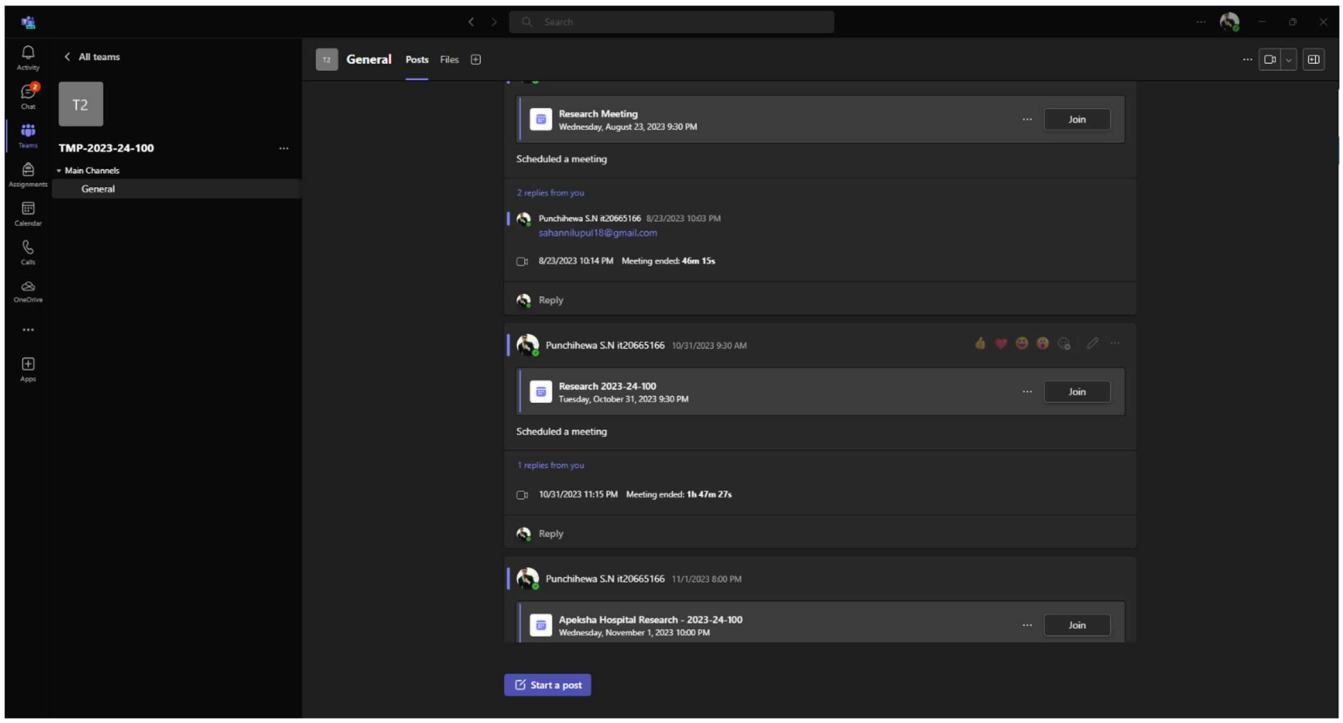


4. Screenshot of Meetings and Conversations




All teams
T2
TMP-2023-24-100
Main Channels
General
General
Posts
Files
Research Meeting
Wednesday, August 23, 2023 9:30 PM
Join
Scheduled a meeting
2 replies from you
Punchihewa S.N it20665166 8/23/2023 10:03 PM
sahannilupul18@gmail.com
8/23/2023 10:14 PM Meeting ended: 46m 15s
Reply
Punchihewa S.N it20665166 10/31/2023 9:30 AM
Research 2023-24-100
Tuesday, October 31, 2023 9:30 PM
Join
Scheduled a meeting
1 replies from you
10/31/2023 11:15 PM Meeting ended: 1h 47m 27s
Reply
Punchihewa S.N it20665166 11/1/2023 8:00 PM
Apeksha Hospital Research - 2023-24-100
Wednesday, November 1, 2023 10:00 PM
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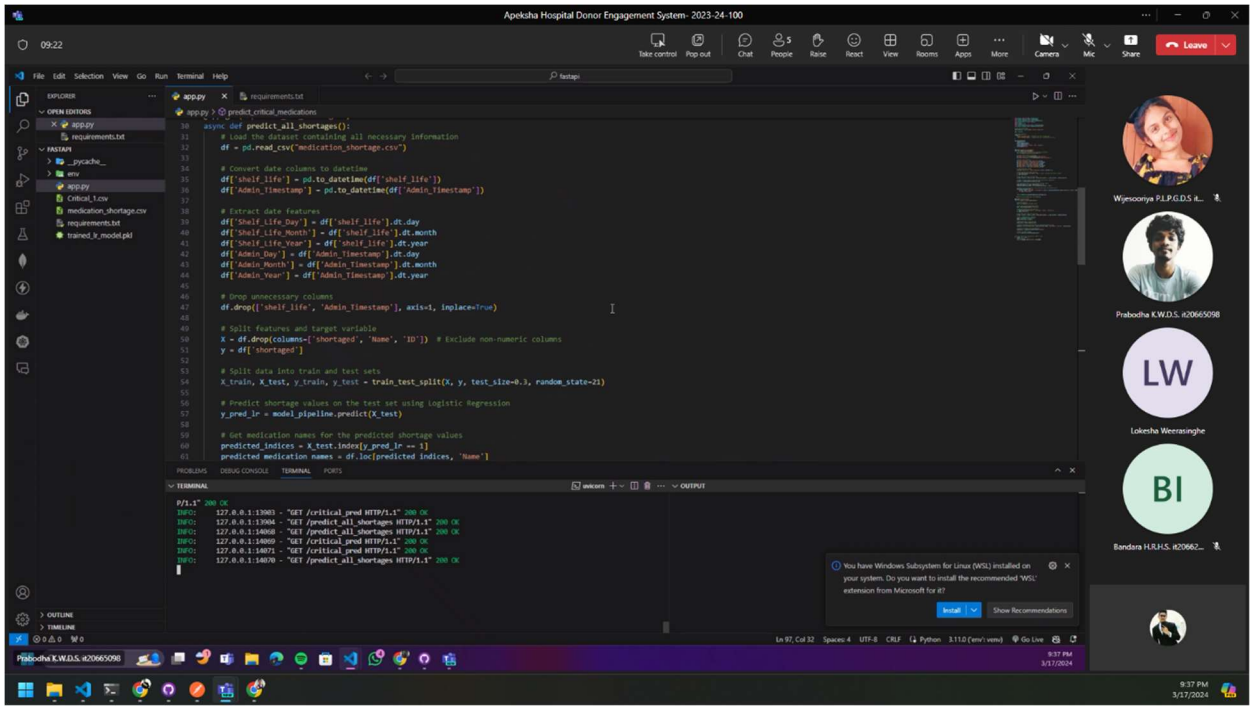
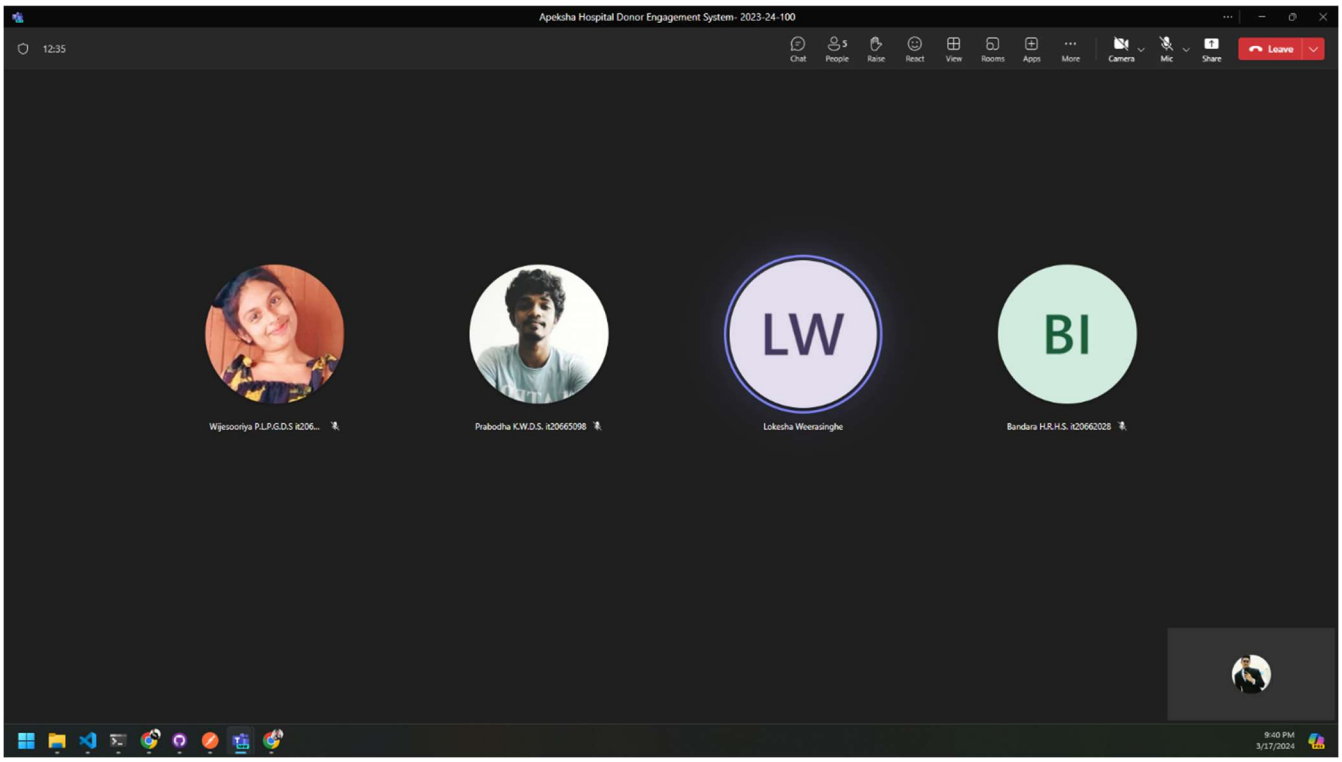
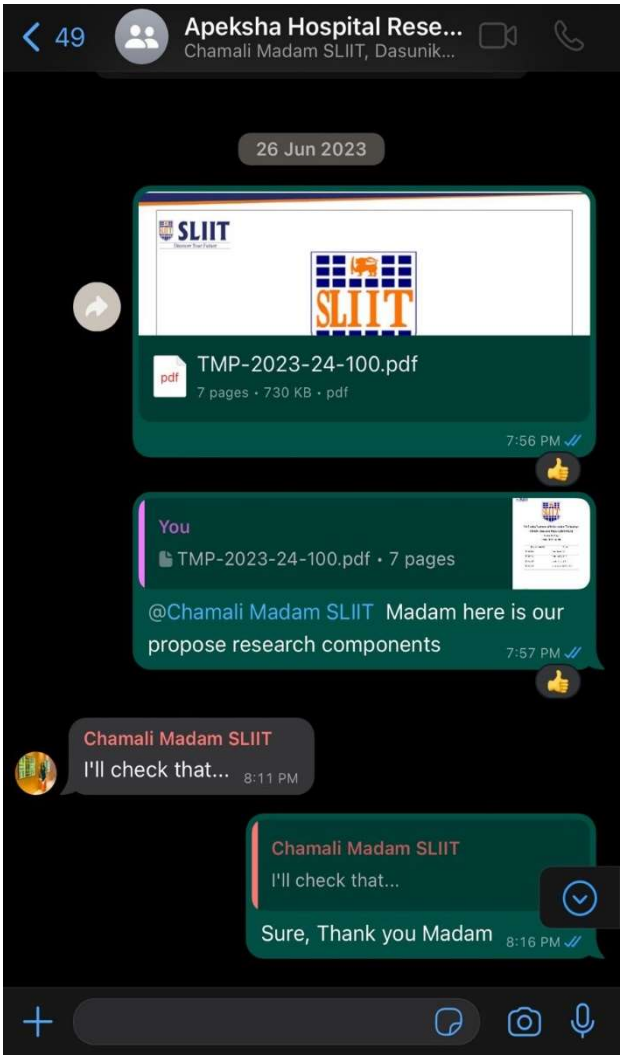
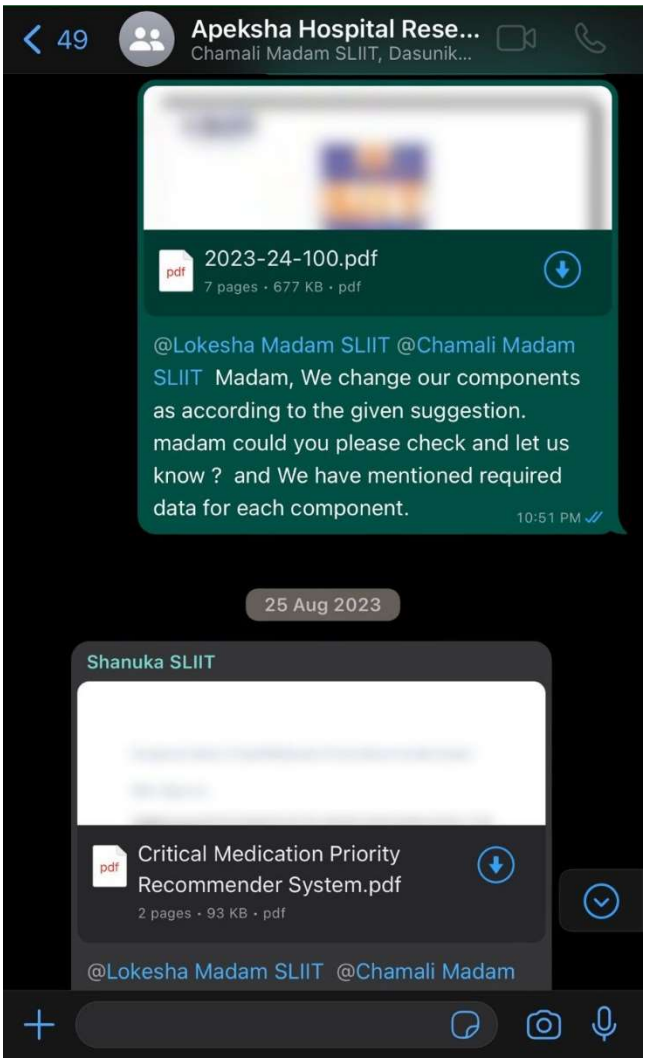
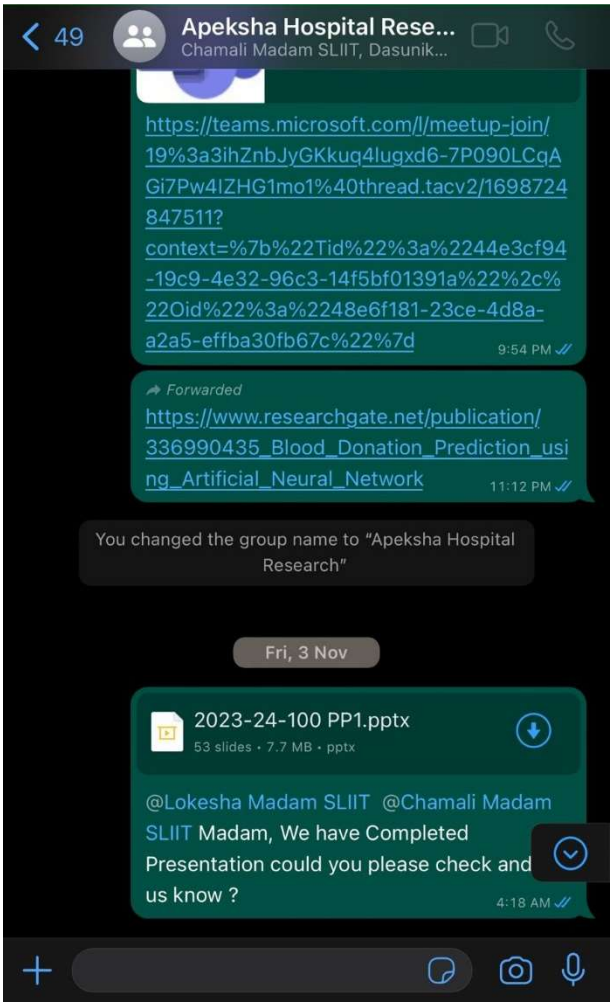
Start a post


