DermAI

Skin disease detection

Team Thunder Buddies Sprint 4

Agenda

- Team Members
- Improvement
- Project Description
- Teamwork agreement
- Personas
- MVP
- Technologies
- Algorithms
- Diagrams
- Sprint 3 recap
- Product Backlog(All the Users Stories or Tasks)
- Sprint Summary(2 and 3)
- Sprint 4 Backlog (Stories or tasks committed)
- Test cases
- Metrics(Historical velocity)
- Retrospective
- Sprint 4(Stories planned and committed for Sprint 4)
- Project demo (Application Screenshots)
- Code snippets
- Demo Video of application
- Github link

Team Members

Bhargava Chilukuri
Front end developer and scrum master

Kushal arya neela
Front end developer

Manideep Kumar Reddy Kotha
Backend developer

Jagadeesh Mekhapotula
Backend Developer and Tester

Akshara Uppu
Backend Developer

Sai Praneeth Chagiri
Front-end Developer

Srinath Madagoni
Machine learning engineer

Manoj Kumar Madhavarapu
Machine learning engineer

Improvements after Professor’s Feedback

- Test screen updated and changed product backlog slides
- Ordering Project presentation slides
- Updates in sprint backlog and burndown chart
- Addition of details into application screen
- Improved technologies slide and description

Problem Statement

The diagnosis of the dermatological problem is quite complex and requires expert knowledge and accurate results. At present digital solutions lack accuracy and simplicity usage of the application. Thus ,it creates a gap between the human solution and the digital solution. So DermAI comes in place which has a user-friendly interface and employs deep learning to diagnose skin conditions and give precision results. Which empowers everyone from general public to have expert dermatologists in their hands.

Project Description

Project Name:	DermAI
Team:	Thunder Buddies
Project Description:	Derm AI's deep learning technology democratizes dermatology by increasing diagnostic speed, accuracy, and accessibility, all of which improve patient outcomes and save costs. **For** dermatological problem **who** find lack of digital accuracy and usage of application **the** Artificial Intelligence solution **is an** AI based Mobile application **that** simplifies a user-friendly interface and employs deep learning to diagnose skin conditions and give precision results. **unlike** the traditional method of booking an appointment and visiting the dermatologist **our application** empowers everyone from general public to have expert dermatologists in their hands.
Benefit Outcomes:	• Proficient Access: Derm AI empowers the general populace with advanced technology to obtain dermatological diagnoses at the level of experts. • Efficient and Accurate: Implements deep learning techniques to augment the accuracy and velocity of skin condition evaluations. • The provision of a user-friendly platform ensures that dermatological care is readily available to all individuals, irrespective of location. • Enhanced Outcomes: Advocates for improved treatment strategies and enhances the general health and well-being of the epidermis.
Github Link:	https://github.com/htmw/2024S-Thunder-Bubbles

Teamwork Agreement

Team Name: Thunder Buddies

Our goal is to bring collaborative knowledge and skills together for the completion of the Computer Science Capstone Project. Our project might have challenges to tackle and we would overcome challenges and deliver the project on time.

Team Agreement

1.All teammates should share their opinions and even respect each other's opinions. The sharing of information should be transparent, if any of the team members is having any issue, they can react to other team members and try to solve the issue. If any teammates have new ideas and thoughts, they can share in our sprint meetings.

2.Team Members should be responsible for their respective tasks and deliver the required project deliverables before the due date and if they are unable to finish it before the due date, they can reach out to other members.

3.All the roles are given based on your strengths , ideas and commitment and there shouldn't be any conflict between team members regarding roles.

4.Communication between front end, backend and machine learning team should be interactive and weekly 2 meetings will be held one on Wednesday and the other on Saturday and all team members are requested to take part in the team meetings and all communications are done via Slack.

5.If any team member is unable to attend the meeting, then they have to prior inform the scrum master about it, and missing any team meeting is not advisable.

6.All members should equally take part and give their best effort.

PERSONA 1

EMMA
THE BUSY PROFESSIONAL

EDUCATION: JURIS DOCTOR (J.D.) FROM HARVARD

AGE: 29

OCCUPATION: CORPORATE LAWYER

TECH-SAVVINESS: HIGH

NEEDS: QUICK AND RELIABLE SKIN CONDITION DIAGONISES DUE TO HER BUSY SCHEDULE.

PAIN POINTS: LACK OF TIME TO VISIT DERMATOLOGISTS AND THE NEED FOR IMMEDIATE ADVICE ON SKIN CARE.

FITNESS ROUTINE: IN THE MORNINGS, EMMA MAKES TIME FOR 30 MINUTES OF HIGH-INTENSITY INTERVAL TRAINING WORKOUTS OR GOING FOR A JOG AROUND THE NEIGHBORHOOD TO STAY HEALTHY. THESE EXERCISES KEEP HER FEELING ENERGIZED AND FOCUSED THROUGHOUT HER BUSY DAY

PERSONA 2

DAVID
THE RURAL RESIDENT

EDUCATION: BACHELOR'S IN AGRICULTURAL SCIENCE,

AGE: 45

OCCUPATION: FARMER

TECH-SAVVINESS: MODERATE

NEEDS: ACCESS TO DERMATOLOGIST CARE, NEAREST IS FEW HOURS AWAY

PAIN POINTS: GEOGRAPHICAL ISOLATED LOCATION AND RARE COMMUTE TO CITY MAKES IT DIFFICULT FOR REGULAR CHECKUPS.

FITNESS ROUTINE: DAVID'S FITNESS IS ALL ABOUT THE HARD WORK OF FARMING. HIS DAYS ARE FILLED WITH TOUGH JOBS LIKE DIGGING, PLANTING, AND HARVESTING CROPS. THESE DEMANDING TASKS KEEP DAVID ACTIVE AND STRONG. HE DOESN'T NEED A SPECIAL WORKOUT ROUTINE BECAUSE HIS DAILY FARM CHORES PROVIDE ALL THE EXERCISE-HE NEEDS. FOR DAVID, STAYING FIT ISN'T A SEPARATE ACTIVITY BUT JUST PART OF HIS REGULAR WORKDAY. THE PHYSICAL LABOR OF FARMING HE-LPS BUILD HIS ENDURANCE AND MUSCLE POWER.

PERSONA 3

EDUCATION: LIFELONG LEARNER WITH A MIX OF FORMAL EDUCATION AND SELF-TAUGHT KNOWLEDGE.

MICHAEL

THE SENIOR CITIZEN

AGE: 70

OCCUPATION: RETIRED

TECH-SAVVINESS: LOW

NEEDS: EASY TO USE INTERFACE TO CHECK SKIN CONDITIONS.

PAIN POINTS: PREFERS SIMPLICITY AND EASE IN TECHNOLOGY, OFTEN CAUTIOUS ABOUT TRYING OUT NEW DIGITAL TOOLS.

FITNESS ROUTINE: MICHAEL'S FITNESS ROUTINE KEEPS THINGS SIMPLE, YET EFFECTIVE. HE STARTS EACH MORNING WITH SOME E-ASY STRETCHES. THEN HE HEADS OUT FOR A PEACEFUL WALK AROUND THE PARK. THIS DAILY STROLL LETS HIM STAY ACTIVE AND SOCIALIZE TOO. TWICE WEEKLY, MICHAEL ATTENDS YOGA CLASSES AT THE COMMUNITY CENTER FOR SENIORS. THE CLASSES HELP HIM STAY FLEXIBLE AND STEADY ON HIS FEET. THESE ACTIVITIES ARE KEY FOR MICHAEL'S HAPPY, ENERGETIC LIFESTYLE-AS HE GROWS OLDER.

MVP (Minimum Viable Product)

- Registration and login page for authentication of user
- Upload of Affected Skin picture
- Analysis of the Picture and recognition of disease using AI
- User Information and detail of the skin disease

Technologies and Tools - Frontend

Expo is react native wrapper which makes developing an mobile application faster and it does most of complex just by **npx create-expo-app my-app.**

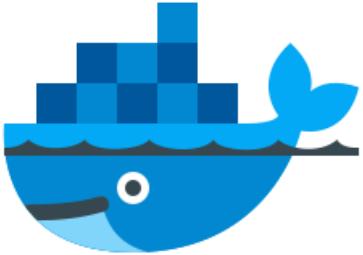
Technologies and tools - Backend

For backend both flask and node js has been used.
Flask is mainly to create a machine learning model api which is going to be connected via node js.
Node js is mainly used to do basic CRUD operations.

Technologies and Tools - Backend

Tensorflow is a machine learning framework and it is used to build Image classification model. For this project, tensorflow is used to build skin disease classification model.

Technologies and Tools



Docker is used for containerizing dependencies which ensures portability, consistency and scalability.
Firebase is used for authentication and database where as digital ocean is used of running the backend code and run those apis on cloud then in local machine.

Technologies and Design Tools

Those 2 are the design tools and these are mainly used for design UI and for flowcharts.
Figma is used for UI design .
Miro is used for designing charts.

Algorithms

CNN Algorithms:

- CNNs uses layered architecture to process visual data, extracting features through filters for image recognition tasks.

