

Project Design Phase-II Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID35991
Project Name	AI-based localization and classification of skin disease with erythema
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

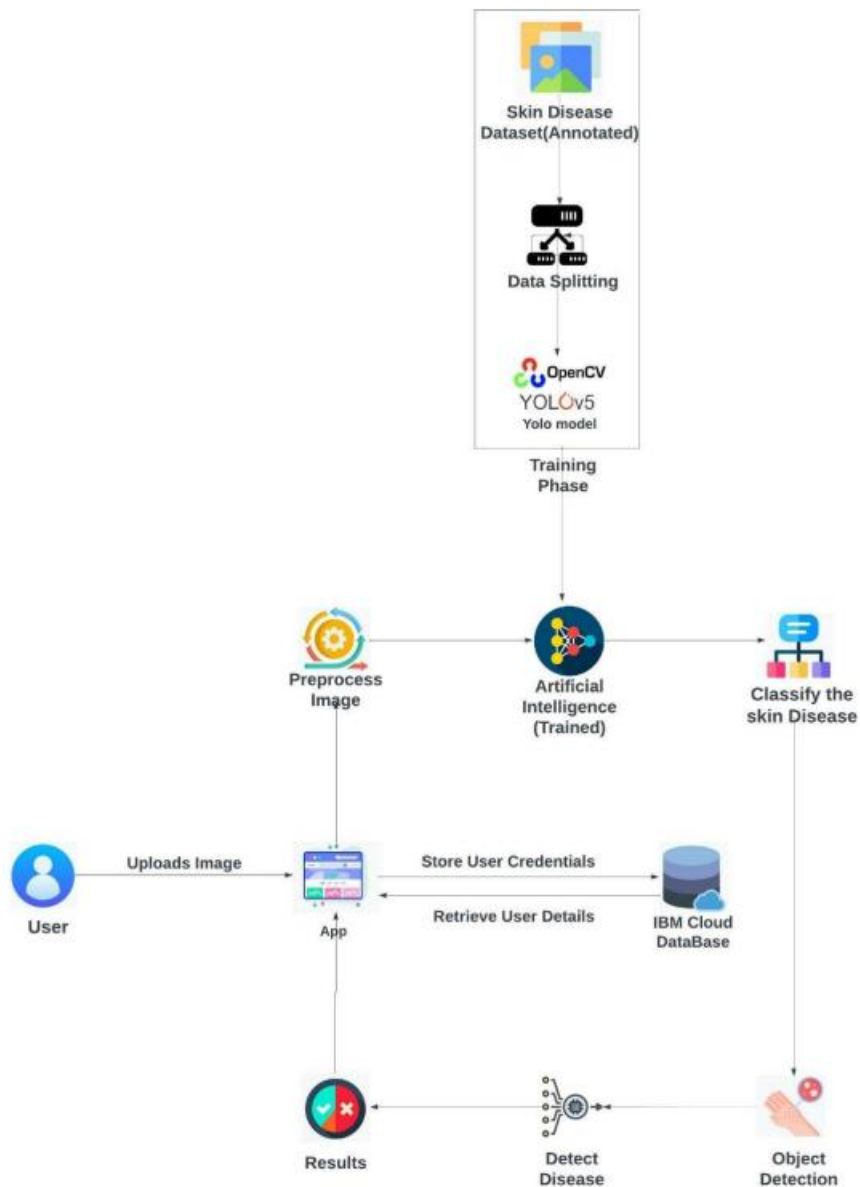


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User interacts via web application	HTML, CSS, JavaScript / Angular JS / React JS etc.
2.	Application Logic-1	The skin disease dataset is collected from Google with 7 different types of diseases.	Python
3.	Application Logic-2	Train a Deep Learning Object Detection and Localization model to classify the type of skin disease and localize the area affected on the skin	IBM Watson STT service
4.	Application Logic-3	A Full Stack Web Application is developed with allows users to signup / login using email, password and OAuth.	IBM Watson Assistant
5.	Database	MongoDB database is used to store the patient's credentials and medical details.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File Storage Requirements	Local Filesystem
8.	Machine Learning Model	A Deep Learning Pytorch Object Detection YOLOv5 Model is trained on the dataset with 10,000 images with 7 different classes.	Object Recognition Model, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Pytorch a Deep Learning Python Library developed and maintained by Facebook YOLO algorithm employs convolutional neural networks (CNN) to detect objects in real-time	Pytorch and YOLOv
2.	Security Implementations	Bcrypt and JSON Web Token (JWT) an encryption-based algorithm is implemented for secure authentications and authorization	e.g., Bcrypt and JWT
3.	Scalable Architecture	An efficient, fast, multiple request handle, scalable and easy development backend microservice is implemented that could predict the disease quickly and display the results to the user	NodeJS

S.No	Characteristics	Description	Technology
4	Availability	With good scalable architecture, the application has less tendency to go down and performance efficient	IBM Cloud
4.	Performance	The result is displayed with no delay once the skin diseased image is uploaded by the user	Incremental feature updating with alpha and regression testing methodologies.

References:

<https://c4model.com/>

<https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>

<https://www.ibm.com/cloud/architecture>

<https://aws.amazon.com/architecture>

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>