Apeksha Hospital Donor Engagement System- 2023-24-100
09:22
Leave
app.py
requirements.txt
async def predict_all_shortages():
# Load the dataset containing all necessary information
df = pd.read_csv("medication_shortage.csv")
# Convert date columns to datetime
df['shelf_life'] = pd.to_datetime(df['shelf_life'])
df['Admin_Timestamp'] = pd.to_datetime(df['Admin_Timestamp'])
Extract date features
df['Shelf_Life_Day'] = df['shelf_life'].dt.day
df['Shelf_Life_Month'] = df['shelf_life'].dt.month
df['Shelf_Life_Year'] = df['shelf_life'].dt.year
df['Admin_Day'] = df['Admin_Timestamp'].dt.day
df['Admin_Month'] = df['Admin_Timestamp'].dt.month
df['Admin_Year'] = df['Admin_Timestamp'].dt.year
# Drop unnecessary columns
df.drop(['shelf_life', 'Admin_Timestamp'], axis=1, inplace=True)
# Split features and target variable
X = df.drop(columns=['shortaged', 'Name', 'ID']) # Exclude non-numeric columns
y = df['shortaged']
# Split data into train and test sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=21)
# Predict shortage values on the test set using Logistic Regression
y_pred_lr = model_pipeline.predict(X_test)
# Get medication names for the predicted shortage values
predicted_indices = X_test.index[y_pred_lr == 1]
predicted_medication_names = df.loc[predicted_indices, 'Name']
INFO: 127.0.0.1:13903 - "GET /critical_pred HTTP/1.1" 200 OK
INFO: 127.0.0.1:13904 - "GET /predict_all_shortages HTTP/1.1" 200 OK
INFO: 127.0.0.1:14068 - "GET /predict_all_shortages HTTP/1.1" 200 OK
INFO: 127.0.0.1:14069 - "GET /critical_pred HTTP/1.1" 200 OK
INFO: 127.0.0.1:14071 - "GET /critical_pred HTTP/1.1" 200 OK
INFO: 127.0.0.1:14070 - "GET /predict_all_shortages HTTP/1.1" 200 OK
Wijesooriya P.L.P.G.D.S it...
Prabodha K.W.D.S. it20665098
LW
Lokesha Weerasinghe
BI
Bandara H.R.H.S. it20662...
9:37 PM
3/17/2024


Apeksha Hospital Donor Engagement System- 2023-24-100
12:35
Leave
Wijesooriya P.L.P.G.D.S it206...
Prabodha K.W.D.S. it20665098
LW
Lokesha Weerasinghe
BI
Bandara H.R.H.S. it20662028
9:40 PM
3/17/2024


49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
26 Jun 2023
SLIIT
TMP-2023-24-100.pdf
7 pages • 730 KB • pdf
7:56 PM
You
TMP-2023-24-100.pdf • 7 pages
@Chamali Madam SLIIT Madam here is our propose research components
7:57 PM
Chamali Madam SLIIT
I'll check that... 8:11 PM
Chamali Madam SLIIT
I'll check that...
Sure, Thank you Madam 8:16 PM


49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
2023-24-100.pdf
7 pages • 677 KB • pdf
@Lokesha Madam SLIIT @Chamali Madam SLIIT Madam, We change our components as according to the given suggestion. madam could you please check and let us know ? and We have mentioned required data for each component.
10:51 PM
25 Aug 2023
Shanuka SLIIT
Critical Medication Priority Recommender System.pdf
2 pages • 93 KB • pdf
@Lokesha Madam SLIIT @Chamali Madam


49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
https://teams.microsoft.com/l/meetup-join/19%3a3ihZnbJyGKkuq4lugxd6-7P090LCqAGi7Pw4IZHG1mo1%40thread.tacv2/1698724847511?context=%7b%22Tid%22%3a%2244e3cf94-19c9-4e32-96c3-14f5bf01391a%22%2c%22Oid%22%3a%2248e6f181-23ce-4d8a-a2a5-effba30fb67c%22%7d
9:54 PM
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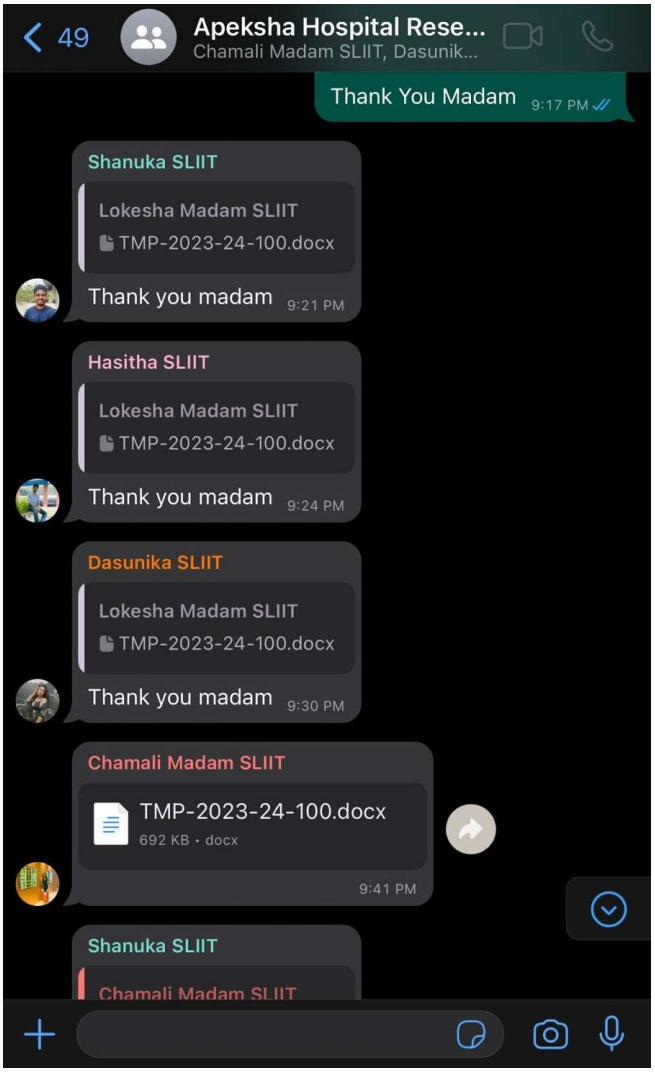
https://www.researchgate.net/publication/336990435_Blood_Donation_Prediction_using_Artificial_Neural_Network
11:12 PM
You changed the group name to "Apeksha Hospital Research"
Fri, 3 Nov
2023-24-100 PP1.pptx
53 slides • 7.7 MB • pptx
@Lokesha Madam SLIIT @Chamali Madam SLIIT Madam, We have Completed Presentation could you please check and us know ?
4:18 AM


49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
Thank You Madam
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Shanuka SLIIT
Lokesha Madam SLIIT
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Thank you madam
9:21 PM
Hasitha SLIIT
Lokesha Madam SLIIT
TMP-2023-24-100.docx
Thank you madam
9:24 PM
Dasunika SLIIT
Lokesha Madam SLIIT
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Thank you madam
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Chamali Madam SLIIT
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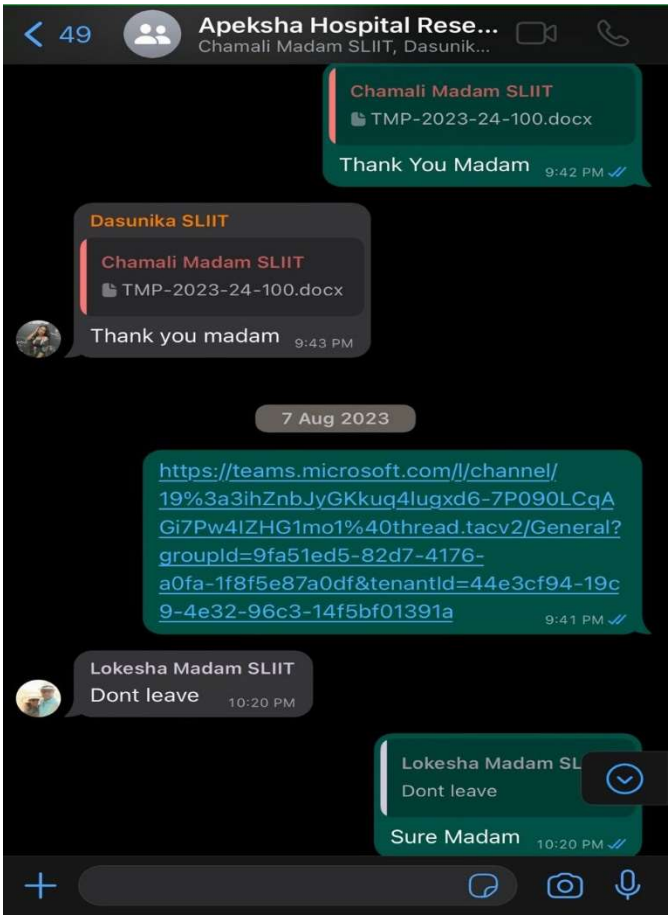
9:41 PM
Shanuka SLIIT


49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
Chamali Madam SLIIT
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Thank You Madam 9:42 PM
Dasunika SLIIT
Chamali Madam SLIIT
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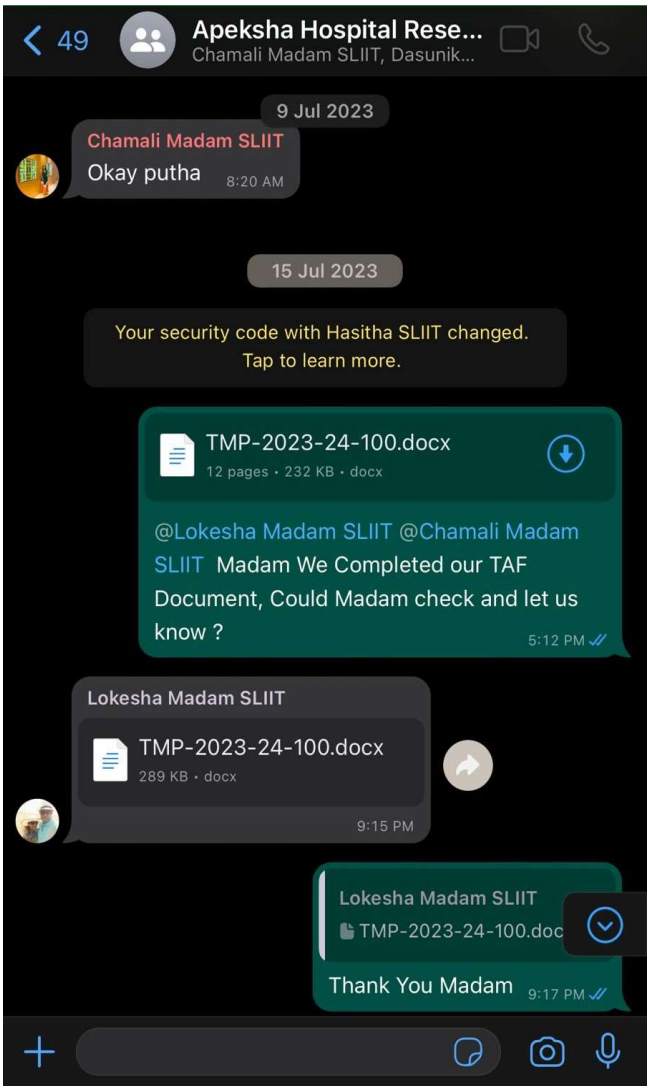
Thank you madam 9:43 PM
7 Aug 2023
https://teams.microsoft.com/l/channel/19%3a3ihZnbJyGKkuq4lugxd6-7P090LCqAGi7Pw4lZHG1mo1%40thread.tacv2/General?groupId=9fa51ed5-82d7-4176-a0fa-1f8f5e87a0df&tenantId=44e3cf94-19c9-4e32-96c3-14f5bf01391a 9:41 PM
Lokesha Madam SLIIT
Dont leave 10:20 PM
Lokesha Madam SL
Dont leave
Sure Madam 10:20 PM