EfficientNet:

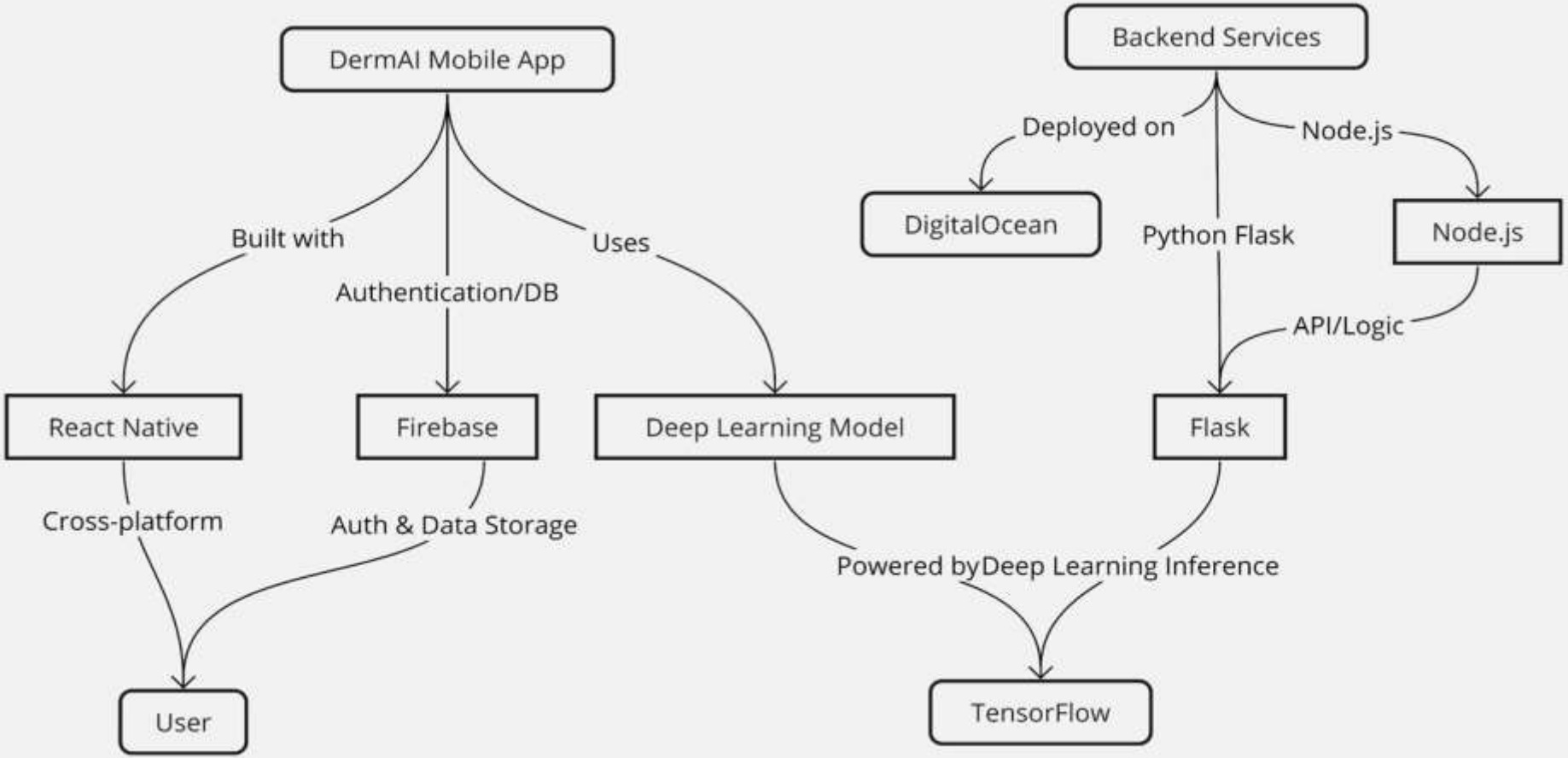
- EfficientNet scales CNNs uniformly across width, depth, and resolution, enhancing efficiency and accuracy.

Pseudo Code: ML

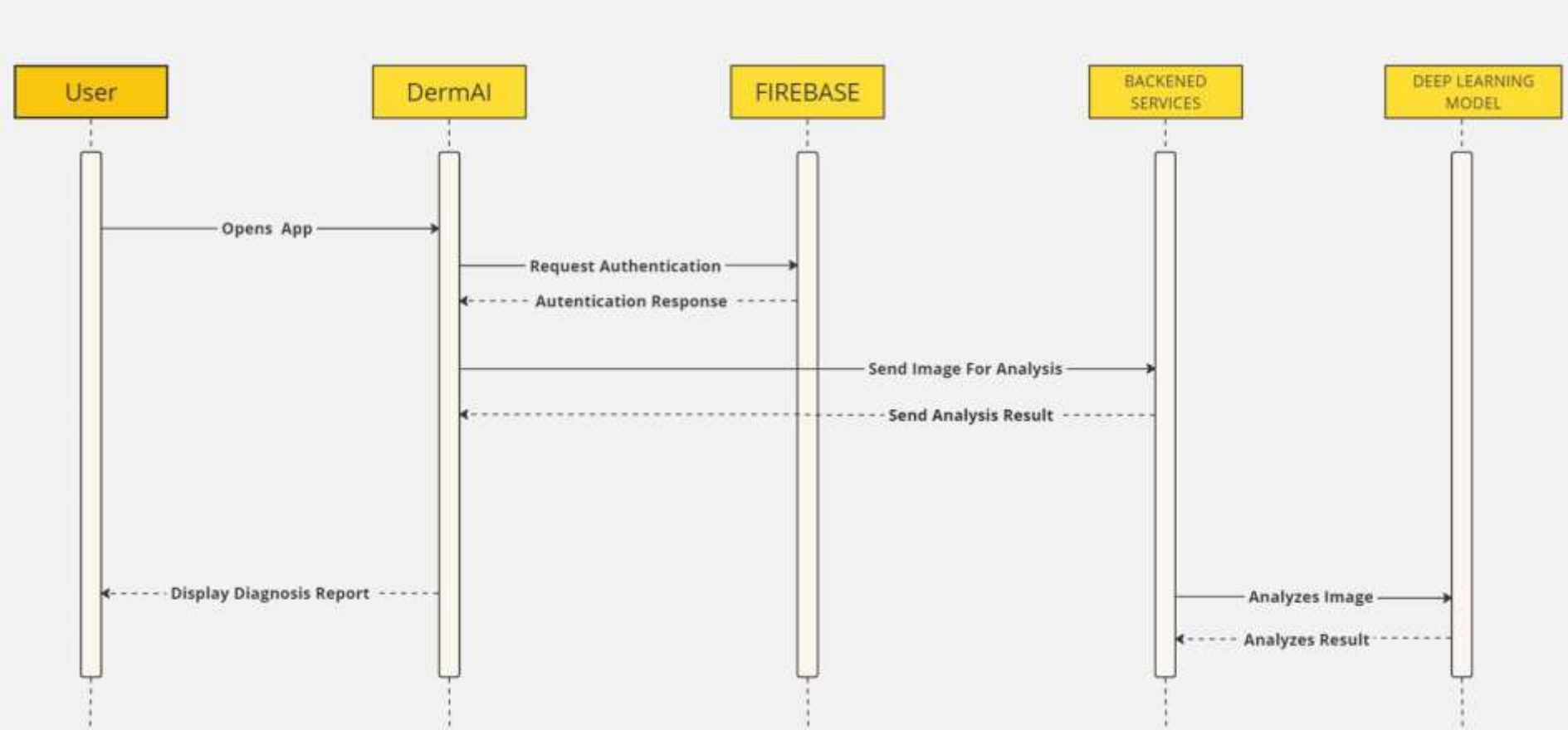
Efficient net pseudo code

```
import tensorflow as tf
from tensorflow.keras.applications import EfficientNetB0
from tensorflow.keras.layers import GlobalAveragePooling2D, Dense
from tensorflow.keras.models import Model

base_model = EfficientNetB0(include_top=False, weights='imagenet')

x = GlobalAveragePooling2D()(base_model.output)
output = Dense(10, activation='softmax')(x)

model = Model(inputs=base_model.input, outputs=output)

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

model.summary()
```

