SKIN DISEASE DETECTION

Team

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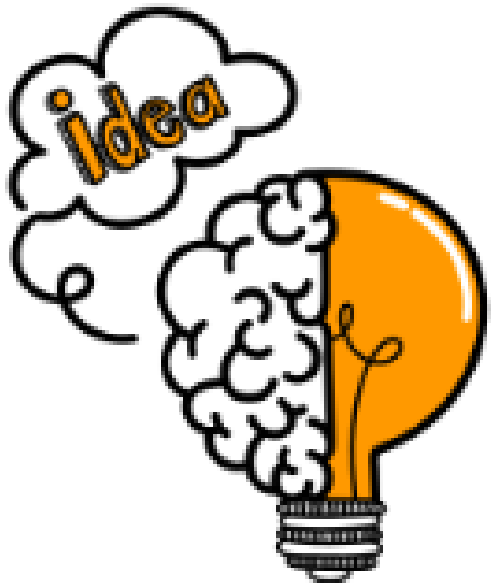
Problem Statement

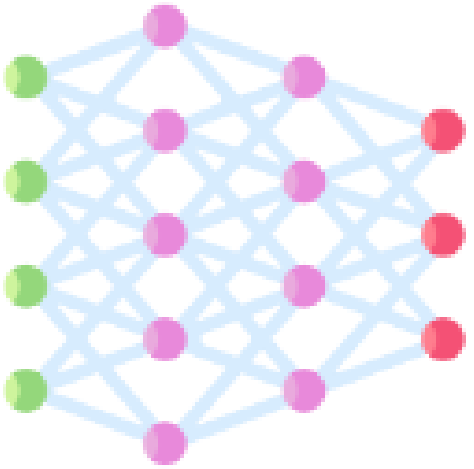
Early detection and accurate diagnosis of skin diseases are critical for effective treatment, but many people lack access to healthcare or cannot afford medical consultations. To address this challenge, an automated skin disease detection system using deep learning could be developed. Such a system would enable individuals to assess their skin conditions from home, reducing the need for costly medical consultations and improving access to healthcare. This could ultimately lead to better health outcomes for communities, particularly those who lack access to adequate healthcare services.

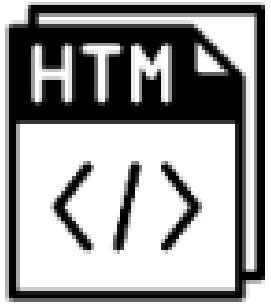


Innovation

Technologies Used

- Deep Learning
- HTML
- CSS
- JAVA Script





.js

Proposed Methodology:

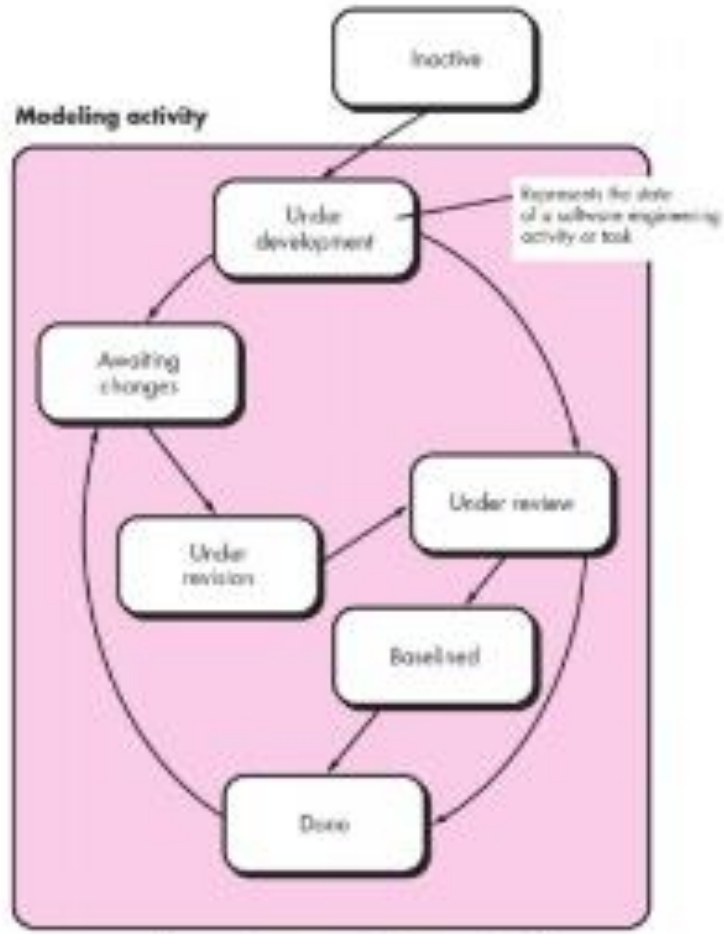


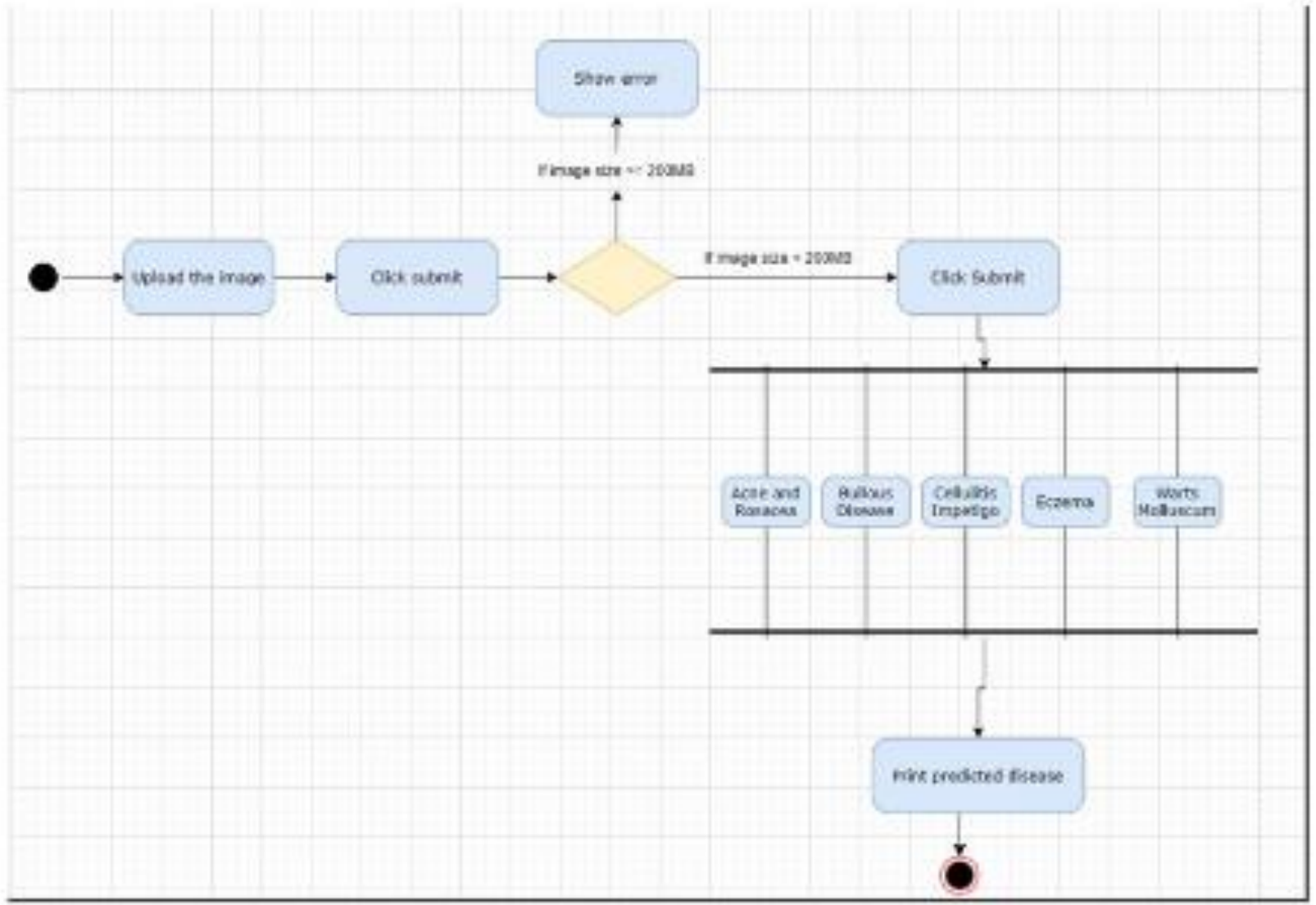
Figure: Concurrent Process Model

Data Set Used:

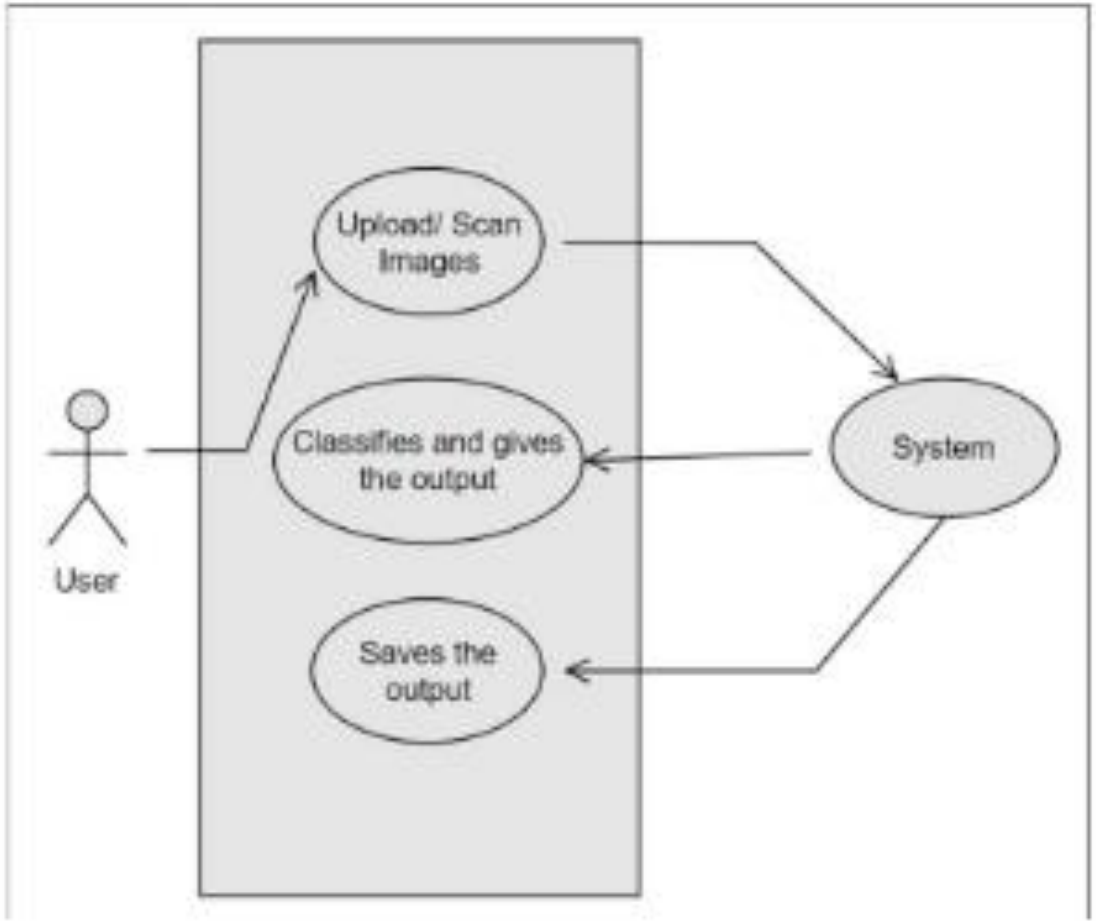
Skin disease

0	Acne and Rosacea Photos	840
1	Bullous Disease Photos	448
2	Cellulitis Impetigo and other	288
3	Eczema Photos	1235
4	Warts Molluscum and other	1086