49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
9 Jul 2023
Chamali Madam SLIIT
Okay putha 8:20 AM
15 Jul 2023
Your security code with Hasitha SLIIT changed.
Tap to learn more.
TMP-2023-24-100.docx
12 pages • 232 KB • docx
@Lokesha Madam SLIIT @Chamali Madam SLIIT Madam We Completed our TAF Document, Could Madam check and let us know ?
5:12 PM
Lokesha Madam SLIIT
TMP-2023-24-100.docx
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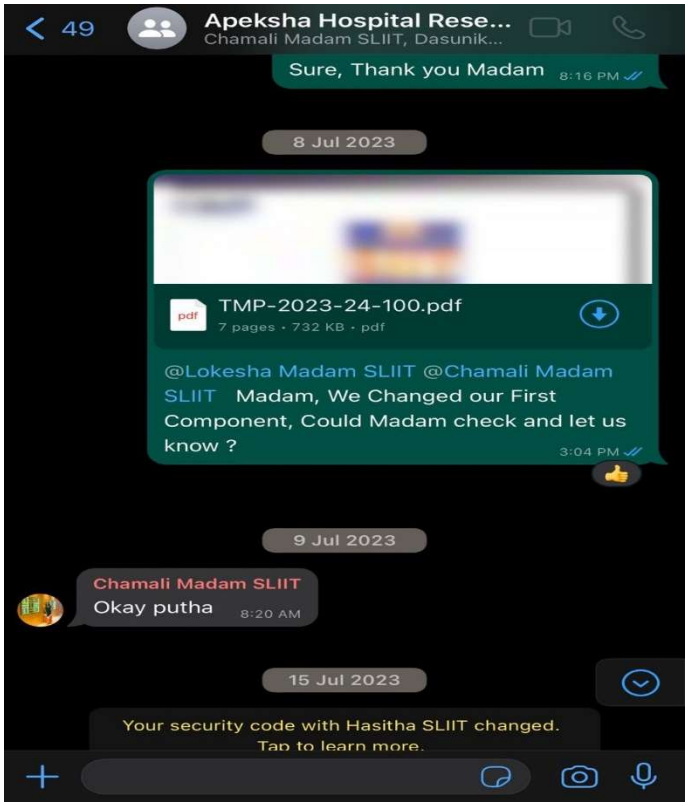
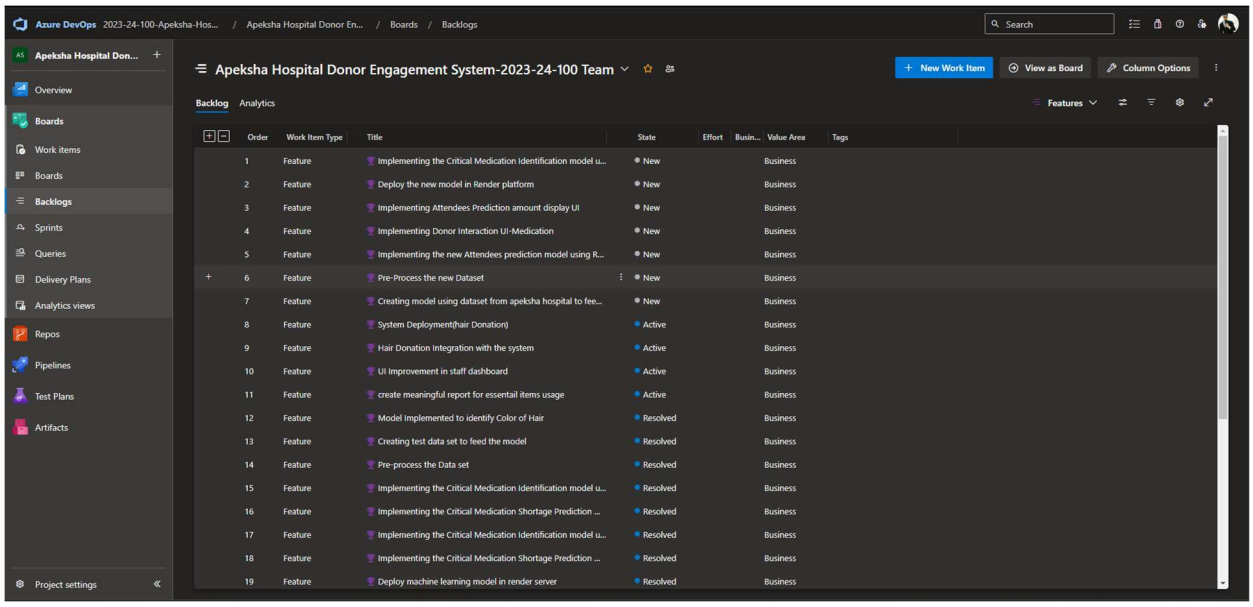
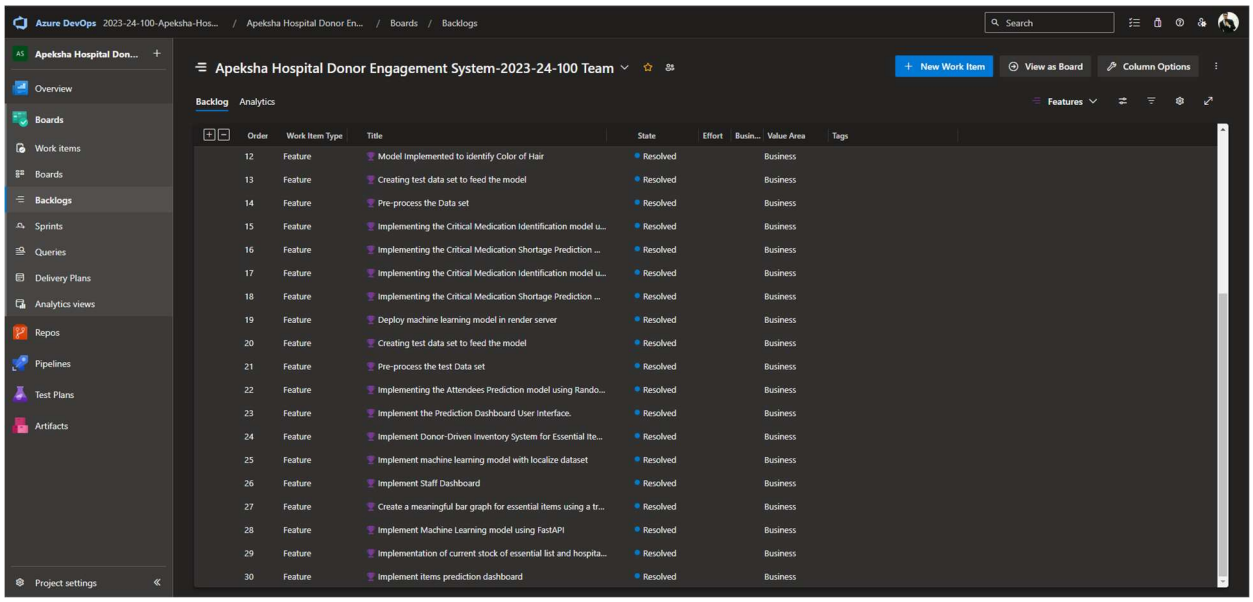
9:15 PM
Lokesha Madam SLIIT
TMP-2023-24-100.doc
Thank You Madam 9:17 PM

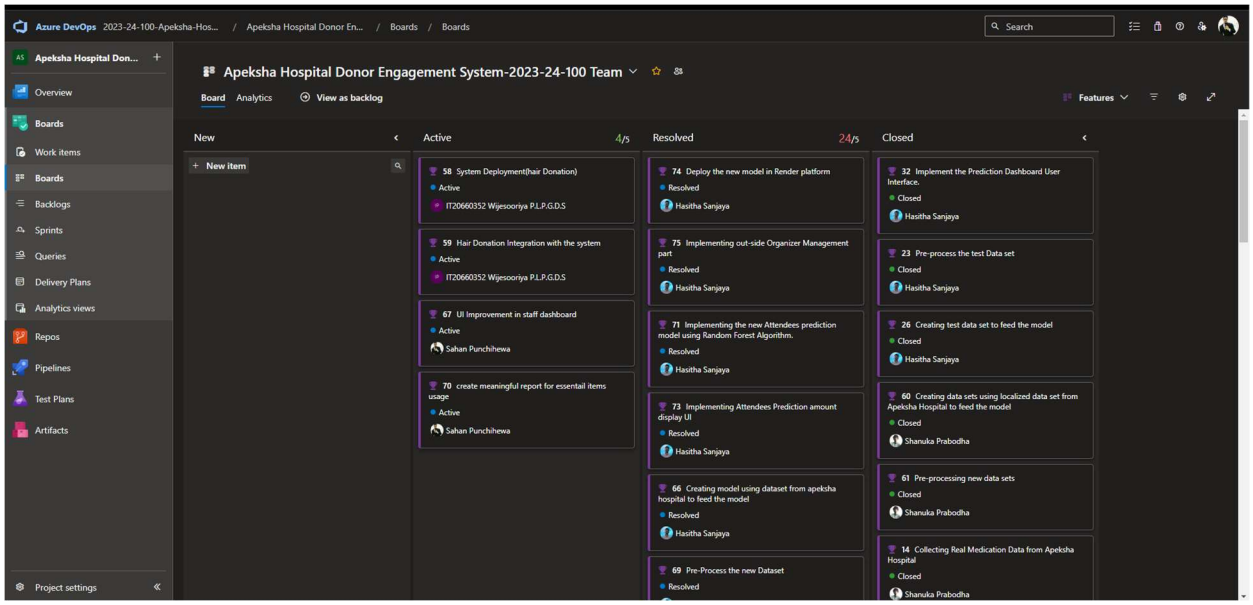

49
Apeksha Hospital Rese...
Chamali Madam SLIIT, Dasunik...
Sure, Thank you Madam 8:16 PM
8 Jul 2023
TMP-2023-24-100.pdf
7 pages • 732 KB • pdf
@Lokesha Madam SLIIT @Chamali Madam SLIIT Madam, We Changed our First Component, Could Madam check and let us know ?
3:04 PM
9 Jul 2023
Chamali Madam SLIIT
Okay putha 8:20 AM
15 Jul 2023
Your security code with Hasitha SLIIT changed.
Tap to learn more.

5. Project Management Tools & Screenshot

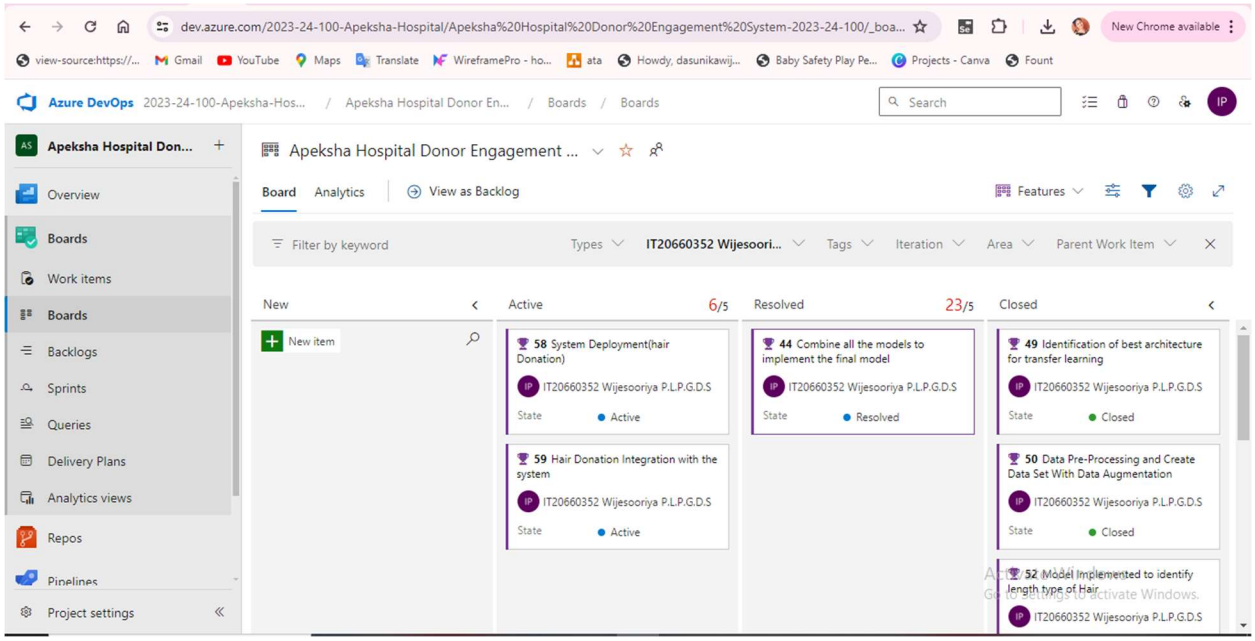
5.1 Overall Backlog







5.2 Personal Backlog



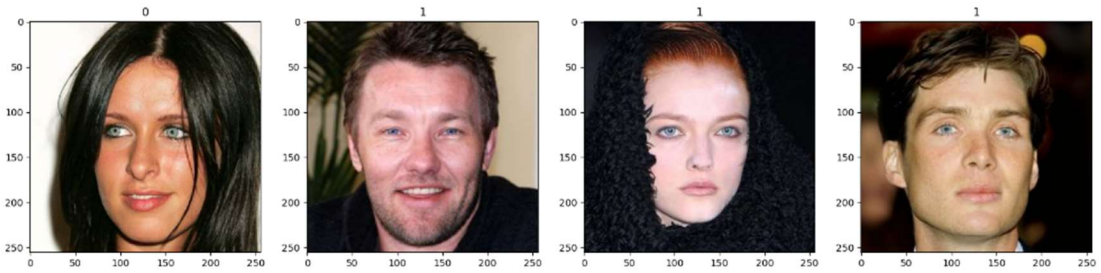
6. Trained Model Screenshot

6.1 Preprocessing for the image data sets

```
In [4]: import cv2
        import imghdr

In [6]: image_exts = ['jpeg','jpg', 'bmp', 'png']

In [7]: data_dir='C:/Users/Ridma/Downloads/Hairs'
        for image_class in os.listdir(data_dir):
            for image in os.listdir(os.path.join(data_dir, image_class)):
                image_path = os.path.join(data_dir, image_class, image)
                try:
                    img = cv2.imread(image_path)
                    tip = imghdr.what(image_path)
                    if tip not in image_exts:
                        print('Image not in ext list {}'.format(image_path))
                        os.remove(image_path)
                except Exception as e:
                    print('Issue with image {}'.format(image_path))
                    # os.remove(image_path)

In [ ]: datagen = preprocessing.image.ImageDataGenerator(
            rescale=1./255,
            validation_split=0.2
```

6.2 Model for the Hair Type Detection

```
In [16]: data_iterator = data.as_numpy_iterator()

In [17]: batch = data_iterator.next()

In [18]: fig, ax = plt.subplots(ncols=4, figsize=(20,20))
         for idx, img in enumerate(batch[0][:4]):
             ax[idx].imshow(img.astype(int))
             ax[idx].title.set_text(batch[1][idx])
```

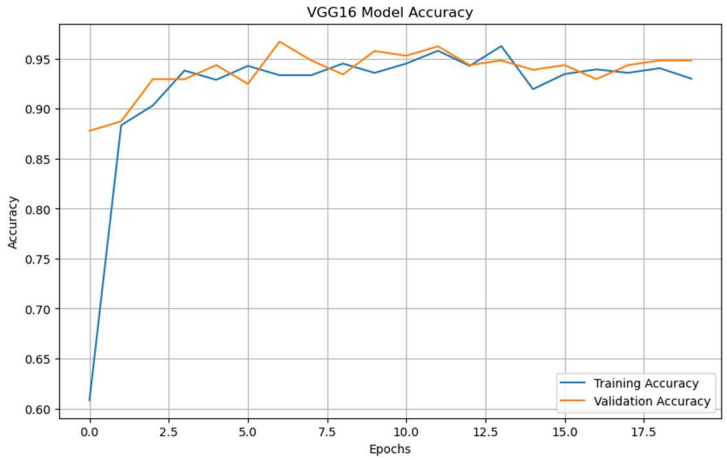


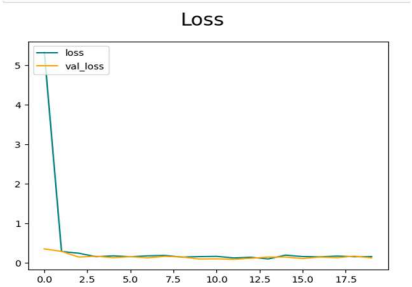
Proposed Model

6.2.1. **CNN Architecture Model- VGG1**

```
In [4]: train_generator = datagen.flow_from_directory(
            'C:/Users/Ridma/Downloads/Hairs',
            target_size=img_size,
            batch_size=batch_size,
            class_mode='categorical',
            subset='training'
        )

        Found 858 images belonging to 2 classes.

In [5]: val_generator = datagen.flow_from_directory(
            'C:/Users/Ridma/Downloads/Hairs',
            target_size=img_size,
            batch_size=batch_size,
            class_mode='categorical',
            subset='validation'
        )

        Found 213 images belonging to 2 classes.

In [6]: from tensorflow.keras.callbacks import EarlyStopping

        early_stop = EarlyStopping(monitor='val_loss', patience=10, verbose=1, restore_best_weights=True)

In [7]: base_model = VGG16(input_shape=(160, 160, 3), include_top=False, weights='imagenet')
        base_model.trainable = False

        vgg16_model = models.Sequential([
            base_model,
            layers.Flatten(),
            layers.Dense(4096, activation='relu'),
            layers.Dropout(0.5),
            layers.Dense(4096, activation='relu'),
            layers.Dropout(0.5),
            layers.Dense(2, activation='softmax')
        ])

        vgg16_model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])

        history=vgg16_model.fit(train_generator, validation_data=val_generator, epochs=20 , callbacks=[early_stop])

        Epoch 1/20
        27/27 [==============================] - 163s 6s/step - loss: 5.3365 - accuracy: 0.6084 - val_loss: 0.3546 - val_accuracy: 0.87
```