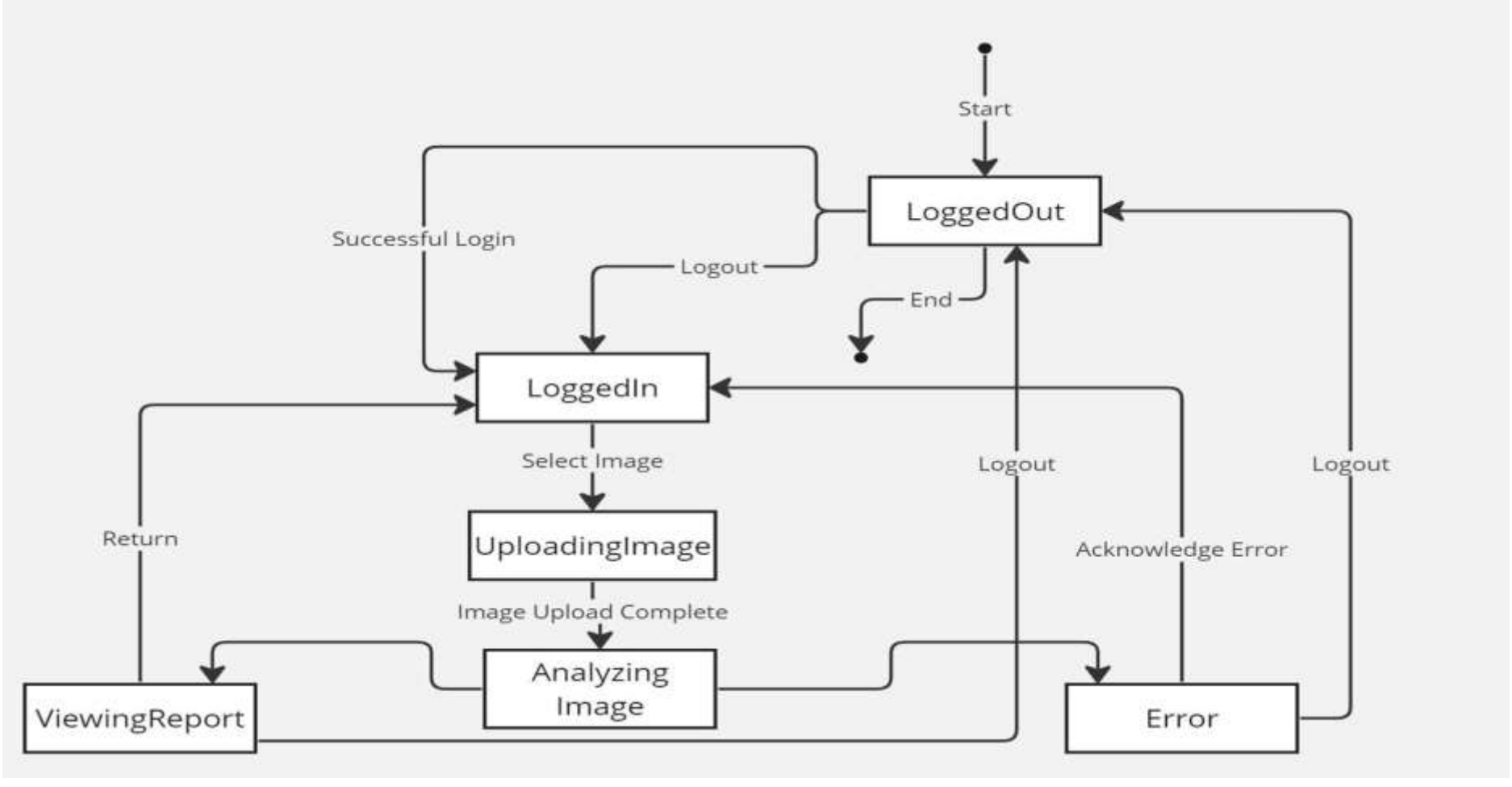
Conceptual Architectural Diagrams



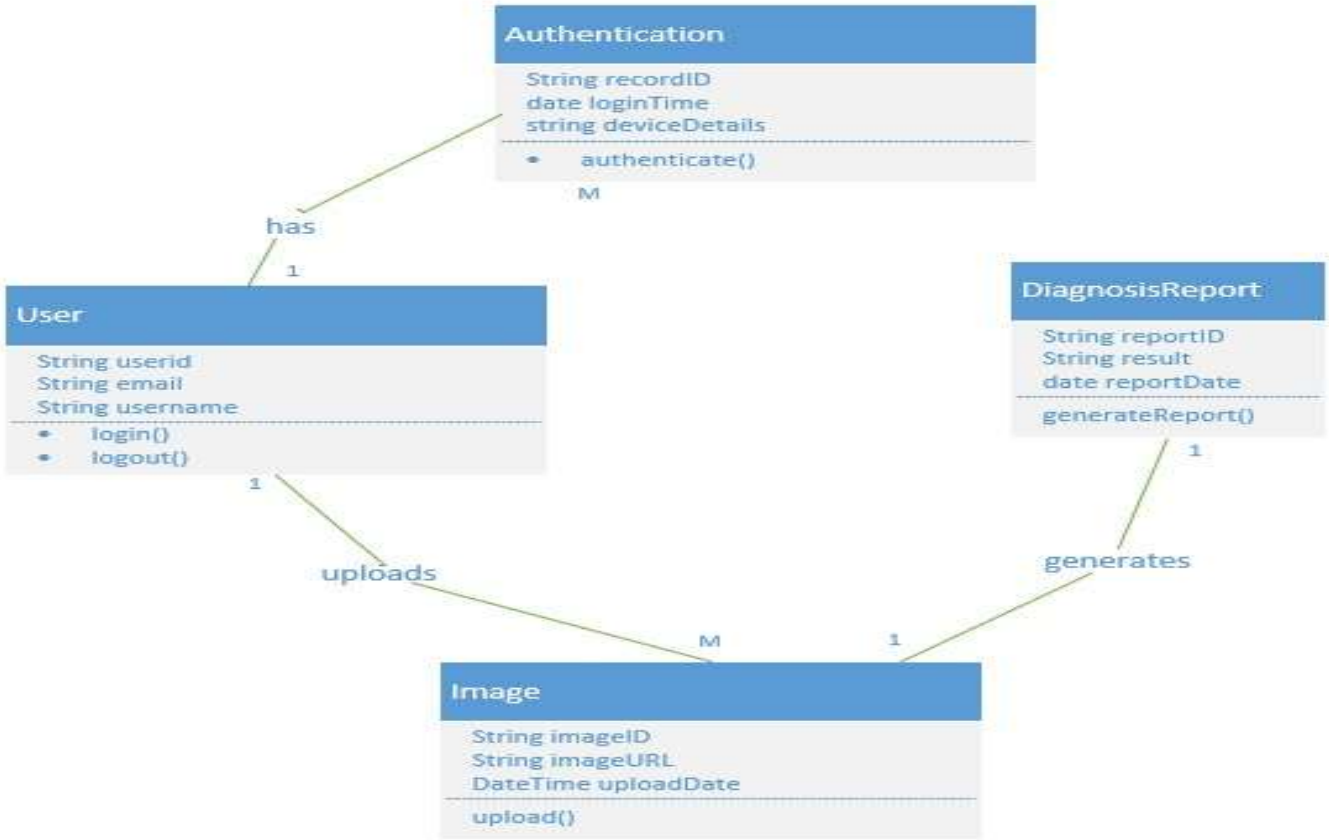
Sequence Diagrams



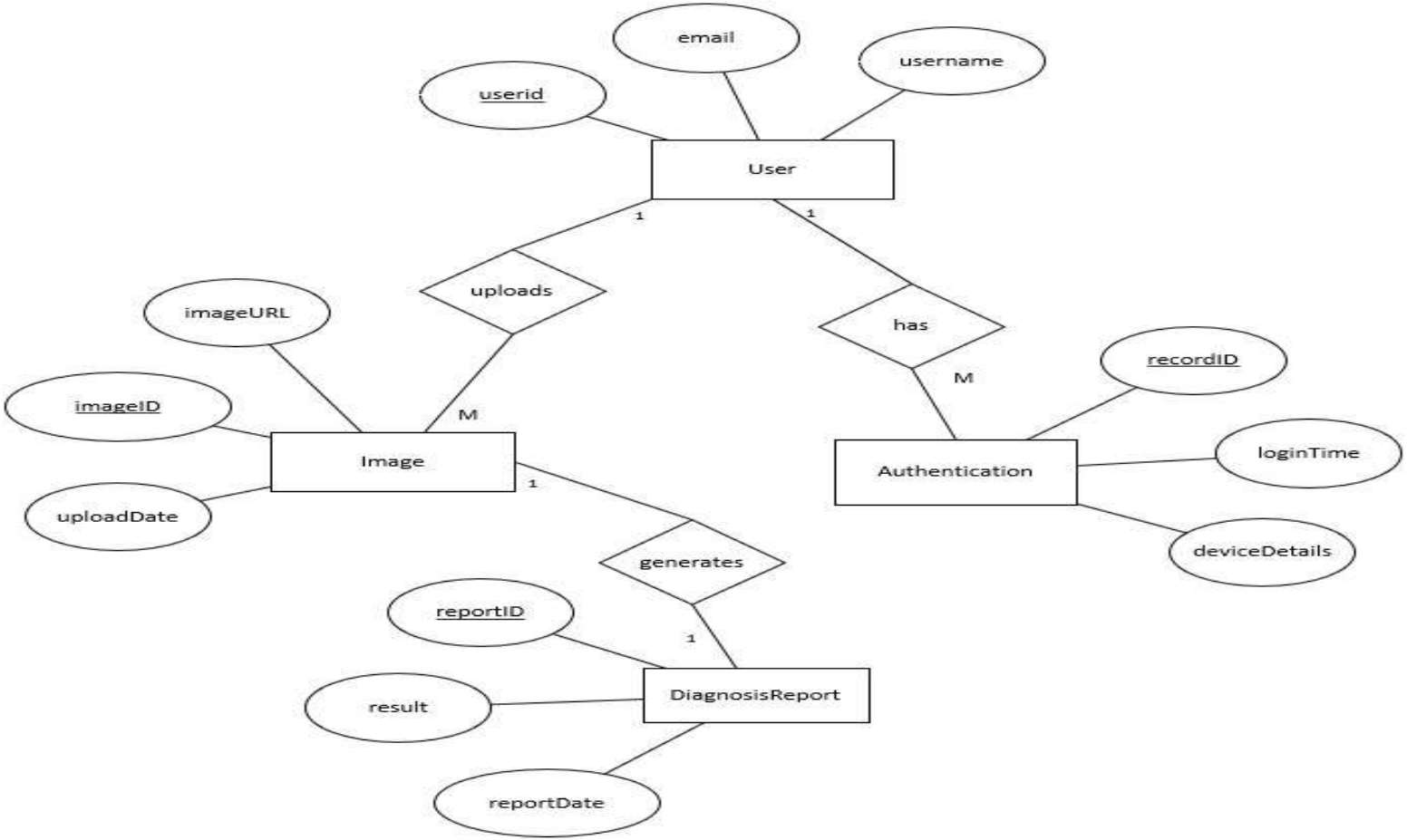
State Diagram



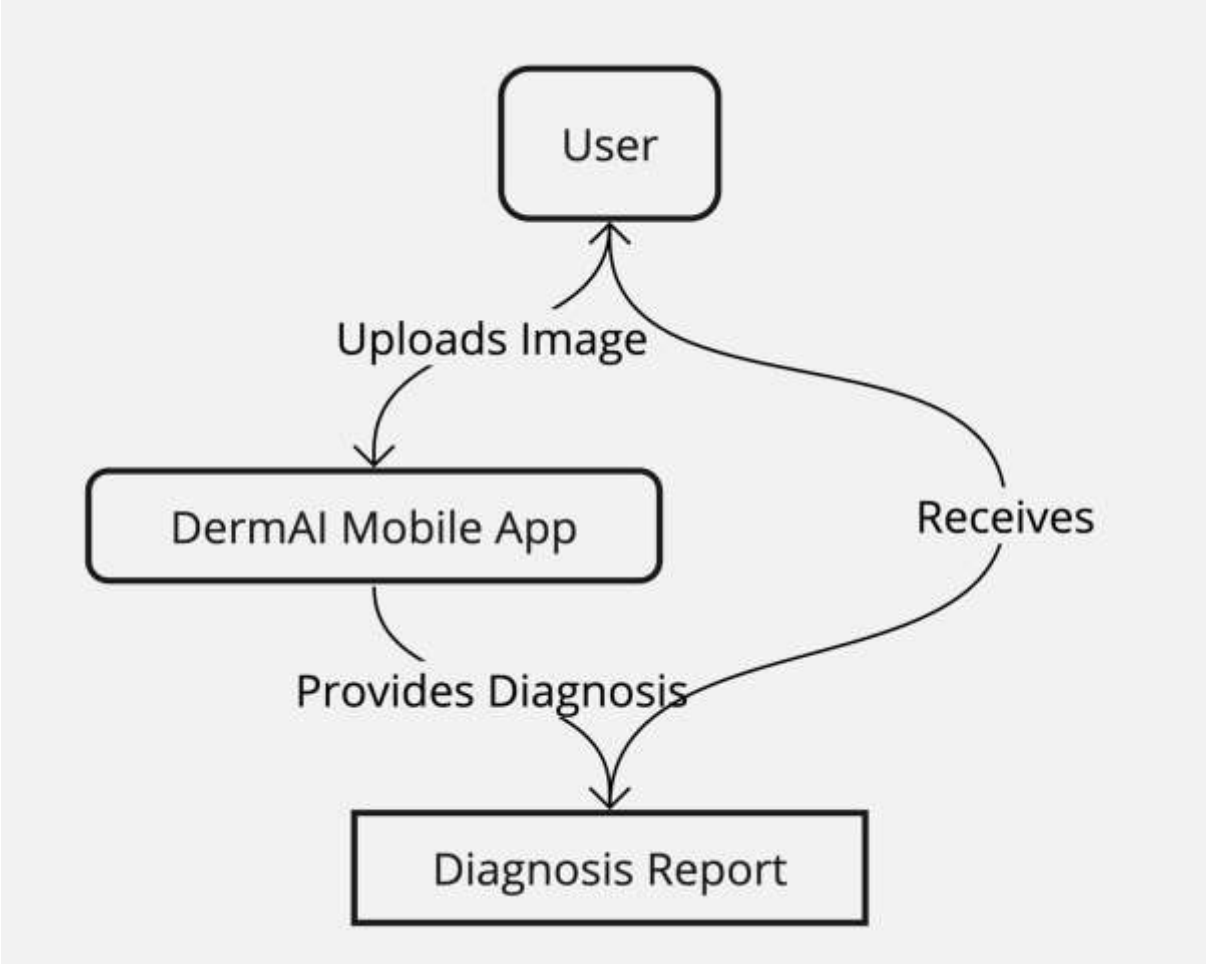
Class Diagram



Entity Relationship Diagram



Context Diagram



Sprint 3 recap

- Machine learning component has been completed and is able to detect the skin disease
- Uploading image functionality has been completed.
- API is built and it is able to connect with the client side, so user can upload the image and get the feedback by the analysis.

Product Backlog

S.No.	Sprint	Feature	User Story	Estimate (Fibonacci)
1	2	Authentication	As a new user, I want to log in by entering my email and password to access the home screen.	2
2	2	Data Analysis	As a researcher, I want to analyze user data to refine the AI diagnosis model.	5
3	3	Image Upload	As a user, I want clear instructions to upload a quality photo for accurate diagnosis.	5
4	3	AI Diagnosis	As a user, I expect a quick and accurate diagnosis of my skin condition from the uploaded photo.	8
5	3	User Education	As a user, I want to learn about my diagnosed skin condition through the app.	5
6	3	Diagnosis Feedback	As a user, I want to give feedback on the diagnosis accuracy and usefulness.	2
7	3	Feedback Impact	As a user, I want assurance that my feedback helps improve the AI model.	2
8	3	Privacy Assurance	As a user, I need assurance that my data and photos are handled with utmost privacy.	5
9	4	Specialist Recommendation	As a user, I want recommendations for specialists based on my AI diagnosis.	5
10	4	Booking Integration	As a user, I want to schedule an appointment with a recommended specialist through the app.	3

Product Backlog

S.No.	Sprint	Feature	User Story	Estimate (Fibonacci)
11	4	Health Resources	As a user, I want access to resources and care tips for my skin condition.	2
12	4	Consultation Preparation	As a user, I want the app to prepare a summary of my diagnosis for the specialist.	3
13	4	Specialist Feedback	As a user, after the consultation, I want to provide feedback about the specialist.	2
14	4	Diagnosis History	As a user, I want to view and manage my diagnosis history within the app.	3
15	4	Account Management (Admin)	As an admin, I want to reset passwords and manage user access for safety.	2
16	4	Activity Monitoring (Admin)	As an admin, I need to monitor user activity for compliance and app integrity.	5
17	4	Security Alerts	As a user, I want customizable security alerts to protect my account.	2
18	4	Account Security Review	As a user, I want to easily review and secure my account if suspicious activity is detected.	3

User Stories and Acceptance Criteria

S.No.	Sprint	Feature	User Story	Estimate (Fibonacci)	Acceptance Criteria
1	2	Authentication	As a new user, I want to log in by entering my email and password to access the home screen.	2	Login accepts credentials, validates, redirects to home, shows errors for invalid attempts.
2	2	Data Analysis	As a researcher, I want to analyze user data to refine the AI diagnosis model.	5	System provides anonymized data for analysis; insights inform AI model refinement.
3	3	Image Upload	As a user, I want clear instructions to upload a quality photo for accurate diagnosis.	5	Instructions for photo quality provided; system supports image uploads with feedback.
4	3	AI Diagnosis	As a user, I expect a quick and accurate diagnosis of my skin condition from the uploaded photo.	8	AI processes photo, presents diagnosis with confidence score quickly; includes condition information.
5	3	User Education	As a user, I want to learn about my diagnosed skin condition through the app.	5	App provides understandable information on diagnosed condition including symptoms, causes, treatments.