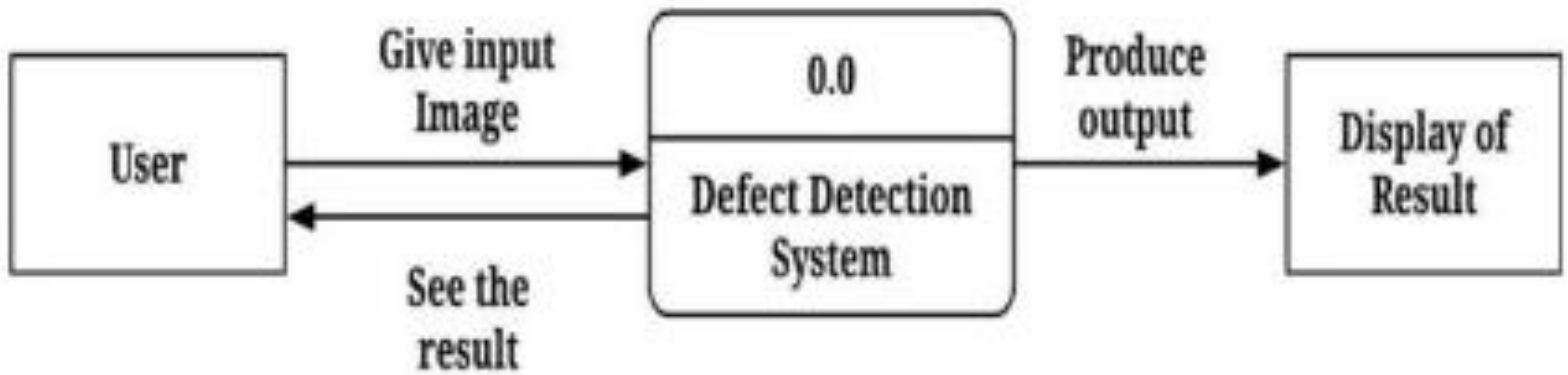
Activity Diagram



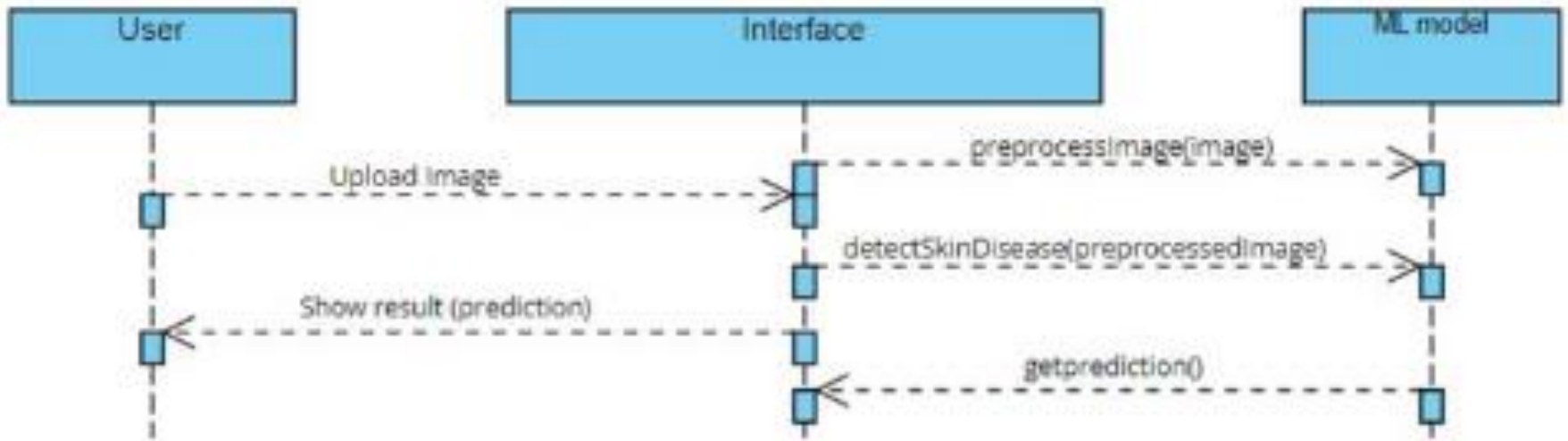
Use Case Diagram