Evidence of Completion





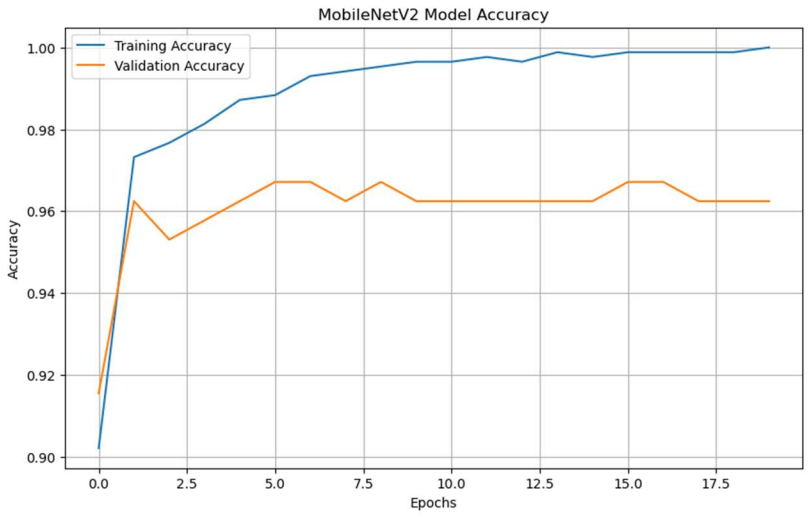
Loss: 0.2021

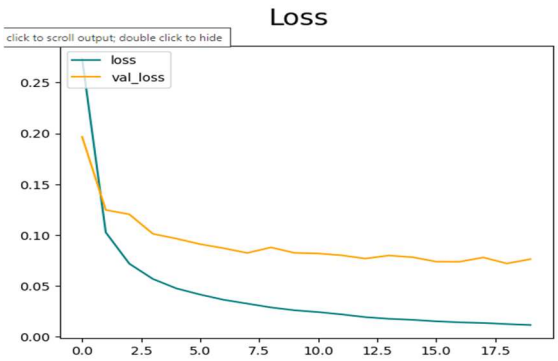
Accuracy: 0.9345

6.2.2. **CNN Architecture Model- MobileNetV2**

```
In [38]: train_generator = datagen.flow_from_directory(
             'C:/Users/Ridma/Downloads/Hairs',
             target_size=img_size,
             batch_size=batch_size,
             class_mode='categorical',
             subset='training'
         )

         Found 858 images belonging to 2 classes.

In [39]: val_generator = datagen.flow_from_directory(
             'C:/Users/Ridma/Downloads/Hairs',
             target_size=img_size,
             batch_size=batch_size,
             class_mode='categorical',
             subset='validation'
         )

         Found 213 images belonging to 2 classes.

In [40]: from tensorflow.keras.callbacks import EarlyStopping

         early_stop = EarlyStopping(monitor='val_loss', patience=10, verbose=1, restore_best_weights=True)

In [10]: base_model = MobileNetV2(input_shape=(160, 160, 3), include_top=False, weights='imagenet')
         base_model.trainable = False

         mobilenet_model = models.Sequential([
             base_model,
             layers.GlobalAveragePooling2D(),
             layers.Dense(2, activation='softmax')
         ])

         mobilenet_model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
         history=mobilenet_model.fit(train_generator, validation_data=val_generator, epochs=20 ,callbacks=[early_stop])

         Epoch 1/20
         14/14 [==============================] - 26s 1s/step - loss: 0.2733 - accuracy: 0.9021 - val_loss: 0.1966 - val_accuracy: 0.915
         5
         Epoch 2/20
         14/14 [==============================] - 16s 1s/step - loss: 0.1027 - accuracy: 0.9732 - val_loss: 0.1247 - val_accuracy: 0.962
         4
```

Evidence of Completion





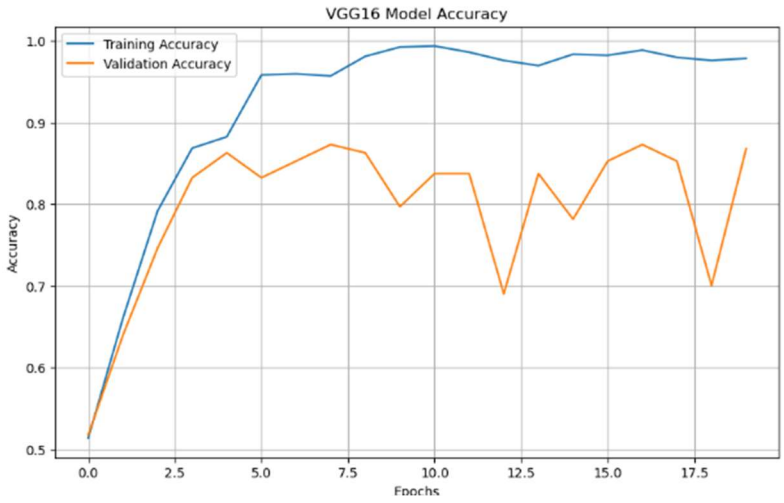
Loss: 0.0105

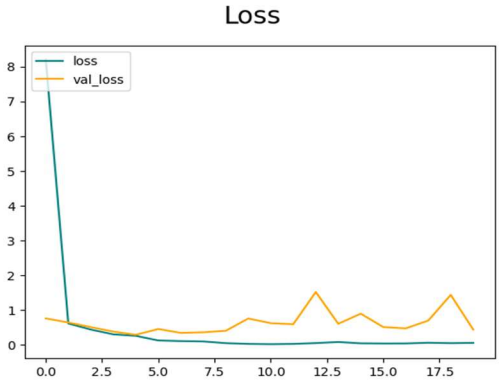
Accuracy: 0.9968

6.3 Model for the Hair Color Detection

6.3.1. **CNN Architecture Model- VGG16**

```
In [6]: train_generator = datagen.flow_from_directory(
            'C:/Users/Ridma/Downloads/newimages',
            target_size=img_size,
            batch_size=batch_size,
            class_mode='categorical',
            subset='training'
        )

Found 792 images belonging to 2 classes.

In [7]: val_generator = datagen.flow_from_directory(
            'C:/Users/Ridma/Downloads/newimages',
            target_size=img_size,
            batch_size=batch_size,
            class_mode='categorical',
            subset='validation'
        )

Found 197 images belonging to 2 classes.

In [8]: base_model = VGG16(input_shape=(160, 160, 3), include_top=False, weights='imagenet')
        base_model.trainable = False

        vgg16_model = models.Sequential([
            base_model,
            layers.Flatten(),
            layers.Dense(4096, activation='relu'),
            layers.Dropout(0.5),
            layers.Dense(4096, activation='relu'),
            layers.Dropout(0.5),
            layers.Dense(2, activation='softmax')  # Assuming 2 hair colors
        ])

        vgg16_model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])

        history=vgg16_model.fit(train_generator, validation_data=val_generator, epochs=20)

Epoch 1/20
13/13 [==============================] - 209s 16s/step - loss: 8.1964 - accuracy: 0.5139 - val_loss: 0.7592 - val_accuracy: 0.5
```





Loss: 0.0576

Accuracy: 0.9785

6.3.2. **CNN Architecture Model- MobileNetV2**

In [13]:
```
train_generator = datagen.flow_from_directory(
    'C:/Users/Ridma/Downloads/newimages',
    target_size=img_size,
    batch_size=batch_size,
    class_mode='categorical',
    subset='training'
)
```

```
Found 792 images belonging to 2 classes.
```

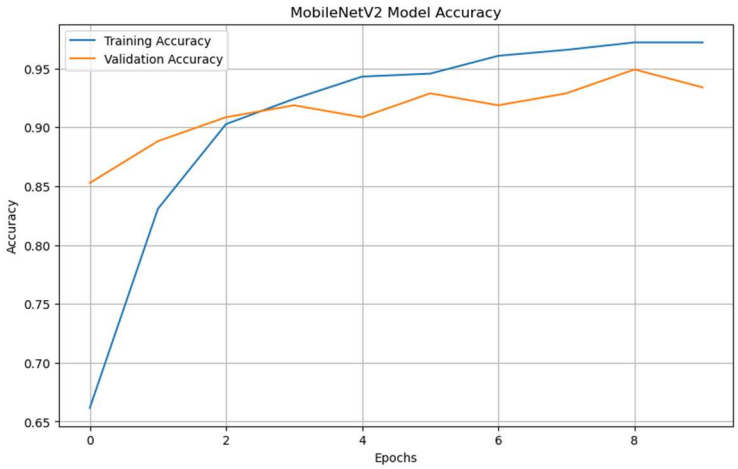
In [14]:
```
val_generator = datagen.flow_from_directory(
    'C:/Users/Ridma/Downloads/newimages',
    target_size=img_size,
    batch_size=batch_size,
    class_mode='categorical',
    subset='validation'
)
```

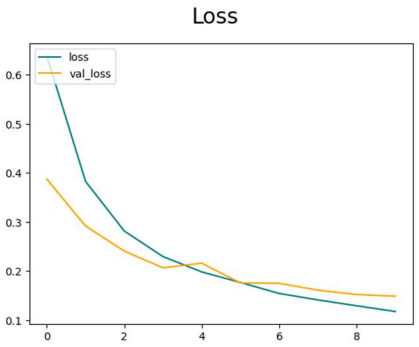
```
Found 197 images belonging to 2 classes.
```

In [15]:
```
base_model = MobileNetV2(input_shape=(160, 160, 3), include_top=False, weights='imagenet')
base_model.trainable = False

mobilenet_model = models.Sequential([
    base_model,
    layers.GlobalAveragePooling2D(),
    layers.Dense(2, activation='softmax')  # Assuming 2 hair colors
])

mobilenet_model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
history=mobilenet_model.fit(train_generator, validation_data=val_generator, epochs=10)
```

```
Epoch 1/10
13/13 [==============================] - 42s 3s/step - loss: 0.6384 - accuracy: 0.6616 - val_loss: 0.3875 - val_accuracy: 0.852
8
```

Evidence of Completion





Loss: 0.1177

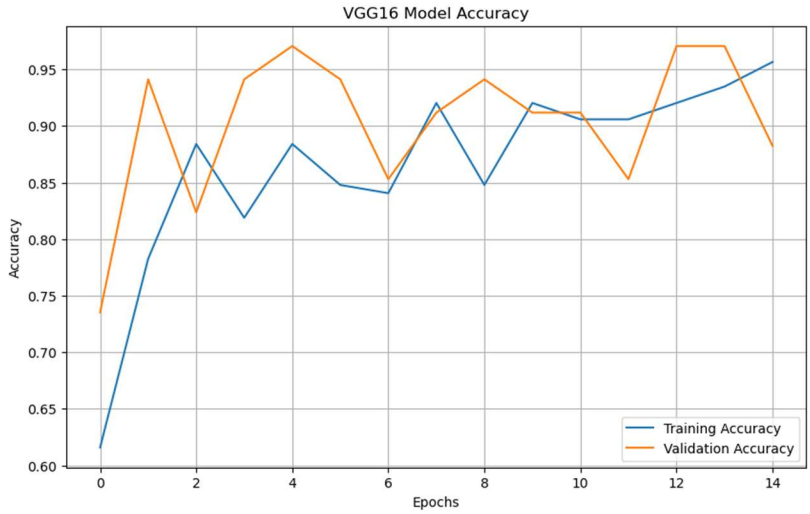
Accuracy: 0.9722

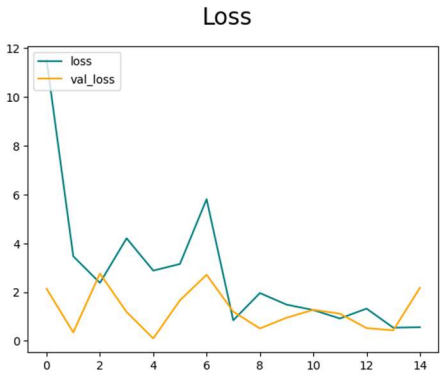
6.4. Model for the Dandruff & Lice Detection

6.4.1. **CNN** Architecture Model- **VGG16**

```
In [5]: train_generator = datagen.flow_from_directory(
            'C:/Users/Ridma/Downloads/Dandruff',
            target_size=img_size,
            batch_size=batch_size,
            class_mode='categorical',
            subset='training'
        )

        Found 138 images belonging to 2 classes.

In [6]: val_generator = datagen.flow_from_directory(
            'C:/Users/Ridma/Downloads/Dandruff',
            target_size=img_size,
            batch_size=batch_size,
            class_mode='categorical',
            subset='validation'
        )

        Found 34 images belonging to 2 classes.

In [7]: from tensorflow.keras.callbacks import EarlyStopping

        early_stop = EarlyStopping(monitor='val_loss', patience=10, verbose=1, restore_best_weights=True)

In [8]: base_model = VGG16(input_shape=(160, 160, 3), include_top=False, weights='imagenet')
        base_model.trainable = False

        vgg16_model = models.Sequential([
            base_model,
            layers.Flatten(),
            layers.Dense(4096, activation='relu'),
            layers.Dropout(0.5),
            layers.Dense(4096, activation='relu'),
            layers.Dropout(0.5),
            layers.Dense(2, activation='softmax')
        ])

        vgg16_model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])

        history=vgg16_model.fit(train_generator, validation_data=val_generator, epochs=20 , callbacks=[early_stop])

        Epoch 1/20
```

Evidence of Completion





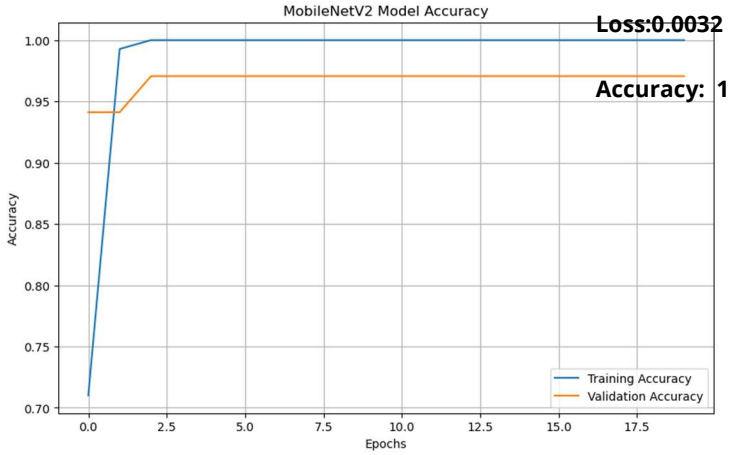
Loss: 0.5594

Accuracy: 0.9565

6.4.2. CNN Architecture Model- MobileNetV2

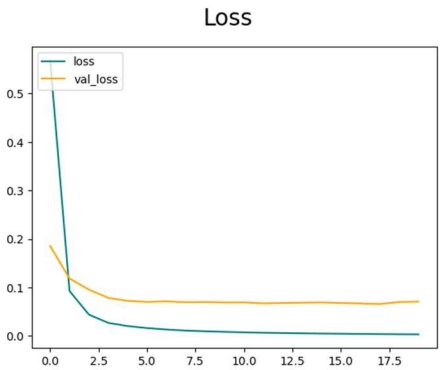
```
In [25]: train_generator = datagen.flow_from_directory(
             'C:/Users/Ridma/Downloads/Dandruff',
             target_size=img_size,
             batch_size=batch_size,
             class_mode='categorical',
             subset='training'
         )

         Found 138 images belonging to 2 classes.

In [26]: val_generator = datagen.flow_from_directory(
             'C:/Users/Ridma/Downloads/Dandruff',
             target_size=img_size,
             batch_size=batch_size,
             class_mode='categorical',
             subset='validation'
         )

         Found 34 images belonging to 2 classes.

In [27]: from tensorflow.keras.callbacks import EarlyStopping

         early_stop = EarlyStopping(monitor='val_loss', patience=10, verbose=1, restore_best_weights=True)

In [28]: base_model = MobileNetV2(input_shape=(160, 160, 3), include_top=False, weights='imagenet')
         base_model.trainable = False

         mobilenet_model = models.Sequential([
             base_model,
             layers.GlobalAveragePooling2D(),
             layers.Dense(2, activation='softmax')
         ])

         mobilenet_model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
         history=mobilenet_model.fit(train_generator, validation_data=val_generator, epochs=20, callbacks=[early_stop])

         Epoch 1/20
         18/18 [==============================] - 18s 657ms/step - loss: 0.5687 - accuracy: 0.7101 - val_loss: 0.1855 - val_accuracy: 0.
         9412
         Epoch 2/20
```