6	3	Diagnosis Feedback	As a user, I want to give feedback on the diagnosis accuracy and usefulness.	2	Feedback mechanism for diagnosis accuracy and usefulness available; user submissions acknowledged.
7	3	Feedback Impact	As a user, I want assurance that my feedback helps improve the AI model.	2	Users receive a message post-feedback submission reinforcing its value to AI improvement.
8	3	Privacy Assurance	As a user, I need assurance that my data and photos are handled with utmost privacy.	5	App aligns with privacy policy in handling data and photos; clear policy communication.

User Stories and Acceptance Criteria

S.No.	Sprint	Feature	User Story	Estimate (Fibonacci)	Acceptance Criteria
9	4	Specialist Recommendation	As a user, I want recommendations for specialists based on my AI diagnosis.	5	App suggests specialists relevant to AI diagnosis with profiles including credentials and reviews.
10	4	Booking Integration	As a user, I want to schedule an appointment with a recommended specialist through the app.	3	Integrated booking feature for appointments with specialists; confirmation process in place.
11	4	Health Resources	As a user, I want access to resources and care tips for my skin condition.	2	App provides resources and care tips relevant to user's diagnosed skin condition.
12	4	Consultation Preparation	As a user, I want the app to prepare a summary of my diagnosis for the specialist.	3	App generates a summary of diagnosis for specialist review pre-consultation.
13	4	Specialist Feedback	As a user, after the consultation, I want to provide feedback about the specialist.	2	Post-consultation feedback feature for specialists available; includes rating and comments.
14	4	Diagnosis History	As a user, I want to view and manage my diagnosis history within the app.	3	Feature to view, search, and manage diagnosis history implemented; supports filtering options.
15	4	Account Management (Admin)	As an admin, I want to reset passwords and manage user access for safety.	2	Admin tools for password reset and user access management available; ensures security compliance.
16	4	Activity Monitoring (Admin)	As an admin, I need to monitor user activity for compliance and app integrity.	5	Admin dashboard for user activity monitoring implemented; supports app compliance and integrity.

User Stories and Acceptance Criteria

S.No.	Sprint	Feature	User Story	Estimate (Fibonacci)	Acceptance Criteria
17	4	Security Alerts	As a user, I want customizable security alerts to protect my account.	2	Customizable security alert settings available for users; includes immediate review options for suspicious activity.
18	4	Account Security Review	As a user, I want to easily review and secure my account if suspicious activity is detected.	3	Features for account review and securing actions in place; supports password changes and activity reviews.

Sprint Summary

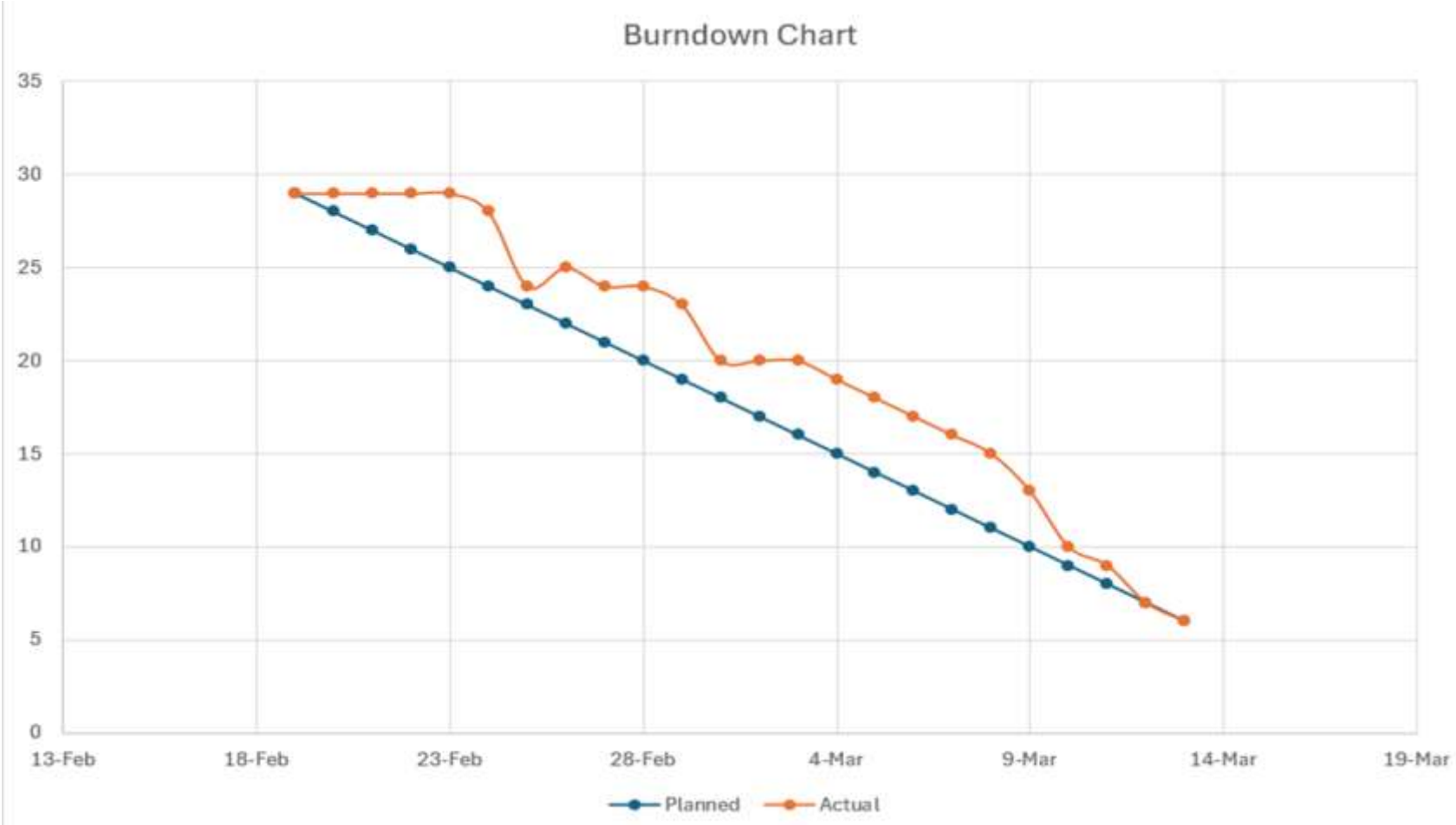
Sprint 2 Tasks and user stories

Task	Story Points	Complexity	Acceptance Criteria	Status
Firebase Integration	7	High	Firebase Authentication integrated	Done
Exploratory Data Analysis (EDA)	4	Medium	Understand the dataset	Done
Diagrams and Testing for Sprint 2	6	Medium	Draw all diagrams required, architecture diagram, context diagram, sequence diagram, state diagram, class diagram, ER diagram and testing the application.	Done
Authentication Implementation	5	Medium	Secure registration, login, logout implemented.	Done
Home Page Design	3	Low-Medium	Home screen design with upload and take image icons.	Done
Basic Backend API	4	Medium	Basic functionality endpoints implemented.	Done