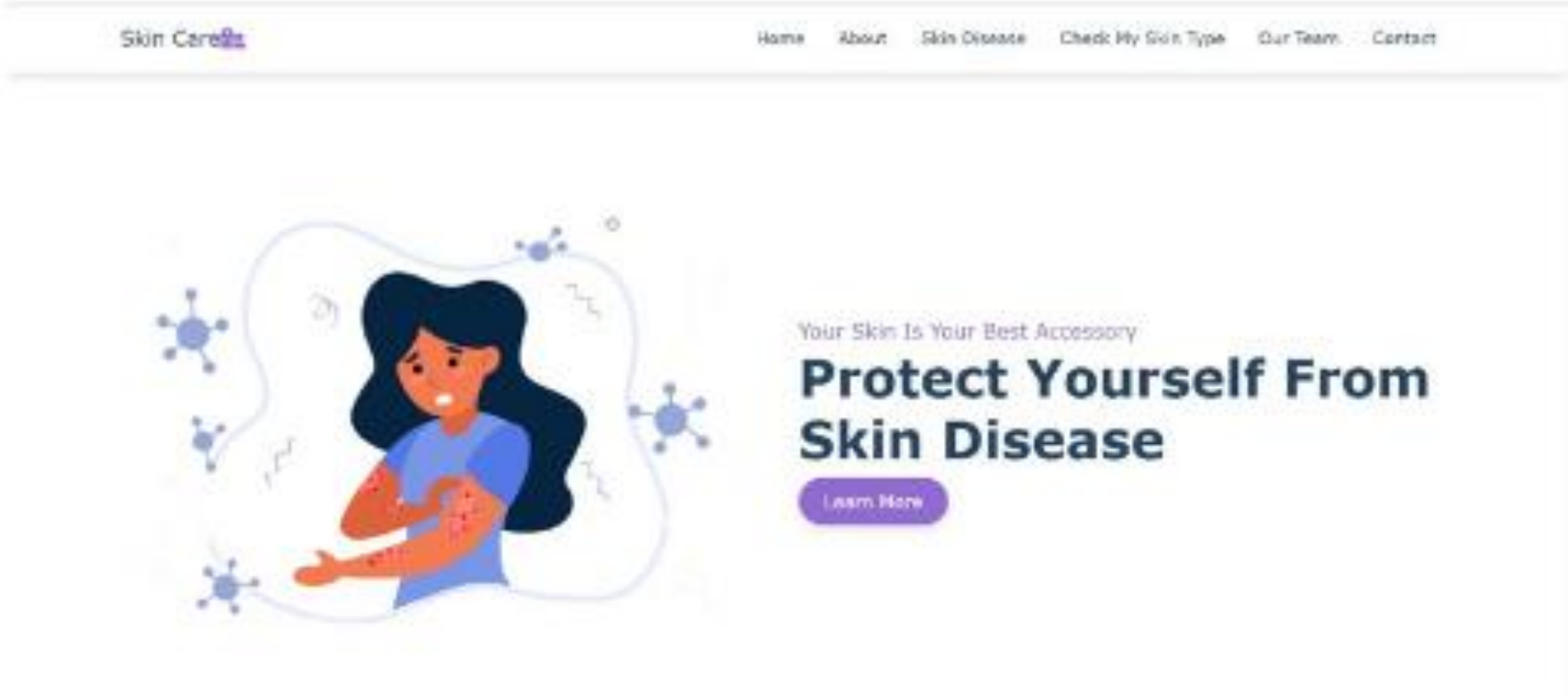
Data Flow Diagram



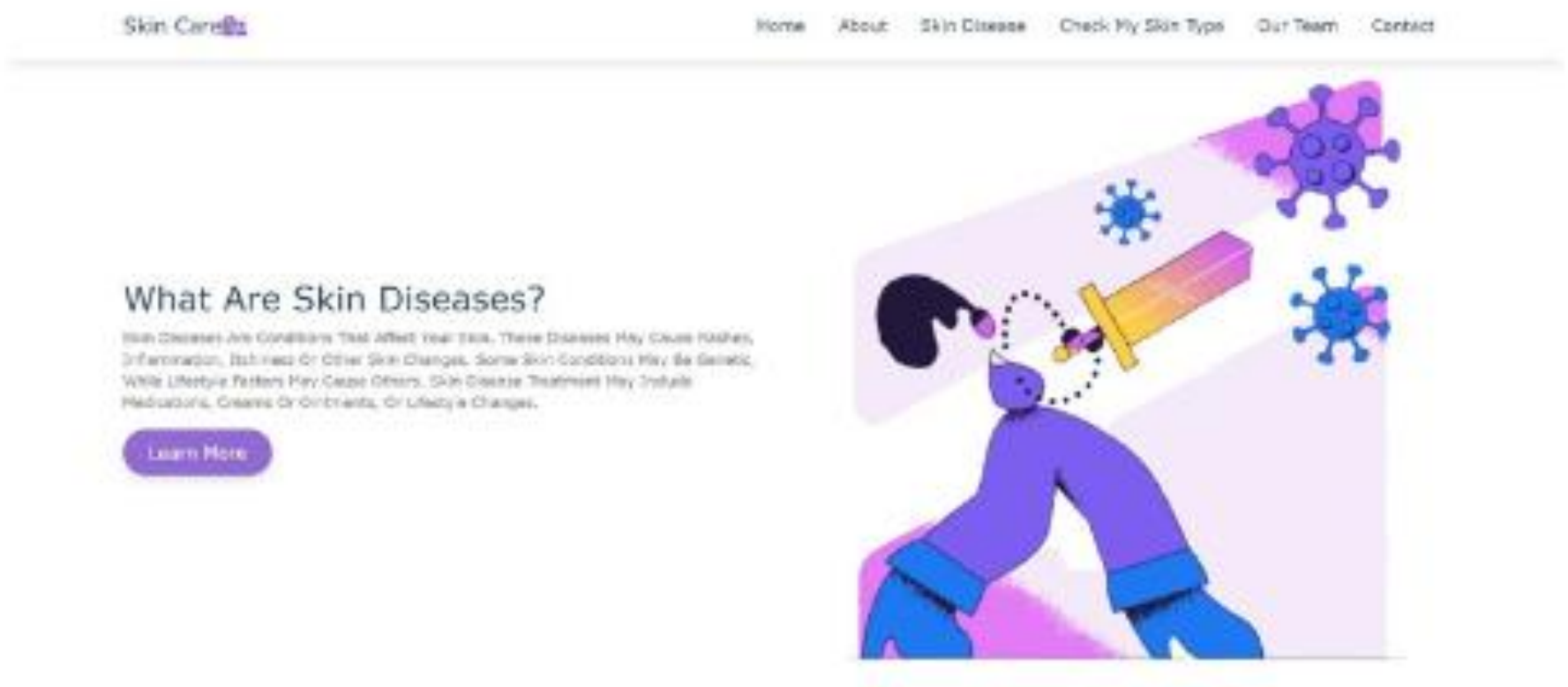
Sequence Diagram



Results


Skin Care
Home
About
Skin Disease
Check My Skin Type
Our Team
Contact
Your Skin Is Your Best Accessory
Protect Yourself From Skin Disease
Learn More