Evidence of Completion

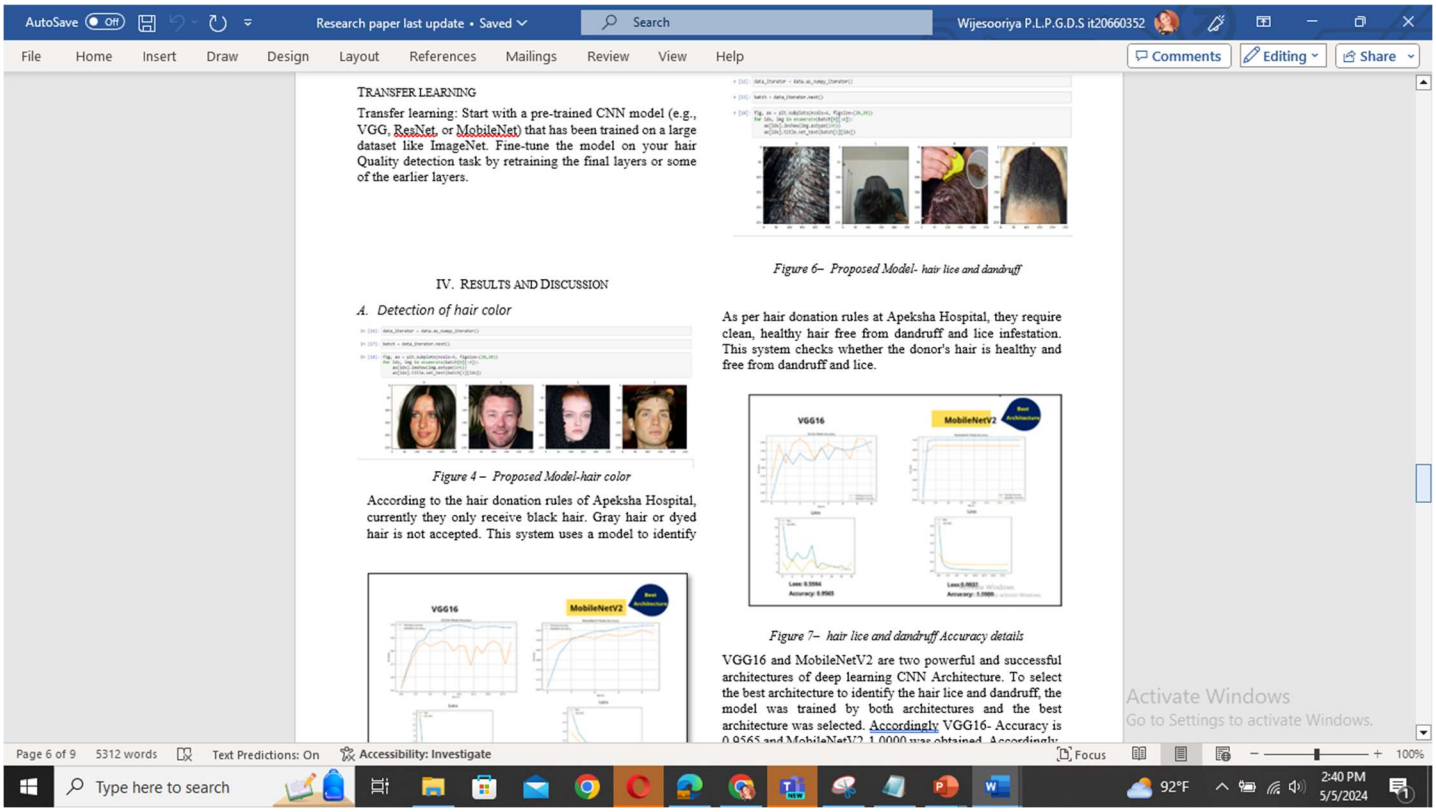


Loss:0.0032

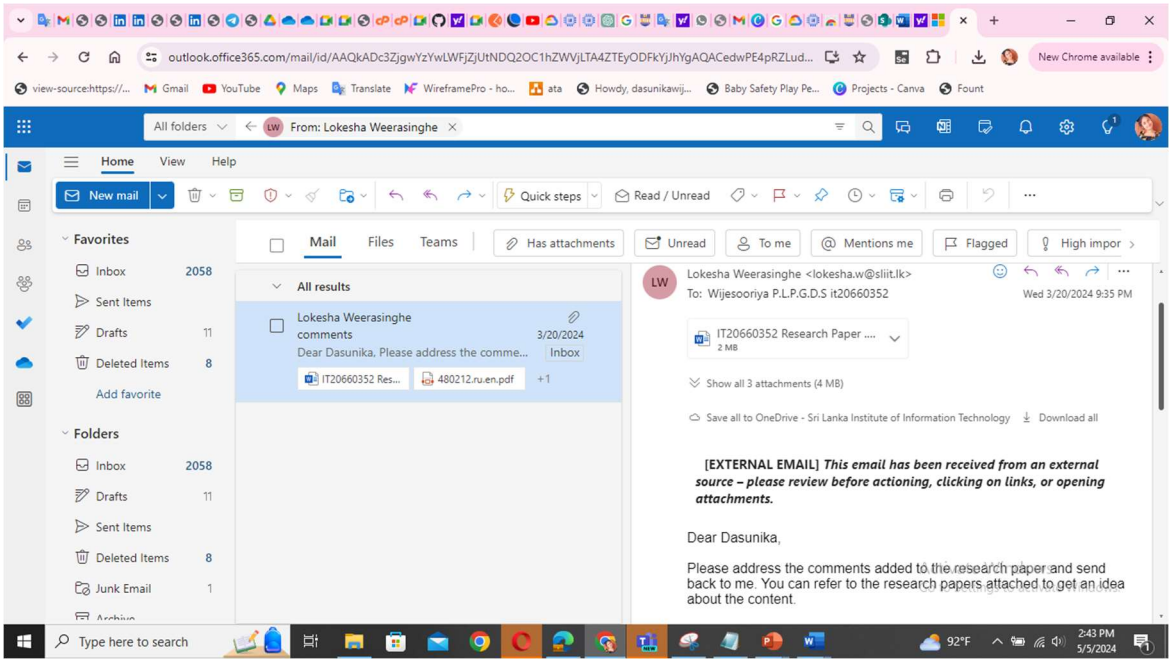
Accuracy: 1.0000



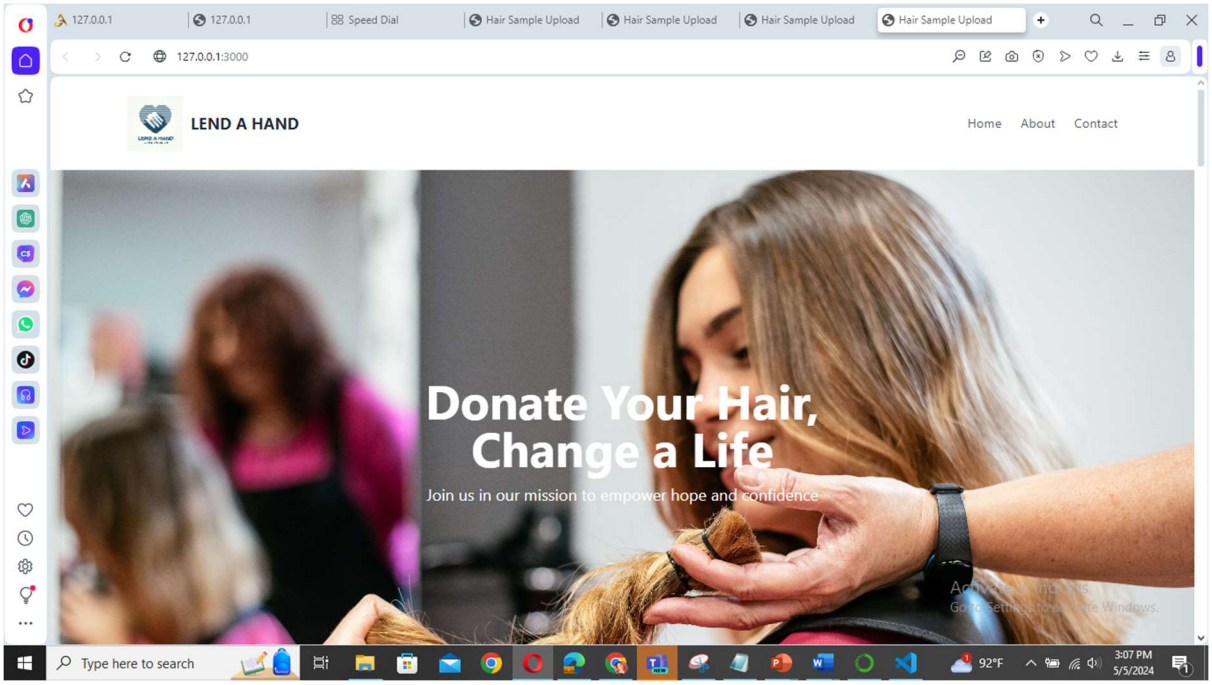
7.Research Paper

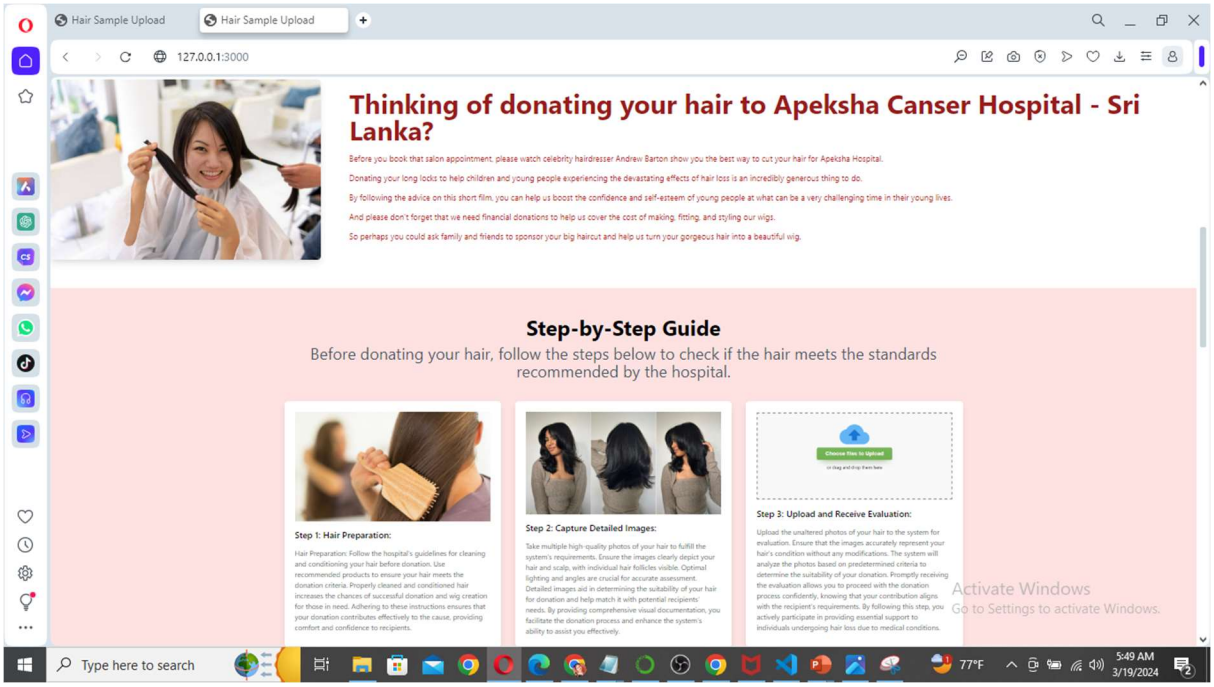


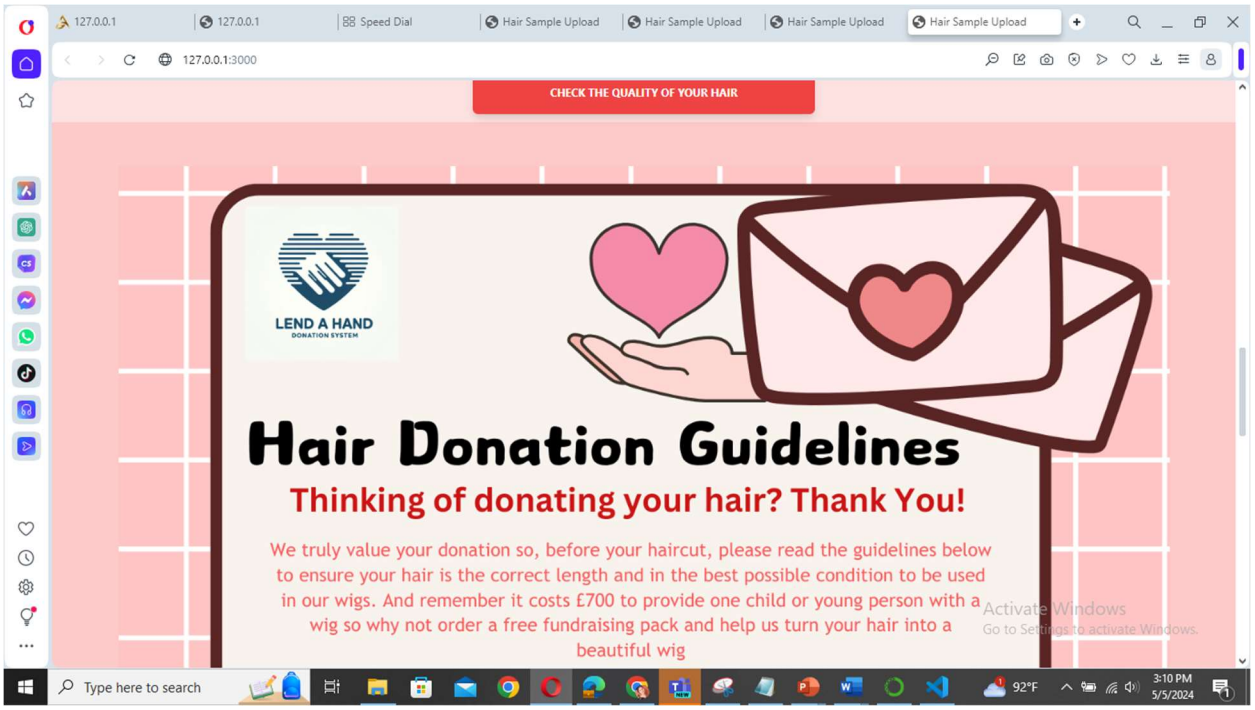
8.Emails on Outlook

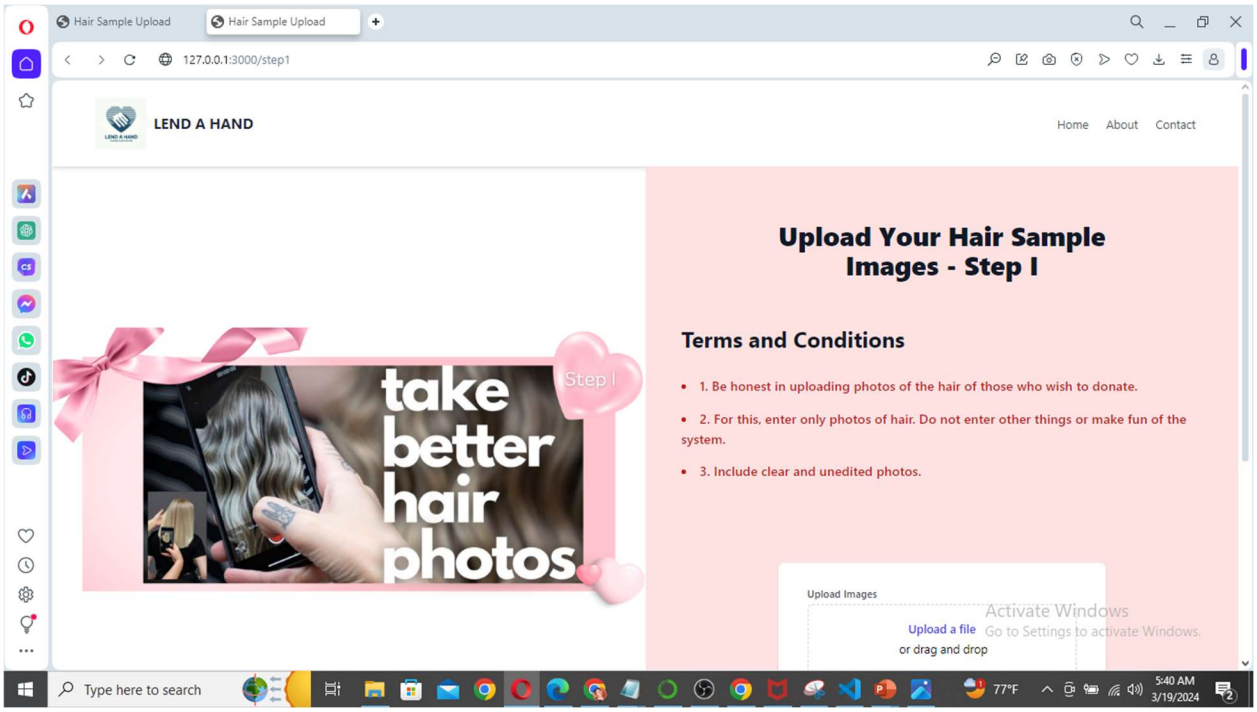


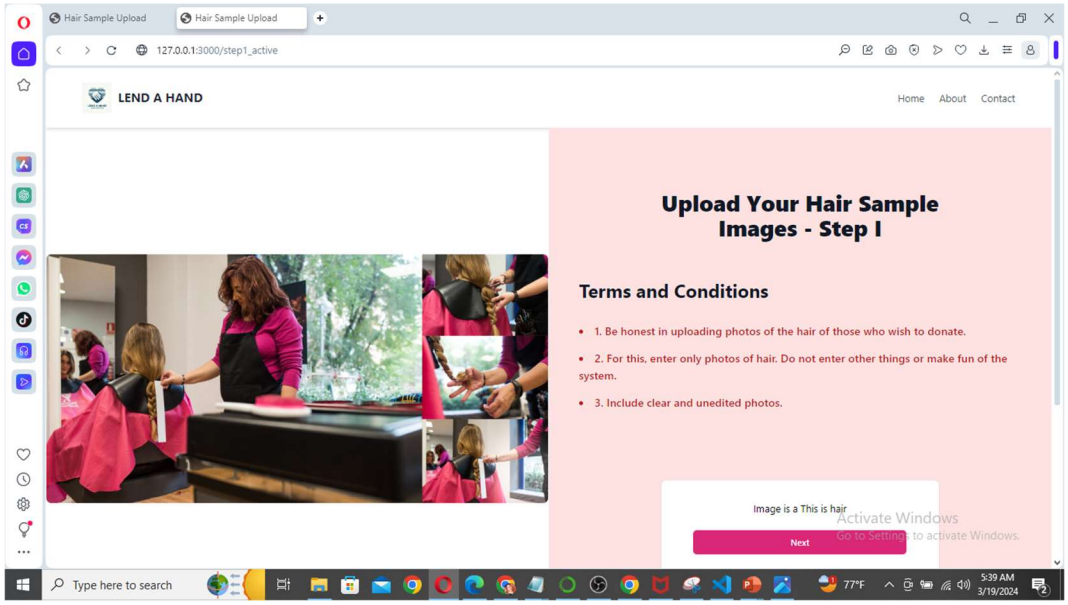
9.Implemented Interfaces of the Web application

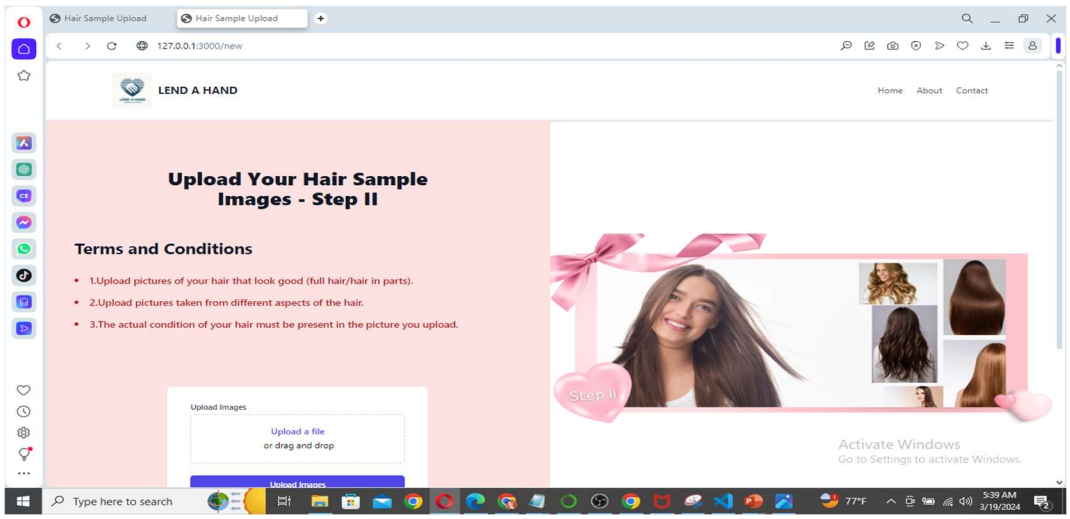


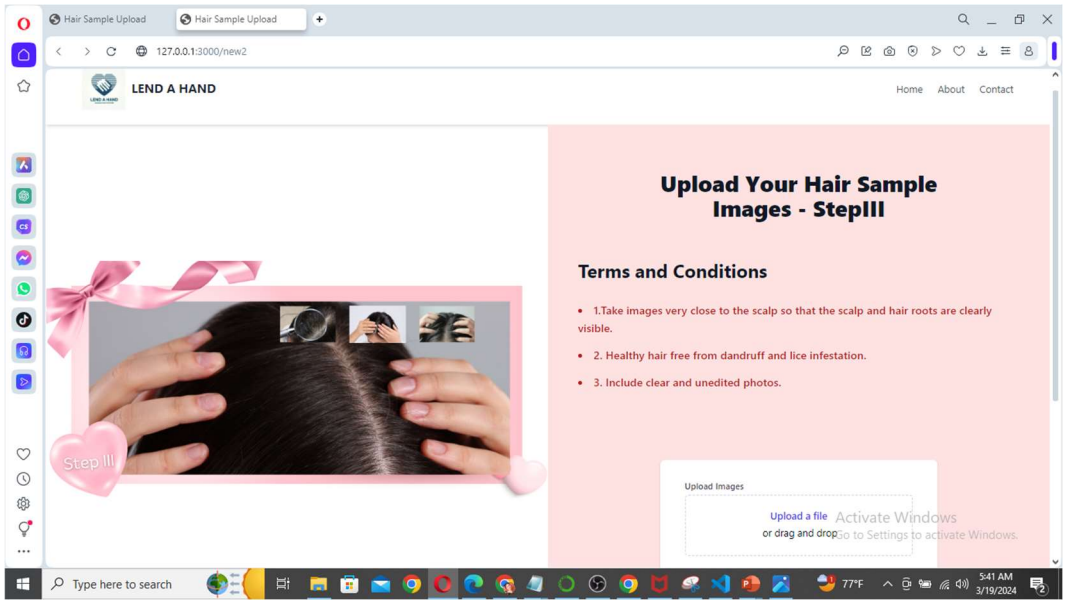


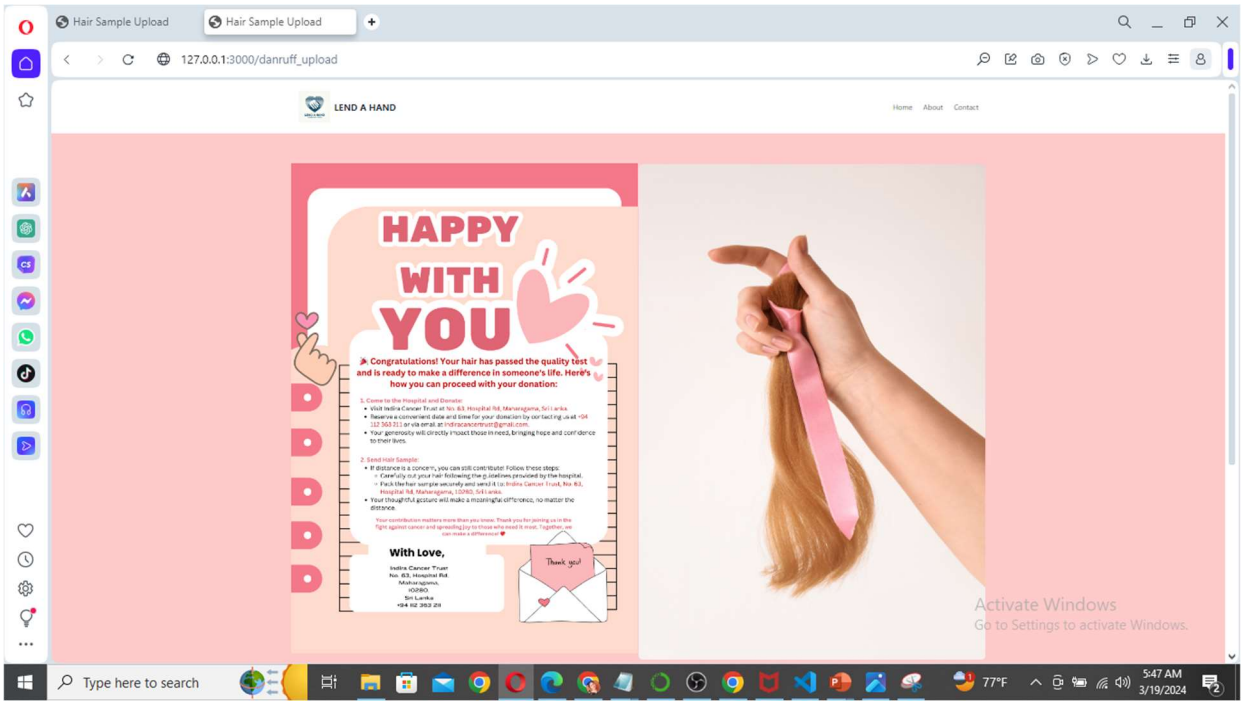

127.0.0.1:3000
CHECK THE QUALITY OF YOUR HAIR
LEND A HAND
DONATION SYSTEM
Hair Donation Guidelines
Thinking of donating your hair? Thank You!
We truly value your donation so, before your haircut, please read the guidelines below to ensure your hair is the correct length and in the best possible condition to be used in our wigs. And remember it costs £700 to provide one child or young person with a wig so why not order a free fundraising pack and help us turn your hair into a beautiful wig
Activate Windows