User stories

Sprint	Feature	User Story	Acceptance Criteria
2	OAuth Integration	As a new user, I want to log in with Google for quick account access.	Login via Google is successful; user sees their dashboard.
2	Data Analysis	As a researcher, I want to analyze data to refine the AI diagnosis.	Access to data for improving the model.
3	Image Upload	As a user, I want to upload a skin image to get a diagnosis.	Image is uploaded and processed; feedback for incorrect formats.
3	Specialist Referral	As a user, I want specialist referrals post-diagnosis if needed.	Gets referral to specialist based on the diagnosis report.
3	Diagnosis Feedback	As a user, I want to confirm or dispute my AI diagnosis.	Mechanism for users to give feedback on diagnosis accuracy.
4	History Tracking	As a returning user, I want to see my past skin diagnoses.	Users can access a chronological history of their diagnoses.
4	Consultation Request	As a user concerned about skin cancer, I want to consult a doctor.	Users can request consultations with specialists through the app.
4	Account Management	As an admin, I want to oversee user accounts to ensure safety.	Admin tools are available for account moderation and support.
4	Security Alerts	As a user, I want notifications of account activity for my safety.	System sends notifications for new logins and significant actions.

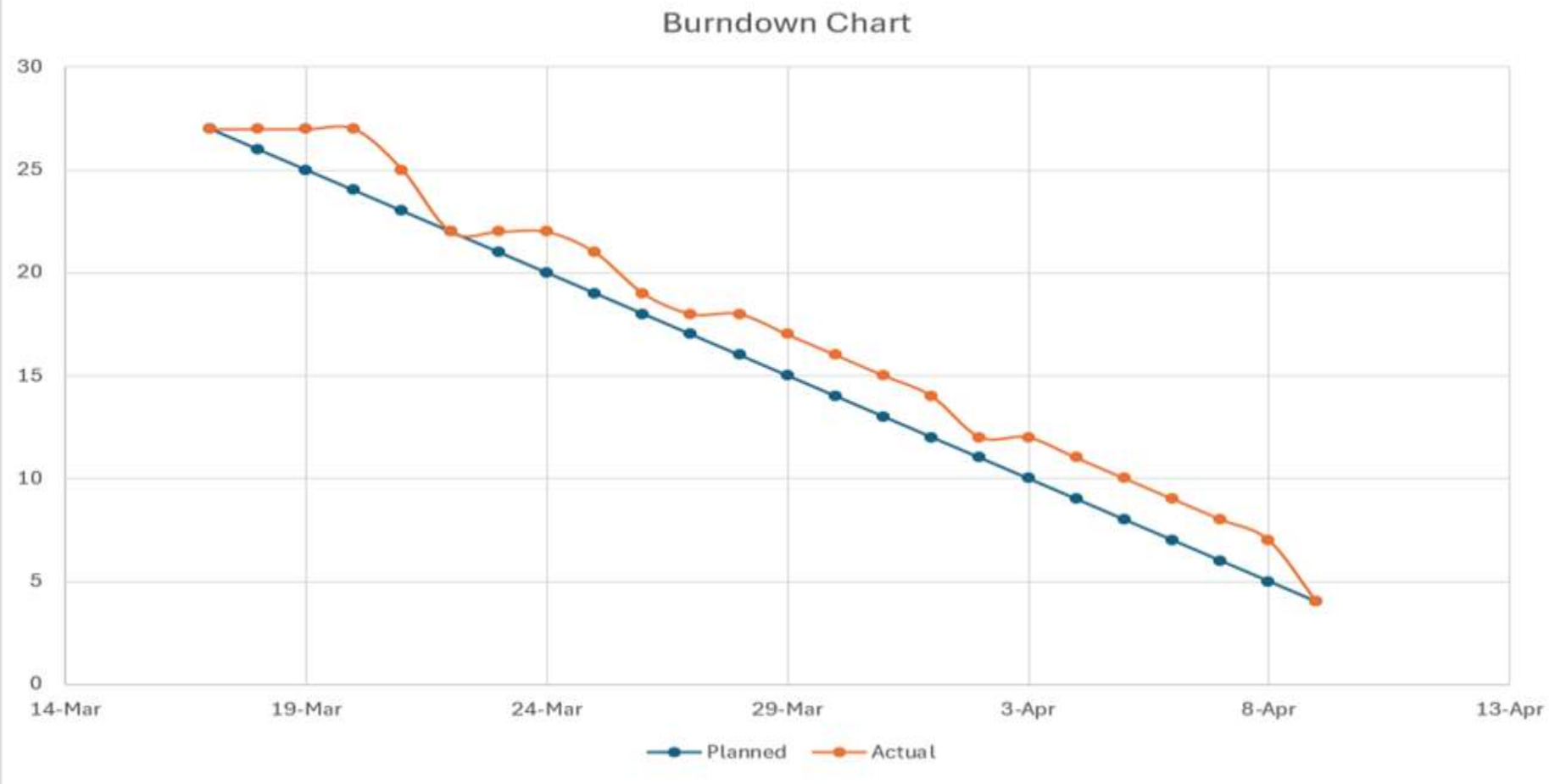
Sprint 2 burndown chart



Sprint 3 tasks and user stories

S.No.	Sprint	Feature	User Story	Estimate Points	Acceptance Criteria
1	2	Authentication	As a new user, I want to log in by entering my email and password to access the home screen.	2	Login accepts credentials, validates, redirects to home, shows errors for invalid attempts.
2	2	Data Analysis	As a researcher, I want to analyze user data to refine the AI diagnosis model.	5	System provides anonymized data for analysis; insights inform AI model refinement.
3	3	Image Upload	As a user, I want clear instructions to upload a quality photo for accurate diagnosis.	5	Instructions for photo quality provided; system supports image uploads with feedback.
4	3	AI Diagnosis	As a user, I expect a quick and accurate diagnosis of my skin condition from the uploaded photo.	8	AI processes photo, presents diagnosis with confidence score quickly; includes condition information.
5	3	User Education	As a user, I want to learn about my diagnosed skin condition through the app.	5	App provides understandable information on diagnosed condition including symptoms, causes, treatments.
6	3	Diagnosis Feedback	As a user, I want to give feedback on the diagnosis accuracy and usefulness.	2	Feedback mechanism for diagnosis accuracy and usefulness available; user submissions acknowledged.
7	3	Feedback Impact	As a user, I want assurance that my feedback helps improve the AI model.	2	Users receive a message post-feedback submission reinforcing its value to AI improvement.
8	3	Privacy Assurance	As a user, I need assurance that my data and photos are handled with utmost privacy.	5	App aligns with privacy policy in handling data and photos; clear policy communication.
9	4	Specialist Recommendation	As a user, I want recommendations for specialists based on my AI diagnosis.	5	App suggests specialists relevant to AI diagnosis with profiles including credentials and reviews.
10	4	Booking Integration	As a user, I want to schedule an appointment with a recommended specialist through the app.	3	Integrated booking feature for appointments with specialists; confirmation process in place.

Sprint 3 burndown chart



Sprint 4 backlog

S.No.	Sprint	Feature	User Story	Estimate (Fibonacci)	Acceptance Criteria
9	4	Specialist Recommendation	As a user, I want recommendations for specialists based on my AI diagnosis.	5	App suggests specialists relevant to AI diagnosis with profiles including credentials and reviews.
10	4	Booking Integration	As a user, I want to schedule an appointment with a recommended specialist through the app.	3	Integrated booking feature for appointments with specialists; confirmation process in place.
11	4	Health Resources	As a user, I want access to resources and care tips for my skin condition.	2	App provides resources and care tips relevant to user's diagnosed skin condition.
12	4	Consultation Preparation	As a user, I want the app to prepare a summary of my diagnosis for the specialist.	3	App generates a summary of diagnosis for specialist review pre-consultation.
13	4	Specialist Feedback	As a user, after the consultation, I want to provide feedback about the specialist.	2	Post-consultation feedback feature for specialists available; includes rating and comments.
14	4	Diagnosis History	As a user, I want to view and manage my diagnosis history within the app.	3	Feature to view, search, and manage diagnosis history implemented; supports filtering options.
15	4	Account Management (Admin)	As an admin, I want to reset passwords and manage user access for safety.	2	Admin tools for password reset and user access management available; ensures security compliance.

Sprint 4 backlog

S.No.	Sprint	Feature	User Story	Estimate (Fibonacci)	Acceptance Criteria
16	4	Activity Monitoring (Admin)	As an admin, I need to monitor user activity for compliance and app integrity.	5	Admin dashboard for user activity monitoring implemented; supports app compliance and integrity.
17	4	Security Alerts	As a user, I want customizable security alerts to protect my account.	2	Customizable security alert settings available for users; includes immediate review options for suspicious activity.
18	4	Account Security Review	As a user, I want to easily review and secure my account if suspicious activity is detected.	3	Features for account review and securing actions in place; supports password changes and activity reviews.