Results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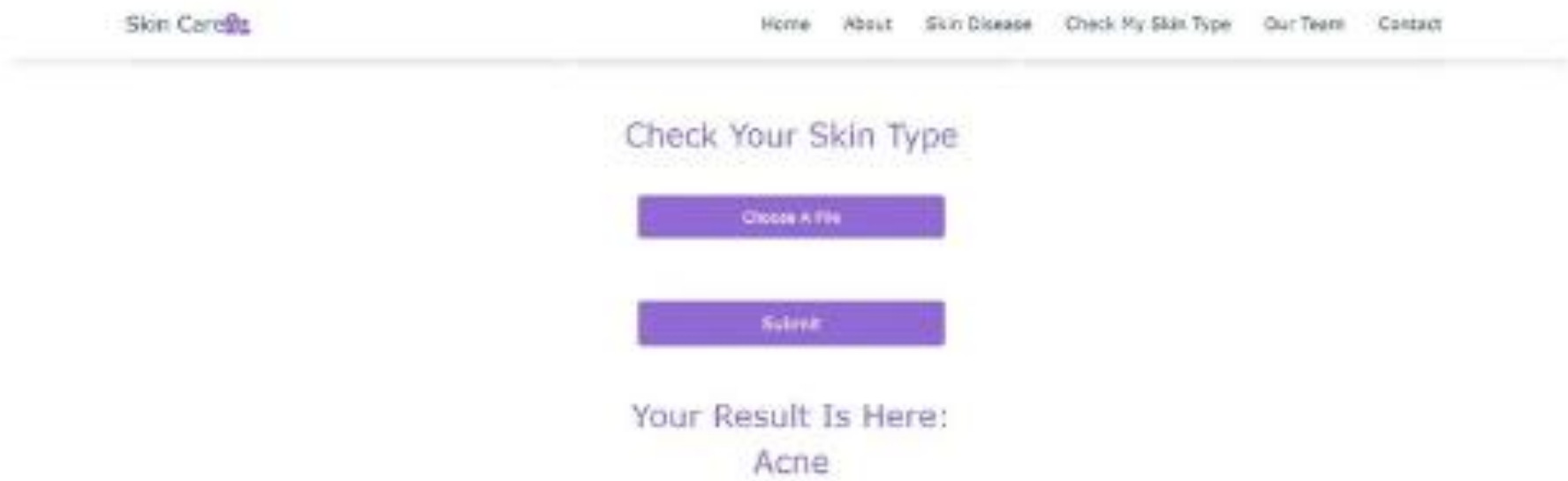
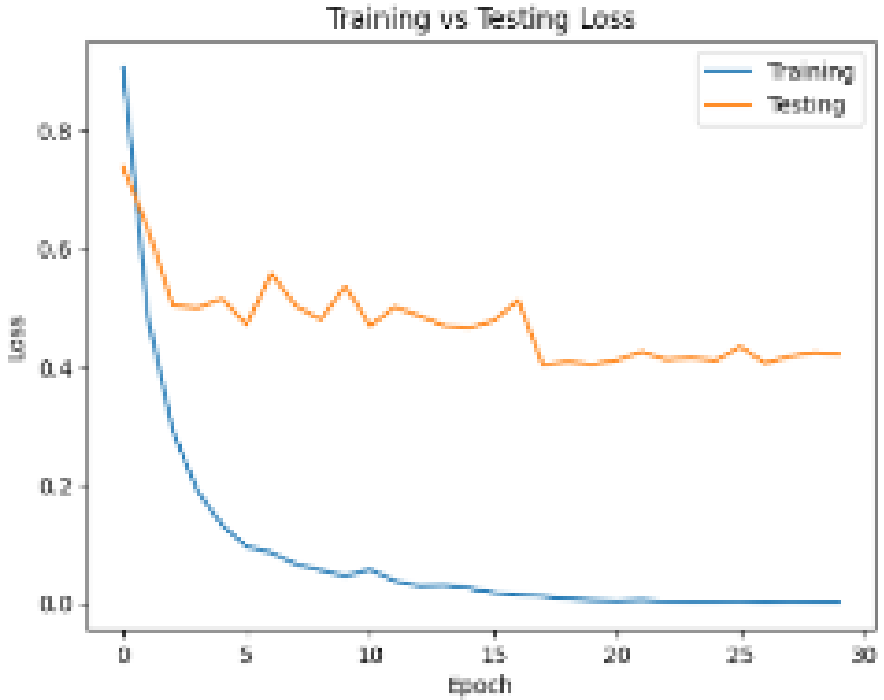
What Are Skin Diseases?
Learn More