Go to Settings to activate Windows.
Type here to search
92°F
3:10 PM
5/5/2024

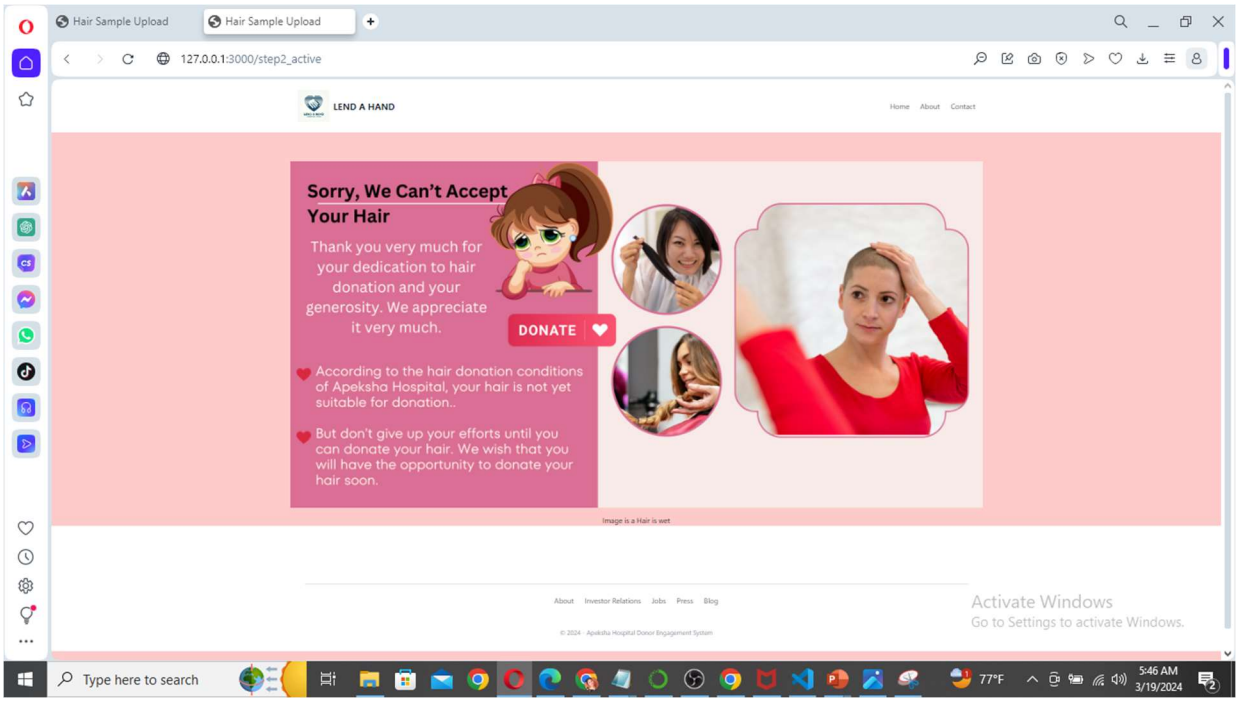

127.0.0.1:3000/step1
LEND A HAND
Home
About
Contact
take better hair photos
Step I
Upload Your Hair Sample Images - Step I
Terms and Conditions
1. Be honest in uploading photos of the hair of those who wish to donate.
2. For this, enter only photos of hair. Do not enter other things or make fun of the system.
3. Include clear and unedited photos.
Upload Images
Upload a file
or drag and drop
Activate Windows
Go to Settings to activate Windows.
Type here to search
77°F
5:40 AM
3/19/2024


Hair Sample Upload
127.0.0.1:3000/step1_active
LEND A HAND
Home
About
Contact
Upload Your Hair Sample Images - Step I
Terms and Conditions
1. Be honest in uploading photos of the hair of those who wish to donate.
2. For this, enter only photos of hair. Do not enter other things or make fun of the system.
3. Include clear and unedited photos.
Image is a This is hair
Next
Activate Windows
Go to Settings to activate Windows.
Type here to search
77°F
5:39 AM
3/19/2024