Test Cases for sprint-3

Sprint ID	Test Case ID	Feature	User Story ID	Description	Expected Result	Result
4	TC-9	Specialist Recommendation	9	Verify that the app displays a list of specialists relevant to the diagnosed condition.	Specialists with relevant expertise are listed, complete with credentials and reviews.	Pass
4	TC-10	Booking Integration	10	Ensure that users can schedule an appointment through the app.	Users can successfully schedule an appointment and receive a confirmation notification.	Pass
4	TC-11	Health Resources	11	Verify that the app provides access to health resources relevant to the user's condition.	Accurate and relevant health resources are accessible to the user.	Pass
4	TC-12	Consultation Preparation	12	Verify that the app prepares a summary of the user's diagnosis before a consultation.	A comprehensive and accurate summary of the diagnosis is prepared for specialist review.	Pass
4	TC-14	Diagnosis History	14	Verify that users can view and manage their diagnosis history.	Users can access, view details, and search through their diagnosis history.	Pass
4	TC-15	Account Management (Admin)	15	Verify that admins can reset passwords and manage user access.	Admins can successfully reset user passwords and manage access rights.	Pass
4	TC-17	Security Alerts	17	Verify that users can customize security alerts.	Users can set and receive notifications based on customized security alert preferences.	Pass
4	TC-18	Account Security Review	18	Ensure that users can review and secure their accounts in case of suspicious activity detection.	Users can review account activities and take appropriate security measures effectively.	Pass

Stories Completed

Sprint ID	User Story ID	Feature	User Story	Status
4	9	Specialist Recommendation	As a user, I want recommendations for specialists based on my AI diagnosis.	Completed
4	10	Booking Integration	As a user, I want to schedule an appointment with a recommended specialist through the app.	Completed
4	11	Health Resources	As a user, I want access to resources and care tips for my skin condition.	Completed
4	12	Consultation Preparation	As a user, I want the app to prepare a summary of my diagnosis for the specialist.	Completed
4	13	Specialist Feedback	As a user, after the consultation, I want to provide feedback about the specialist.	Completed
4	14	Diagnosis History	As a user, I want to view and manage my diagnosis history within the app.	Completed
4	15	Account Management (Admin)	As an admin, I want to reset passwords and manage user access for safety.	Completed
4	16	Activity Monitoring (Admin)	As an admin, I need to monitor user activity for compliance and app integrity.	Completed
4	17	Security Alerts	As a user, I want customizable security alerts to protect my account.	Completed
4	18	Account Security Review	As a user, I want to easily review and secure my account if suspicious activity is detected.	Completed

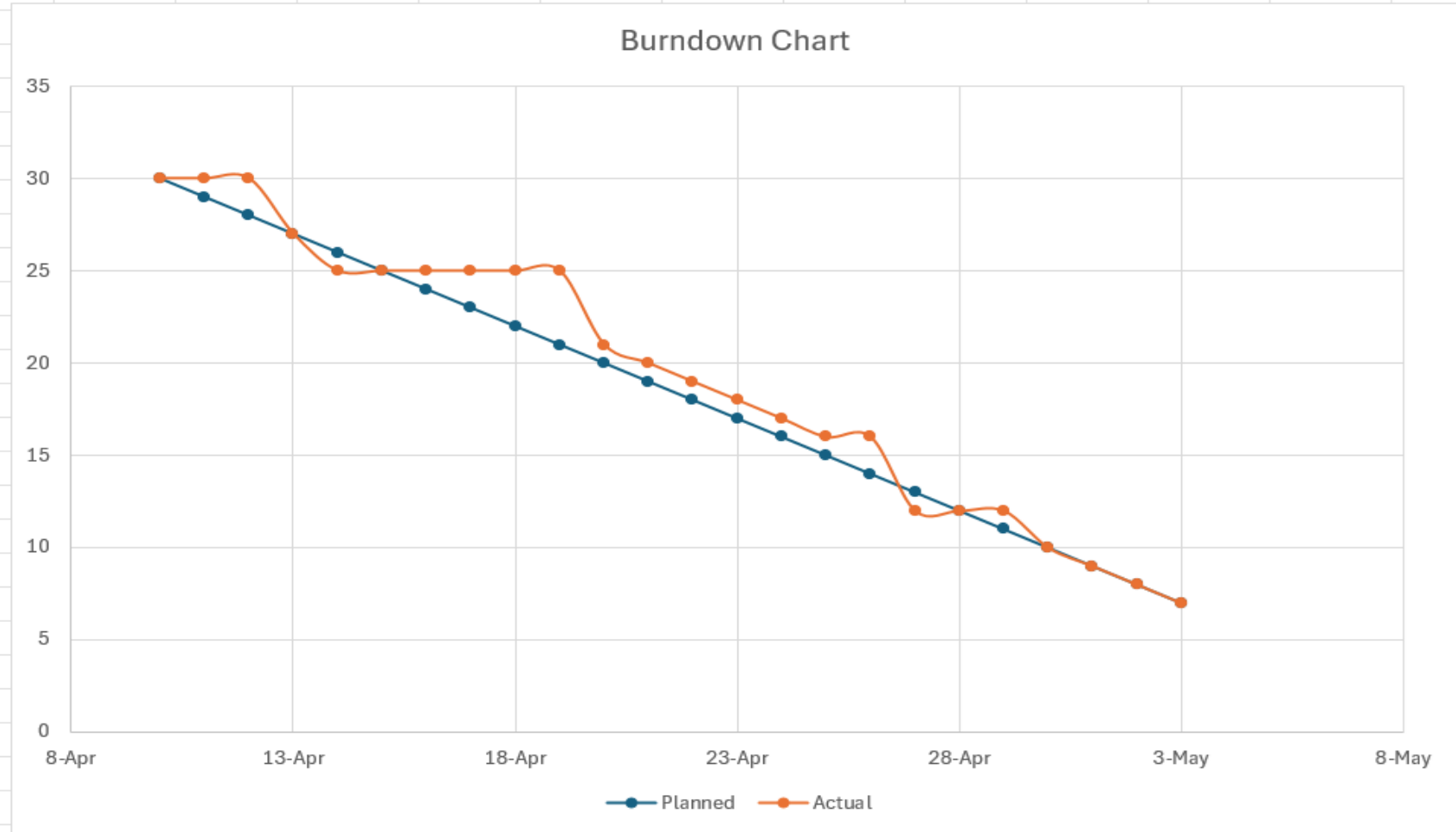
Team Velocity

5+3+2+3+2+3+2+5+2+3 = 30 Story Points

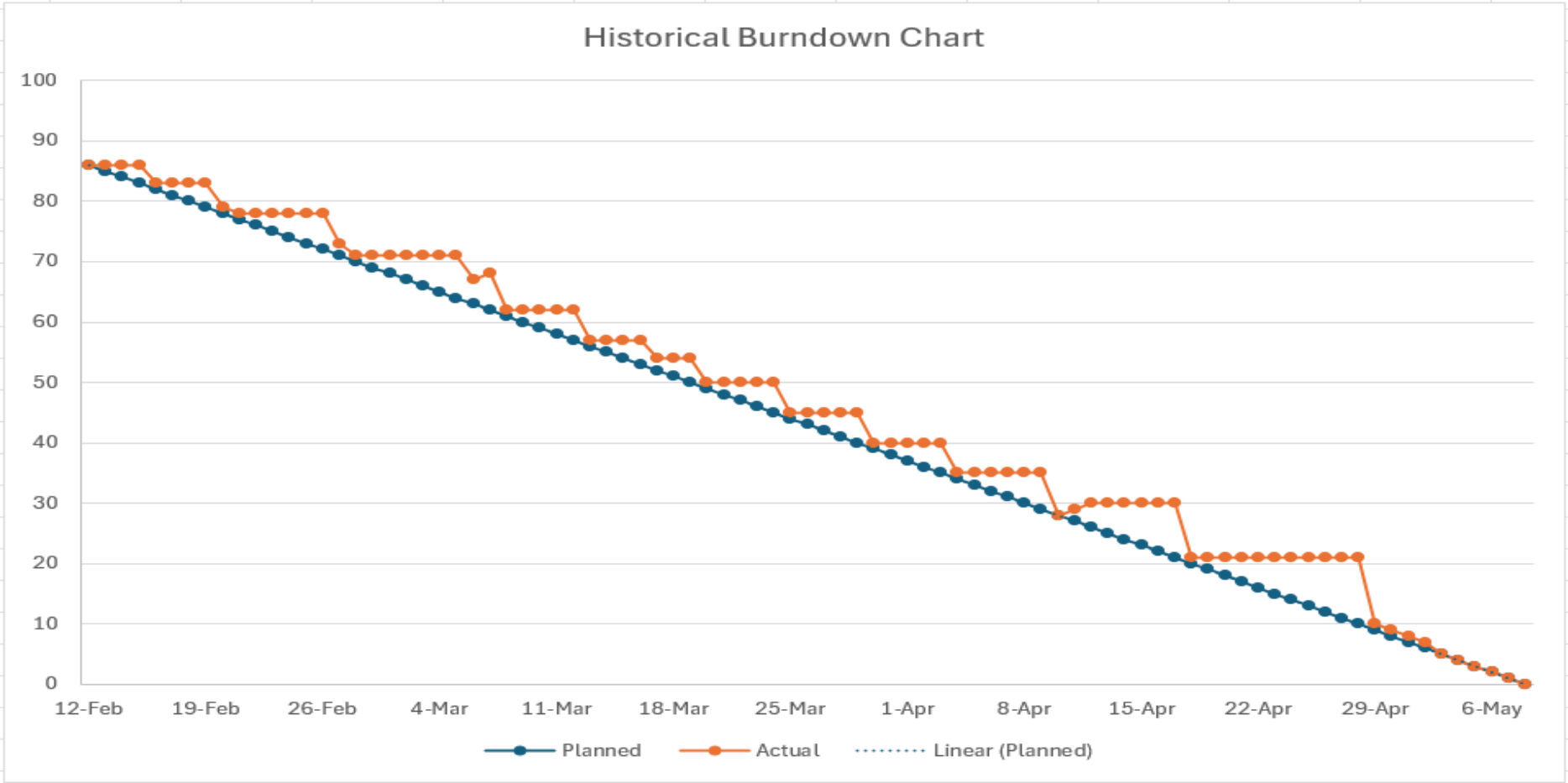
Team's Historical Velocity (Average)