Results


Skin Care
Home
About
Skin Disease
Check My Skin Type
Our Team
Contact
Check Your Skin Type
Choose A File
Submit
Your Result Is Here:
Acne

Results




```
In [34]: loss, accuracy = model.evaluate(x_test, y_test, verbose=1)
         print("Testing: accuracy = %f  ;  loss = %f" % (accuracy, loss))
```

```
118/118 [==============================] - 10s 66ms/step - loss: 0.2731 - accuracy: 0.9360
Testing: accuracy = 0.936000  ;  loss = 0.273067
```

Results

In [36]:
```
from sklearn.metrics import confusion_matrix, accuracy_score, precision_score, recall_score, f1_score, cohen_kappa_score

# Calculate evaluation metrics
accuracy = accuracy_score(np.argmax(y_test, axis=1), y_pred)
precision = precision_score(np.argmax(y_test, axis=1), y_pred, average='macro')
recall = recall_score(np.argmax(y_test, axis=1), y_pred, average='macro')
f1 = f1_score(np.argmax(y_test, axis=1), y_pred, average='macro')
kappa = cohen_kappa_score(np.argmax(y_test, axis=1), y_pred)

print(f"Accuracy: {accuracy:.4f}")
print(f"Precision: {precision:.4f}")
print(f"Recall: {recall:.4f}")
print(f"F1-score: {f1:.4f}")
print(f"Kappa score: {kappa:.4f}")
```

```
Accuracy: 0.9360
Precision: 0.9353
Recall: 0.9354
F1-score: 0.9355
Kappa score: 0.9200
```

Conclusion

- High Accuracy: Achieving a 93% accuracy rate is impressive and indicates that the skin disease detection model performs well in classifying different types of skin diseases.

- Effective Classification: The model demonstrates its effectiveness in accurately identifying and classifying five specific skin disease classes: "Acne and Rosacea Photos","Bullous Disease Photos","Cellulitis Impetigo and other Bacterial Infections","Eczema Photos","Warts Molluscum and other Viral Infections". This capability can be valuable in assisting healthcare professionals with early detection and intervention.

- Potential Clinical Application: With a high accuracy rate, the model holds promise for potential clinical applications. It can aid healthcare providers in diagnosing skin diseases, enabling timely treatments and interventions, ultimately leading to improved patient outcomes.

- Room for Improvement: While a 93% accuracy rate is commendable, it's important to consider areas for improvement. Identifying any misclassifications or instances where the model struggled can guide future enhancements, ensuring even higher accuracy rates in subsequent iterations.

Reference

http://www.ijaerd.com/papers/special_papers/RTDE019.pdf

https://ijrti.org/papers/IJRTI2008003.pdf


Thank you