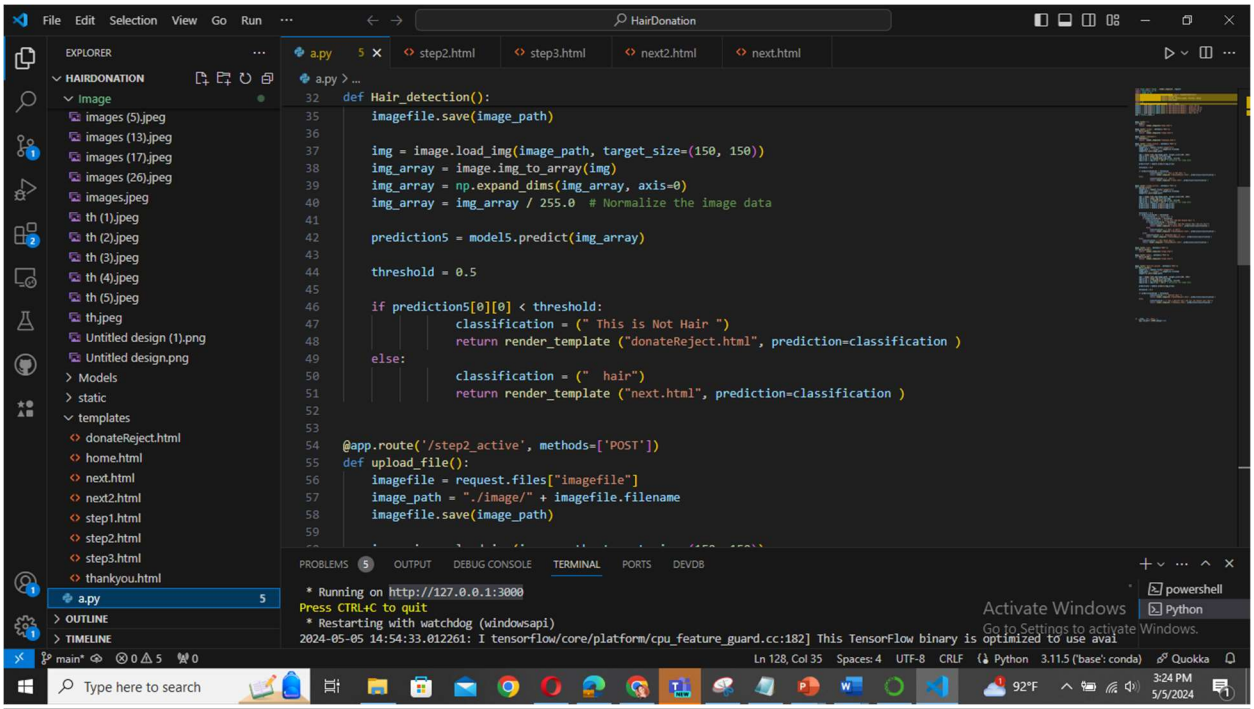

Hair Sample Upload
127.0.0.1:3000/new
LEND A HAND
Home
About
Contact
Upload Your Hair Sample Images - Step II
Terms and Conditions
1.Upload pictures of your hair that look good (full hair/hair in parts).
2.Upload pictures taken from different aspects of the hair.
3.The actual condition of your hair must be present in the picture you upload.
Upload Images
Upload a file
or drag and drop
Upload Images
Step II
Activate Windows
Go to Settings to activate Windows.
Type here to search
77°F
5:39 AM
3/19/2024

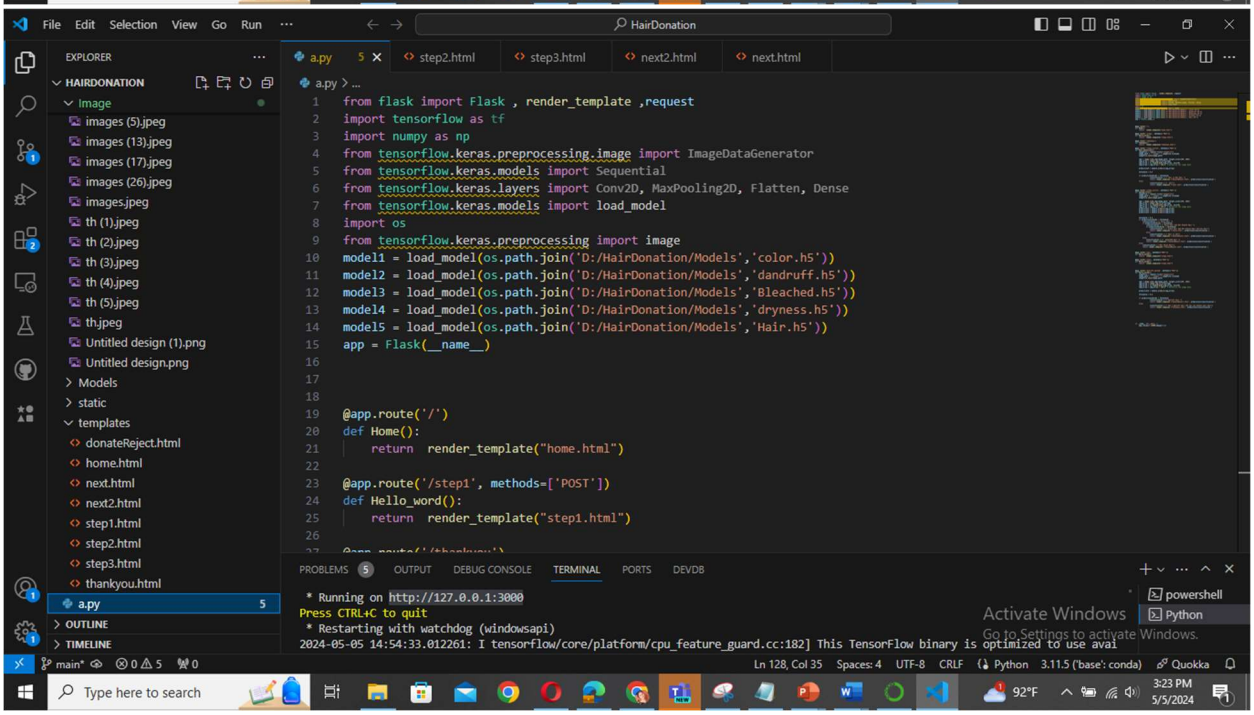

Hair Sample Upload
127.0.0.1:3000/new2
LEND A HAND
Home
About
Contact
Upload Your Hair Sample Images - StepIII
Terms and Conditions
1.Take images very close to the scalp so that the scalp and hair roots are clearly visible.
2. Healthy hair free from dandruff and lice infestation.
3. Include clear and unedited photos.
Step III
Upload Images
Upload a file
or drag and drop
Activate Windows
Go to Settings to activate Windows.
Type here to search
77°F
5:41 AM
3/19/2024


Hair Sample Upload
Hair Sample Upload
127.0.0.1:3000/danruff_upload
LEND A HAND
Home About Contact
HAPPY WITH YOU
Congratulations! Your hair has passed the quality test and is ready to make a difference in someone's life. Here's how you can proceed with your donation:
With Love,
Thank you!
Activate Windows
Go to Settings to activate Windows.
Type here to search
77°F
5:47 AM
3/19/2024


Hair Sample Upload
Hair Sample Upload
127.0.0.1:3000/step2_active
LEND A HAND
Home About Contact
Sorry, We Can't Accept Your Hair
Thank you very much for your dedication to hair donation and your generosity. We appreciate it very much.
DONATE
According to the hair donation conditions of Apeksha Hospital, your hair is not yet suitable for donation..
But don't give up your efforts until you can donate your hair. We wish that you will have the opportunity to donate your hair soon.
Image is a Hair is wet
About Investor Relations Jobs Press Blog
Activate Windows
Go to Settings to activate Windows.
Type here to search
77°F
5:46 AM
3/19/2024

Backend Part





10.Testing

Table 9.1 Test case to verify whether the captured image is stored cloud storage.

Test Case Id	01
Test Case	Verify image upload
Test Scenario	Verify whether the captured image is stored Google cloud storage
Input	Captured suspicious leaflet images
Expected Output	1. 200 status code should be displayed 2. The images must be stored in the firebase bucket
Actual Result	1. 200 status code was displayed 2. The images were stored in the firebase bucket
Status (Pass/Fail)	Pass

Table 9.2: Test case to classify and select the best model for hair identification

Test Case Id	02
Test Case	Classification of Hair identification using CNN
Test Scenario	Testing images to classify Hair and select the best model.
Precondition	512 labelled training & 134 validation images
Input	Test images (with and without hair)
Expected Output	High accuracy (mAP value)
Actual Result	High model accuracy with **95.60**% mAP value
Status (Pass/Fail)	Pass

Table 9.3: Test case to classify and select the best model for hair color Detection

Test Case Id	03
Test Case	Detection of Hair Color using CNN
Test Scenario	Testing images to classify Hair Color and select the best model.
Precondition	660 labelled training & 205 validation images
Input	Test images (black color hair and other colors hair)
Expected Output	High accuracy (mAP value)
Actual Result	High model accuracy with 97.85% mAP value
Status (Pass/Fail)	Pass

Table 9.4: Test case to classify and select the best model for hair Bleached Detection

Test Case Id	04
Test Case	Detection of Hair Bleached using CNN
Test Scenario	Testing images to classify Hair Bleached and select the best model.
Precondition	1025 labelled training & 113 validation images
Input	Test images (Bleached hair and Not Bleached hair)
Expected Output	High accuracy (mAP value)
Actual Result	High model accuracy with 93.45% mAP value
Status (Pass/Fail)	Pass

Table 1Table 9.5: Test case to classify and select the best model for hair Dandruff & Lice Detection

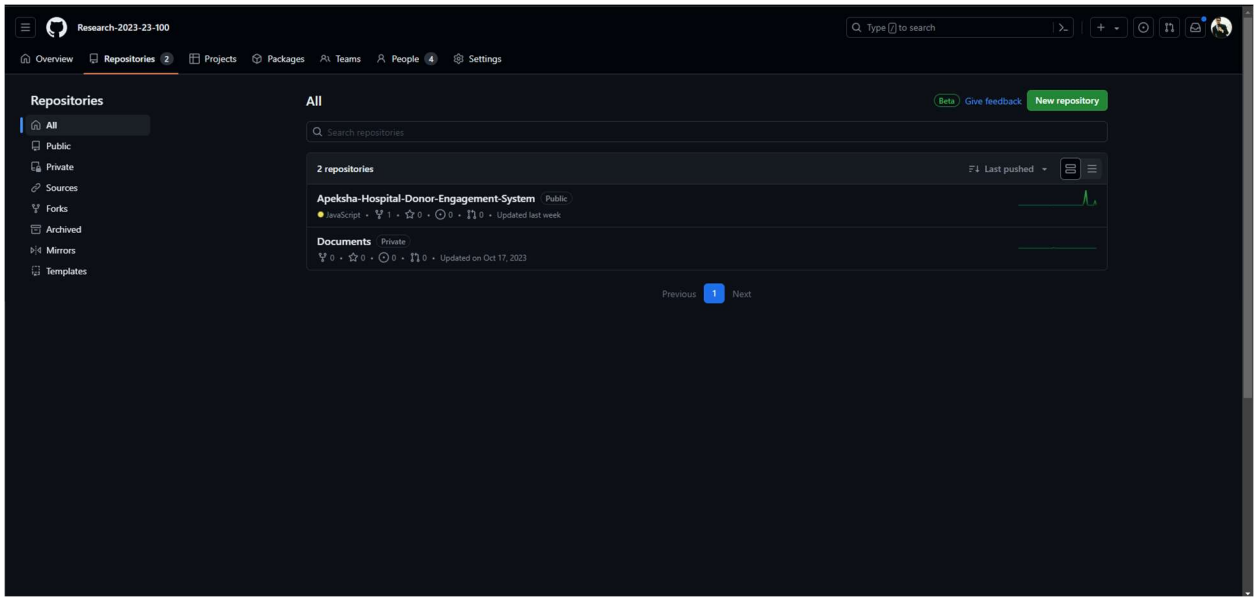
Test Case Id	05
Test Case	Detection of Hair Dandruff & Lice using CNN

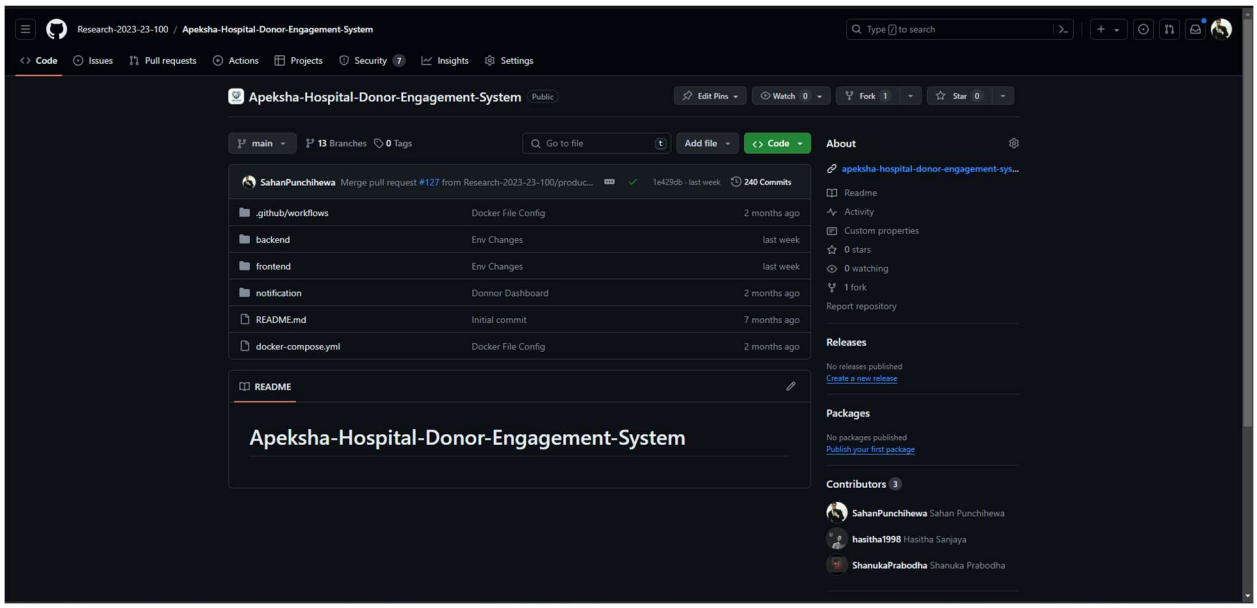
Test Scenario	Testing images to classify Hair Dandruff & Lice and select the best model.
Precondition	700 labelled training & 88 validation images
Input	Test images (Dandruff & Lice hair and Not-Dandruff & Lice hair)
Expected Output	High accuracy (mAP value)
Actual Result	High model accuracy with 99.31% mAP value
Status (Pass/Fail)	Pass

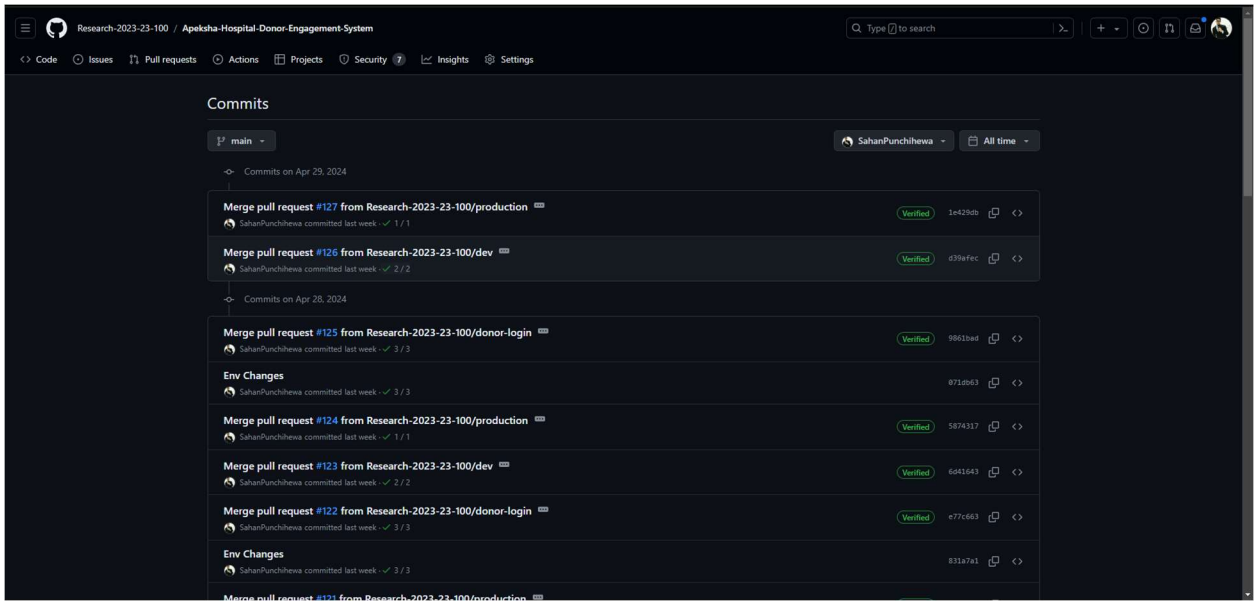
Table 9.6: Test case to classify and select the best model for hair Dryness Detection