Sprint 2 Velocity: 29 Story Points
Sprint 3 Velocity: 27 Story Points
Sprint 4 Velocity: 30 Story Points
Average Velocity: 29+27+30 / 3 = 28.6 points

Burndown Charts



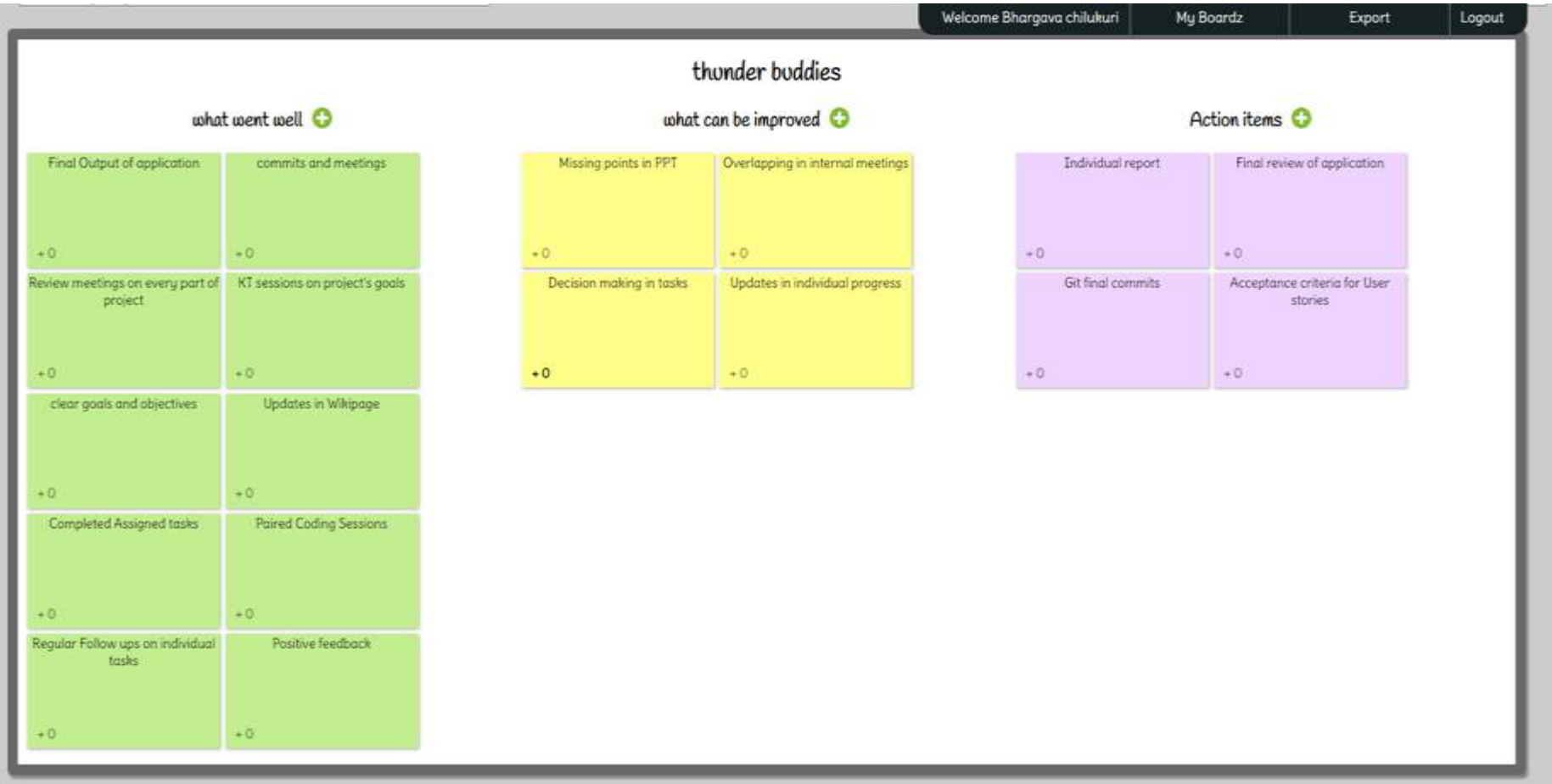
Historical burndown chart



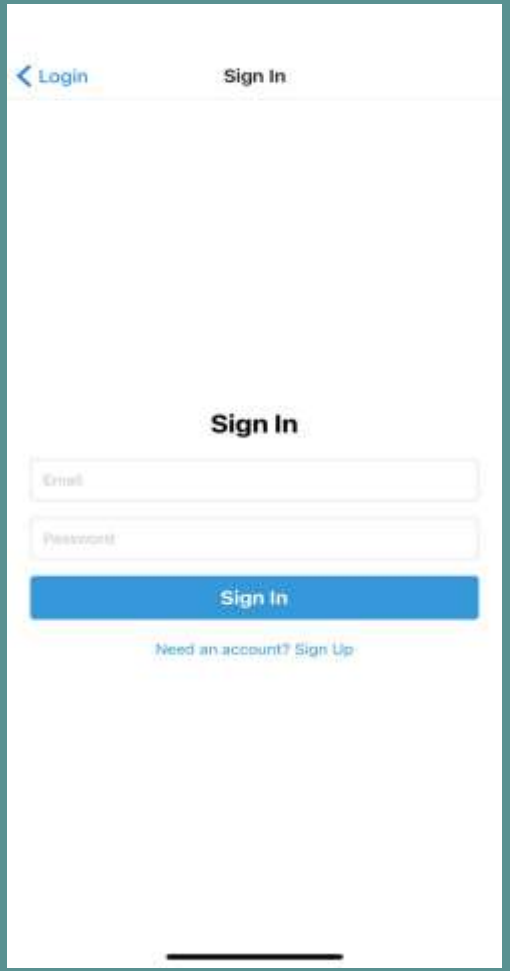
Completed/Committed Ratio (current and average)

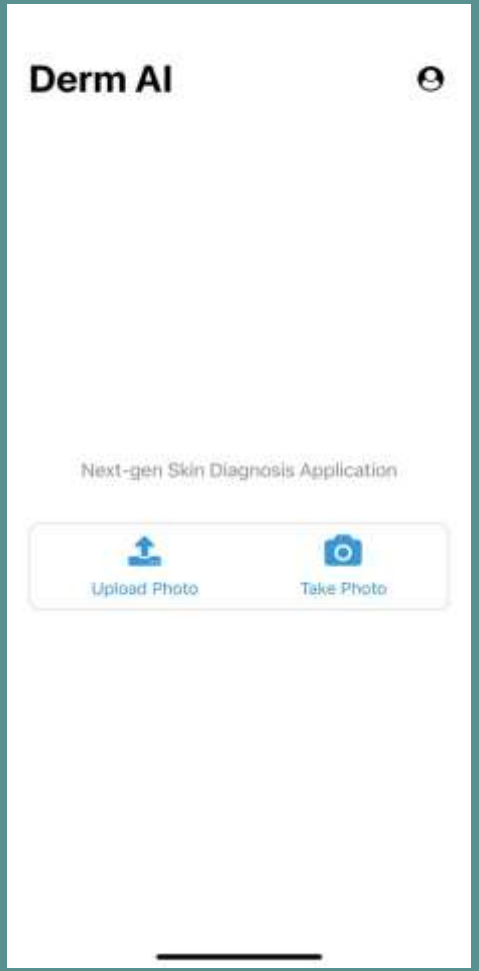
Completed Committed Ratio for Sprint 4: 30/30 - 100%
Average Completed Committed ratio for sprint 3 and 4 - (27/27 +30/30)/2 =100%

