

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

Team ID	PNT2022TMID27836
Project Name	Project - Detecting Parkinson's Disease using Machine Learning
Maximum Marks	4 Marks

Technical Architecture:

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

Guidelines:

- Include all the processes (As an application logic / Technology Block)
- Provide infrastructural demarcation (Local / Cloud)
- Indicate external interfaces (third party API's etc.)
- Indicate Data Storage components / services
- Indicate interface to machine learning models (if applicable)

Parkinson's Disease Detection Architecture:

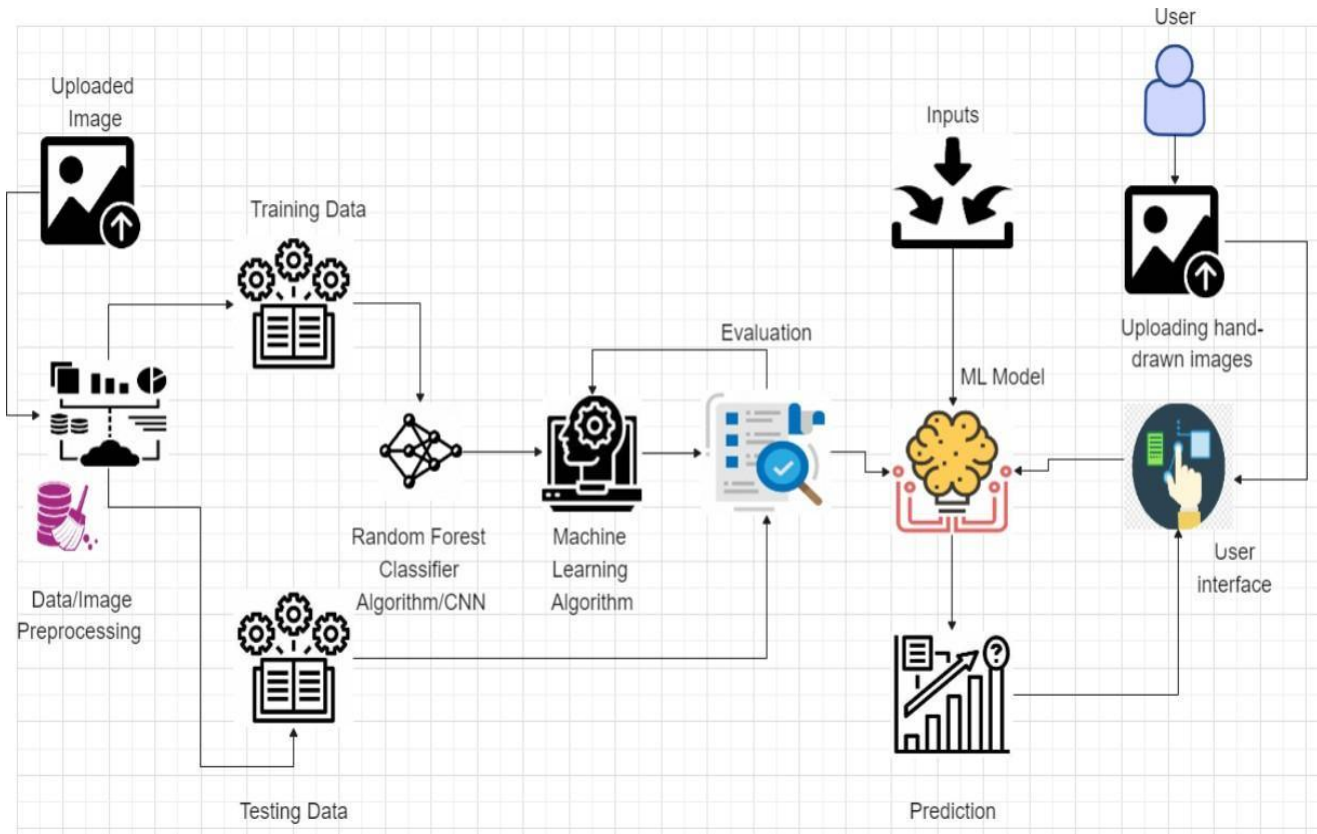


Table-1: Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, Python
2.	Application Logic-1	Home Page	HTML, CSS, Python
3.	Application Logic-2	Test Vital Page- Testing Image Uploading Page	HTML, CSS, Python, Flask
4.	Application Logic-3	Logic for a process in the application	Python, Flask
5.	Database	Data Type, Configurations etc. MySQL is an open-source relational database management system. A relational database organizes data into one or more data tables in which data types may be related to each other; these relations help structure the data.	Dataset processed from Kaggle.com
6.	Cloud Database	Database Service on Cloud	IBM Cloud, IBM DB2
7.	File Storage	File storage requirements	IBM Cloud
8.	External API-1	Spiral and Waves hand-drawn images used for prediction of disease	Dataset for pre-processing IBM API Connect
9.	External API-2	Pre-processed dataset i.e Data analysis for Knowledge Base	Dataset for training the model
10.	Machine Learning Model	To train the Machine Learning Model to predict the parkinson's disease using Random Forest Classifier Algorithm	Parkinson Disease prediction model using CNN, HOG, Random Forest Classifier methodologies

11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Local System Cloud Server Configuration: IBM Cloud (IBM Watson)	Local, IBM Watson (IBM Cloud Service)
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Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks & Libraries	The libraries are used for data pre-processing, data visualization and to train ML model.	Numpy, Pandas, Matplotlib, scikit-image, Open CV, imutils, scikit-learn and various other libraries
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	Built-in Encryptions, BYOK
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services). Since various python libraries and Flask as server has been used, it may speed up the performance and accuracy .	Python, Flask
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	IBM Cloud, IBM Watson
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Python, Flask (To handle multiple requests from the client side)