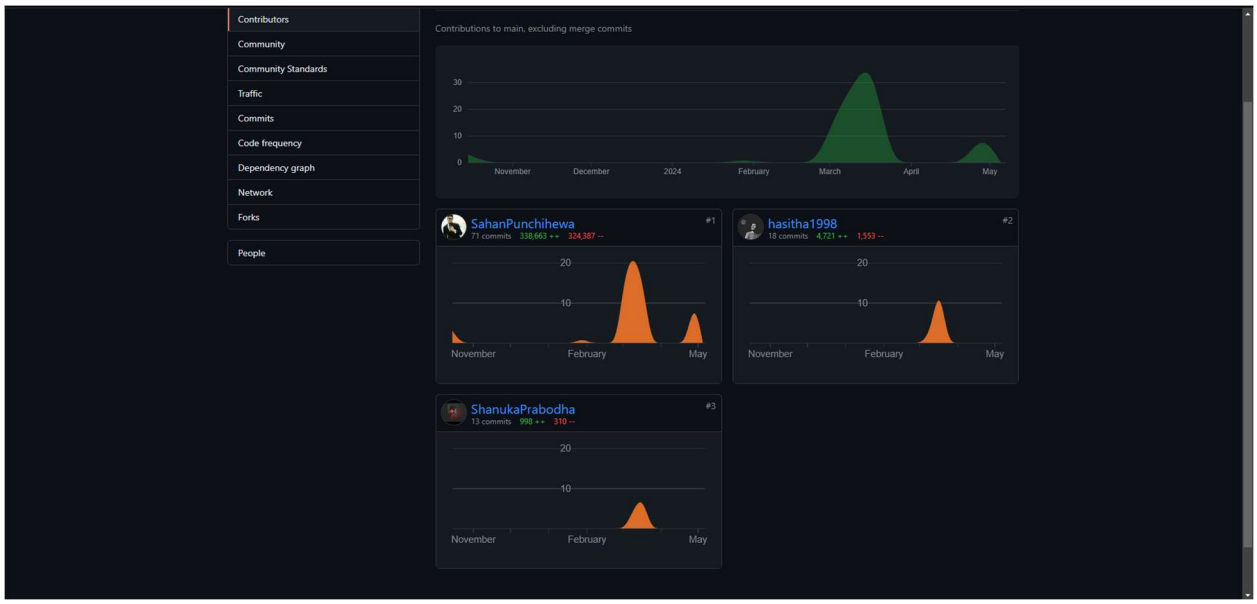
Test Case Id	06
Test Case	Detection of Hair Dryness using CNN
Test Scenario	Testing images to classify Hair Dryness and select the best model.
Precondition	1100 labelled training & 101 validation images
Input	Test images (Dryness hair and Not-Dryness hair)
Expected Output	High accuracy (mAP value)
Actual Result	High model accuracy with 88.56% mAP value
Status (Pass/Fail)	Pass

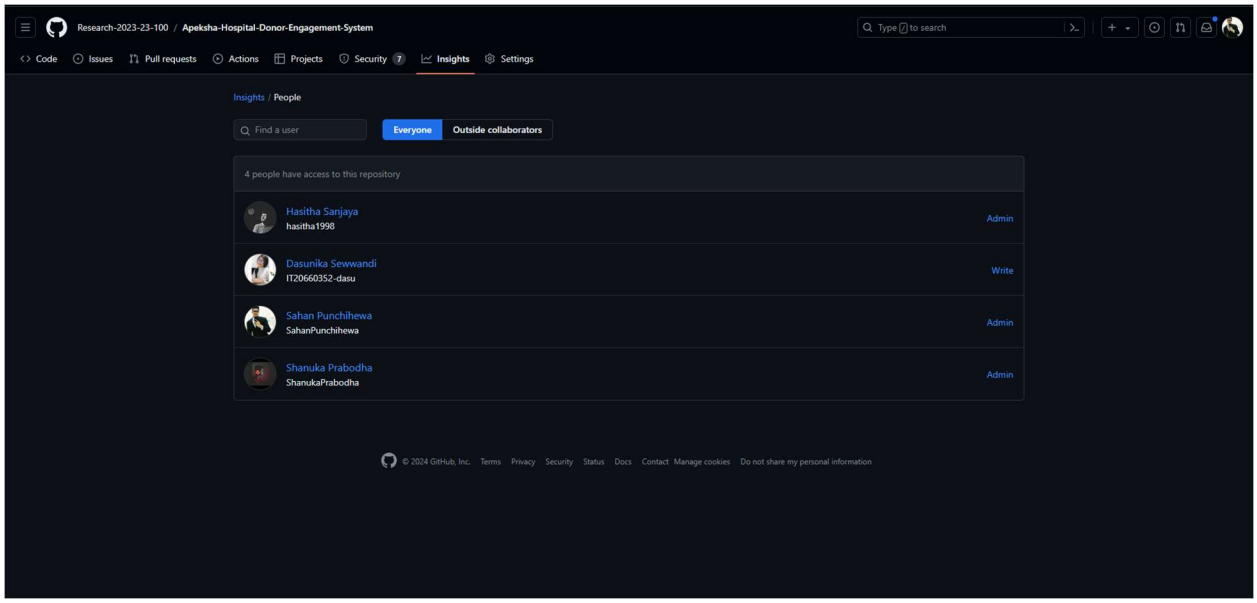
11. Version Control and Contribution


Research-2023-23-100
Type / to search
Overview
Repositories 2
Projects
Packages
Teams
People 4
Settings
Repositories
All
Public
Private
Sources
Forks
Archived
Mirrors
Templates
All
Beta
Give feedback
New repository
Search repositories
2 repositories
Last pushed
Apeksha-Hospital-Donor-Engagement-System Public
JavaScript • 1 • 0 • 0 • 0 • Updated last week
Documents Private
0 • 0 • 0 • 0 • Updated on Oct 17, 2023
Previous 1 Next

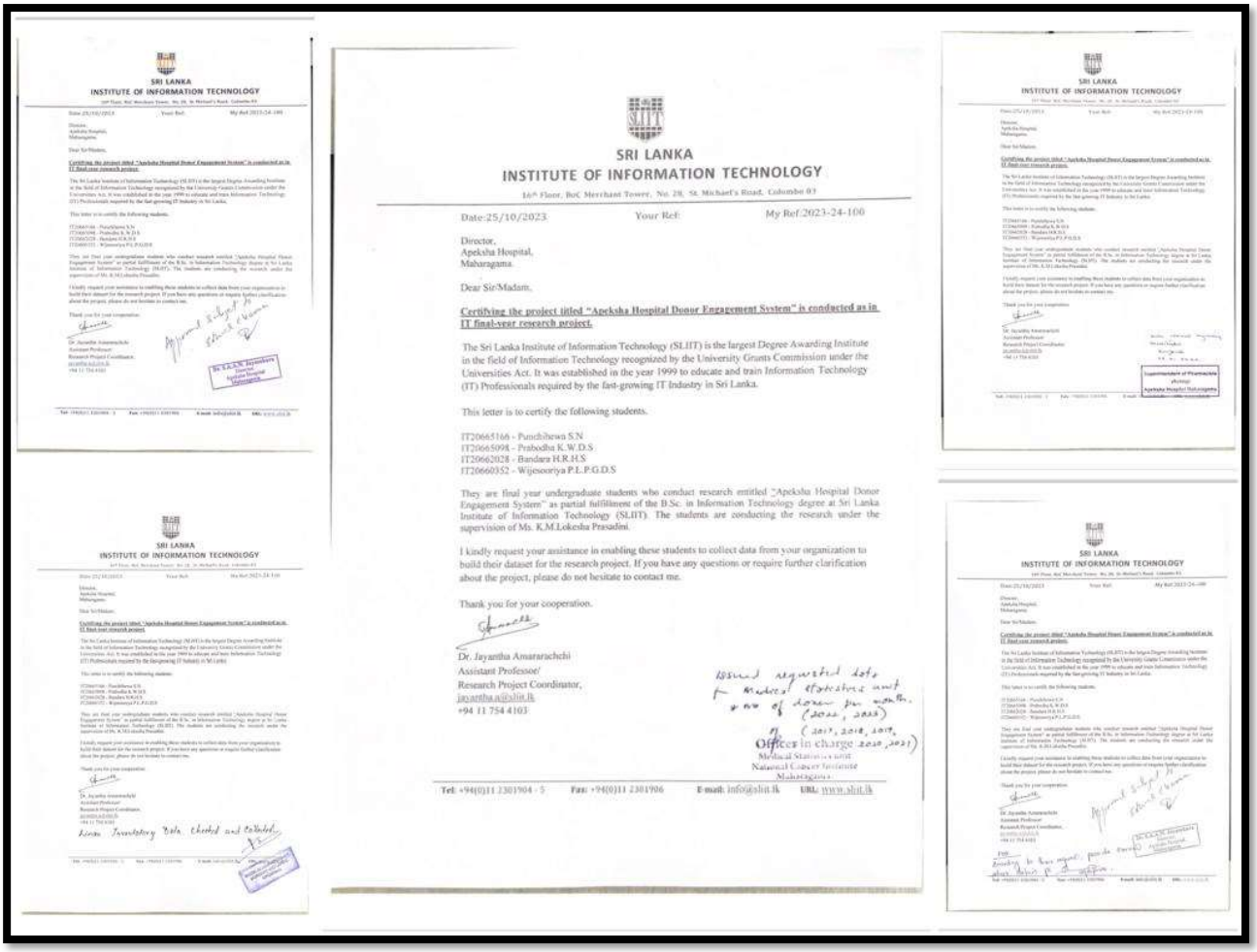

Research-2023-23-100 / Apeksha-Hospital-Donor-Engagement-System
Type / to search
Code
Issues
Pull requests
Actions
Projects
Security 7
Insights
Settings
Apeksha-Hospital-Donor-Engagement-System Public
Edit Pins
Watch 0
Fork 1
Star 0
main
13 Branches
0 Tags
Go to file
t
Add file
Code
SahanPunchihewa Merge pull request #127 from Research-2023-23-100/produc... 1e429db · last week 240 Commits
.github/workflows Docker File Config 2 months ago
backend Env Changes last week
frontend Env Changes last week
notification Donnor Dashboard 2 months ago
README.md Initial commit 7 months ago
docker-compose.yml Docker File Config 2 months ago
README
Apeksha-Hospital-Donor-Engagement-System
About
apeksha-hospital-donor-engagement-sys...
Readme
Activity
Custom properties
0 stars
0 watching
1 fork
Report repository
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package
Contributors 3
SahanPunchihewa Sahan Punchihewa
hasitha1998 Hasitha Sanjaya
ShanukaPrabodha Shanuka Prabodha


Research-2023-23-100 / Apeksha-Hospital-Donor-Engagement-System
Type / to search
Code
Issues
Pull requests
Actions
Projects
Security 7
Insights
Settings
Commits
main
SahanPunchihewa
All time
Commits on Apr 29, 2024
Merge pull request #127 from Research-2023-23-100/production
SahanPunchihewa committed last week · 1 / 1
Verified
1e429db
Merge pull request #126 from Research-2023-23-100/dev
SahanPunchihewa committed last week · 2 / 2
Verified
d39afec
Commits on Apr 28, 2024
Merge pull request #125 from Research-2023-23-100/donor-login
SahanPunchihewa committed last week · 3 / 3
Verified
9861bad
Env Changes
SahanPunchihewa committed last week · 3 / 3
071db63
Merge pull request #124 from Research-2023-23-100/production
SahanPunchihewa committed last week · 1 / 1
Verified
5874317
Merge pull request #123 from Research-2023-23-100/dev
SahanPunchihewa committed last week · 2 / 2
Verified
6d41643
Merge pull request #122 from Research-2023-23-100/donor-login
SahanPunchihewa committed last week · 3 / 3
Verified
e77c663
Env Changes
SahanPunchihewa committed last week · 3 / 3
831a7a1


Contributors
Community
Community Standards
Traffic
Commits
Code frequency
Dependency graph
Network
Forks
People
Contributions to main, excluding merge commits
30
20
10
0
November
December
2024
February
March
April
May
SahanPunchihewa
#1
71 commits 338,663 ++ 324,387 --
20
10
November
February
May
hasitha1998
#2
18 commits 4,721 ++ 1,553 --
20
10
November
February
May
ShanukaPrabodha
#3
13 commits 998 ++ 310 --
20
10
November
February
May


Research-2023-23-100 / Apeksha-Hospital-Donor-Engagement-System
Type / to search
Code
Issues
Pull requests
Actions
Projects
Security 7
Insights
Settings
Insights / People
Find a user
Everyone
Outside collaborators
4 people have access to this repository
Hasitha Sanjaya
hasitha1998
Admin
Dasunika Sewwandi
IT20660352-dasu
Write
Sahan Punchihewa
SahanPunchihewa
Admin
Shanuka Prabodha
ShanukaPrabodha
Admin
© 2024 GitHub, Inc. Terms Privacy Security Status Docs Contact Manage cookies Do not share my personal information

12.Snap Shot



SRI LANKA
INSTITUTE OF INFORMATION TECHNOLOGY
14th Floor, BoC Merchant Tower, No. 28, St. Michael's Road, Colombo 03

Date:25/10/2023 Your Ref: My Ref:2023-24-100

Director,
Apeksha Hospital,
Maharagama.

Dear Sir/Madam,

Certifying the project titled "Apeksha Hospital Donor Engagement System" is conducted as in IT final-year research project.

The Sri Lanka Institute of Information Technology (SLIIT) is the largest Degree Awarding Institute in the field of Information Technology recognized by the University Grants Commission under the Universities Act. It was established in the year 1999 to educate and train Information Technology (IT) Professionals required by the fast-growing IT Industry in Sri Lanka.

This letter is to certify the following students.

IT20665166 - Punchihewa S.N
IT20665098 - Prabodha K.W.D.S
IT20662028 - Bandara H.R.H.S
IT20660352 - Wijesooriya P.L.P.G.D.S

They are final year undergraduate students who conduct research entitled "Apeksha Hospital Donor Engagement System" as partial fulfillment of the B.Sc. in Information Technology degree at Sri Lanka Institute of Information Technology (SLIIT). The students are conducting the research under the supervision of Ms. K.M.Lokesha Prasadini.

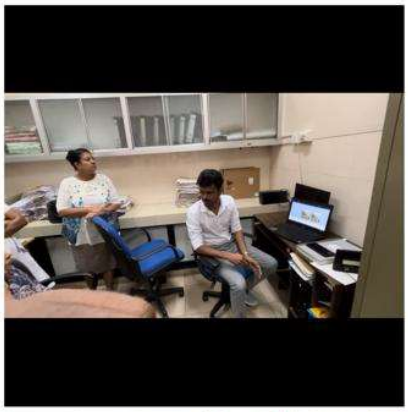
I kindly request your assistance in enabling these students to collect data from your organization to build their dataset for the research project. If you have any questions or require further clarification about the project, please do not hesitate to contact me.

Thank you for your cooperation.

Dr. Jayantha Amararachchi
Assistant Professor/
Research Project Coordinator,
jayantha.a@sliit.lk
+94 11 754 4103

Officer in charge (2020, 2021)
Medical Statistics unit
National Cancer Institute
Maharagama.

Tel: +94(0)11 2301904 - 5 Fax: +94(0)11 2301906 E-mail: info@sliit.lk URL: www.sliit.lk






HOSPITAL