Retrospective

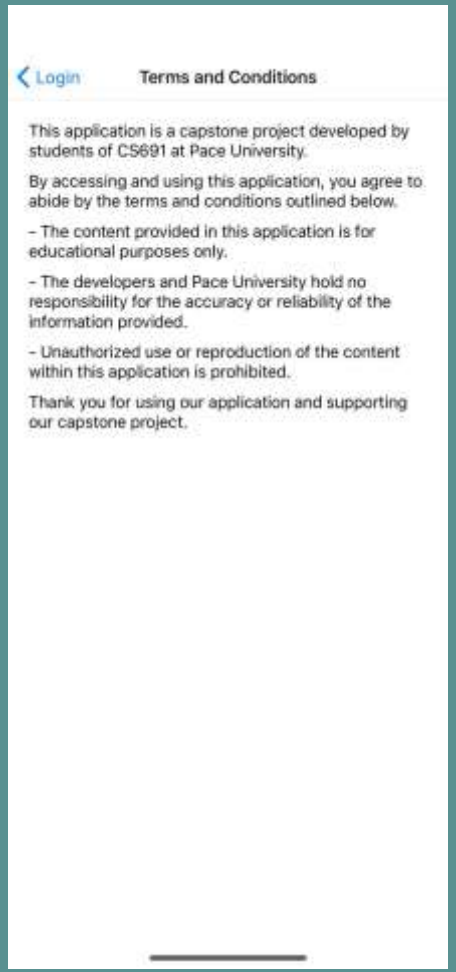


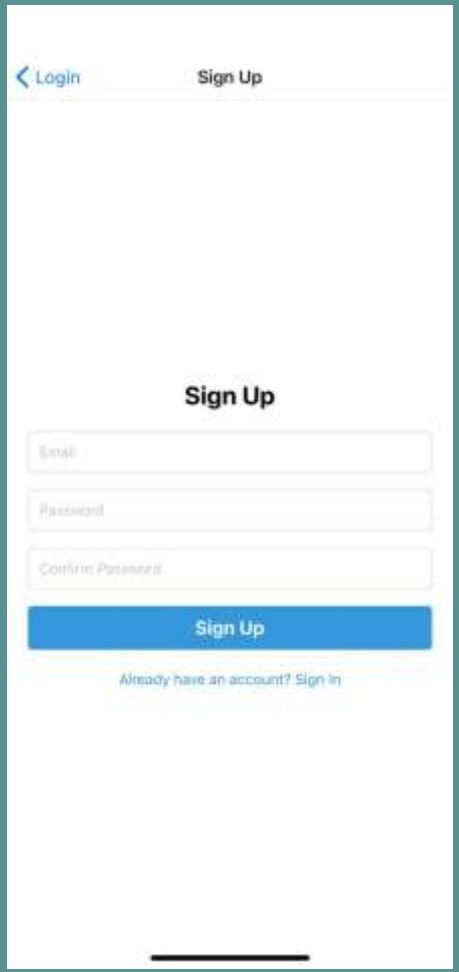
Application Screenshots



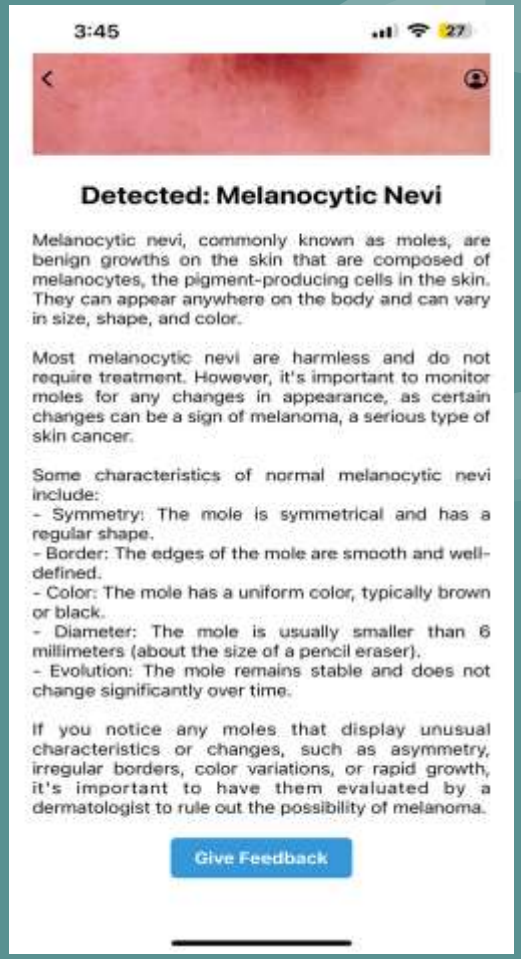


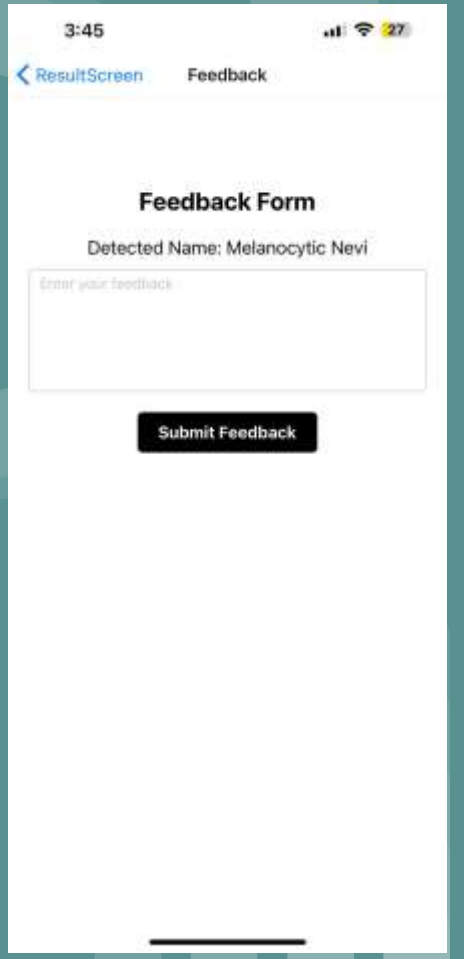
Application Screenshots



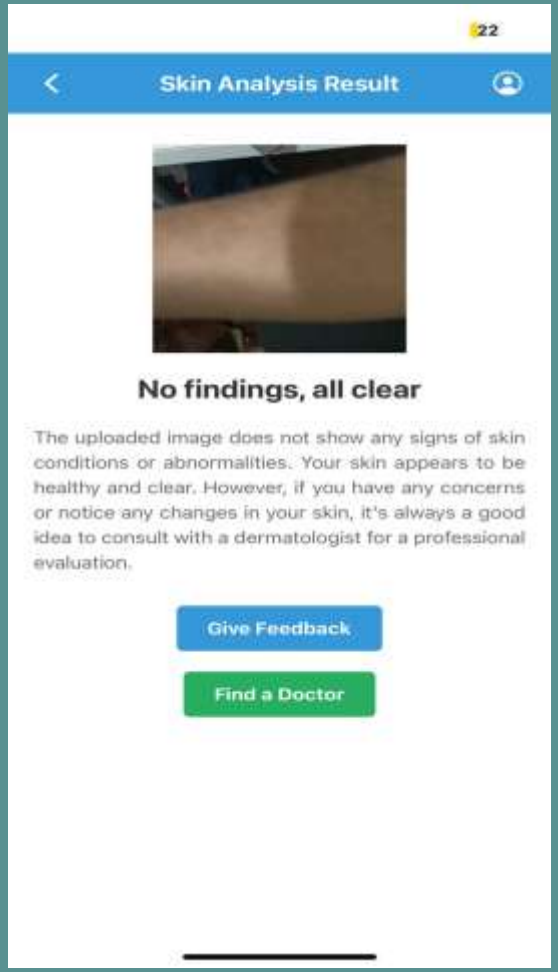


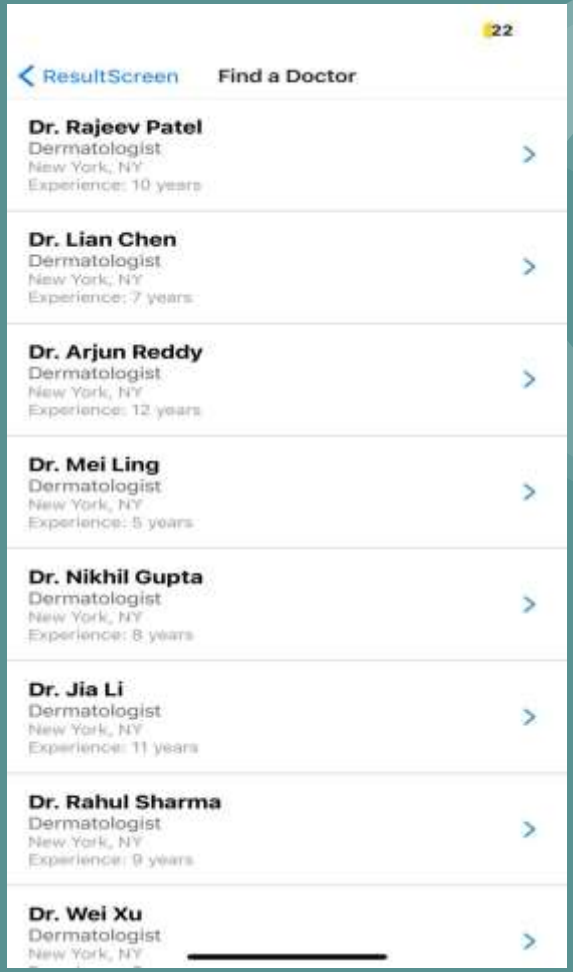
Application Screenshots

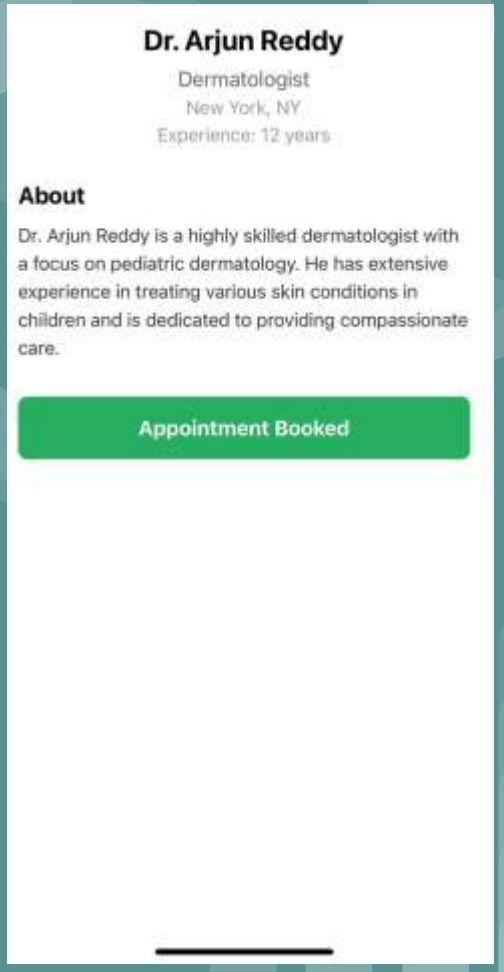




Application Screenshots







FIREBASE API

```
const app = initializeApp(firebaseConfig);
const auth = getAuth(app);
const db = getFirestore(app);
const storage = getStorage(app);

const saveImage = async (imageUri, imageName) => {
  const response = await fetch(imageUri);
  const blob = await response.blob();
  const imageRef = ref(storage, `images/${imageName}`);
  await uploadBytes(imageRef, blob);
};

const saveFeedback = async (userId, disease, feedback) => {
  try {
    await addDoc(collection(db, "feedback"), {
      userId,
      disease,
      feedback,
      timestamp: new Date(),
    });
    console.log("Feedback saved successfully");
  } catch (error) {
    console.error("Error saving feedback:", error);
  }
};

export { auth, saveImage, saveFeedback };
```

Flask API

```
model = load_model('skin_disease_model_efficientnet.h5')
class_labels = ['Melanoma', 'Melanocytic Nevi', 'Basal Cell Carcinoma', 'Actinic Keratosis']

@app.route('/predict', methods=['POST'])
def predict():
    file = request.files['image']
    img = image.load_img(file, target_size=(224, 224))
    img_array = image.img_to_array(img)
    img_array = np.expand_dims(img_array, axis=0)
    img_array /= 255.0
    predictions = model.predict(img_array)
    predicted_class_index = np.argmax(predictions[0])
    predicted_class_label = class_labels[predicted_class_index]
    response = {
        'class_index': int(predicted_class_index),
        'class_label': predicted_class_label
    }
    return jsonify(response)

if __name__ == '__main__':
    app.run()
```

WikiPage

https://github.com/htmw/2024S-Thunder-Bubbies/wiki

Application Demo

- We would be presenting application demo of our project in this presentation

Thank you