

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

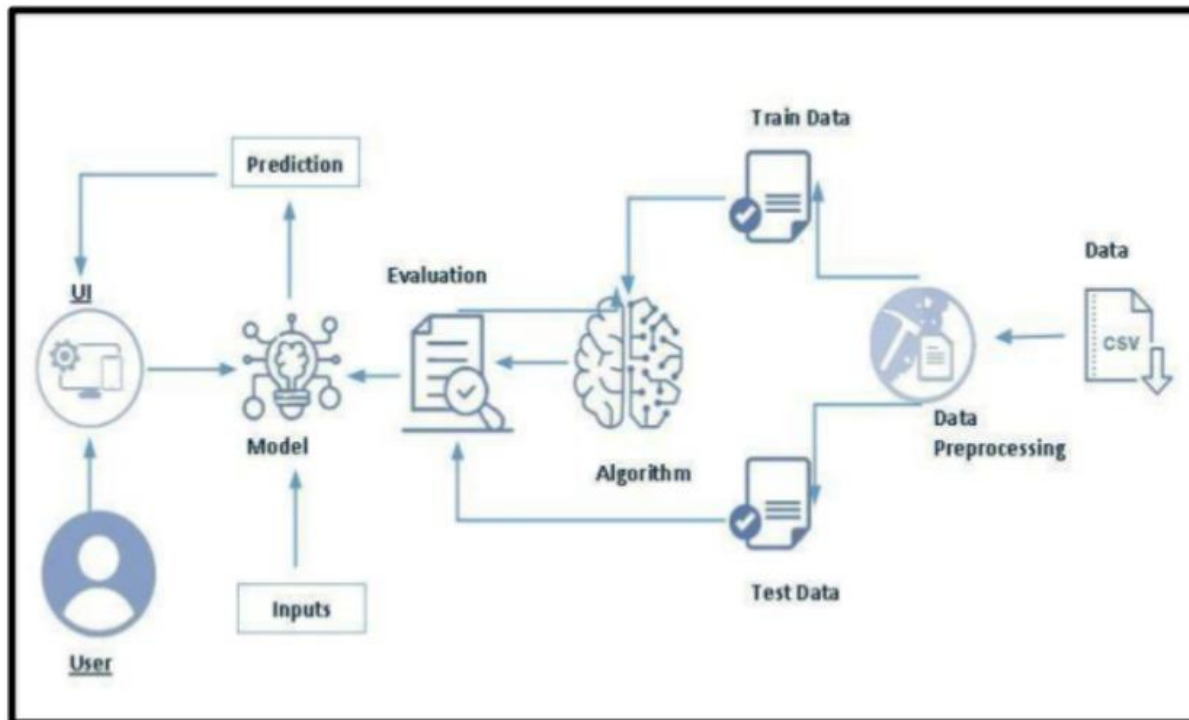
Date	08 November 2023
Team ID	592988
Project Name	Disease Prediction using Machine Learning
Maximum Marks	4 Marks

### Technical Architecture:

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

**Example: Order processing during pandemics for offline mode**

Reference: <https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/>



### Guidelines:

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

**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
1.	Machine Learning Model	This model is trained on an extensive dataset that includes medical records, symptoms, and disease diagnoses.	Various ML algorithms such as decision trees, random forests or the deep learning techniques like neural networks. Python libraries such as Scikit-learn etc.
2.	Symptom Input Interface	Users interact with the system by entering their symptoms through the website.	HTML, CSS, JavaScript, Django or Flask.
3.	Disease Interface	The system is based on an extensive database of illnesses and the symptoms that go along with them.	MySQL or NoSQL like MongoDB.
4.	Predictive Algorithm	The prediction algorithm, which creates a list of likely diseases by matching user-inputted symptoms with patterns in the disease database, is the brains behind the system.	ML models like k-Nearest Neighbors, Naïve Bayes, or logistic regression.
5.	Decision Support System	The algorithm can offer more details about the illnesses it forecasts, such as the seriousness of the conditions, typical therapies, and the urgency of getting medical help to the users.	This info can be extracted from authoritative medical sources.
6.	Data Privacy	The user's data is not collected (such as their name, age, location, etc.) to maintain the security and protection.	Data Anonymization techniques, secure server configurations and Data Protection Regulations (e.g., GDPR)
7.	Scalability	The system should be able to handle the growing user base and remain responsive at busy times.	AWS or Azure
8.	Continuous Learning and Validation	To improve the medical prediction accuracy, the model should be updated with new and updated medical data.	Continuous integration and continuous deployment (CI/CD).

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Accessibility	This model is highly accessible to all the users anywhere anytime.	Can be accessed through any devices like tablets, mobiles, laptops, etc.
2.	Cost-Efficiency	Users can use this model which will act as a cost effective alternative to traditional doctor visits.	Minimizing Overheads associated with user data

			collection and lowering cost-effective web hosting.
3.	Informed Decision-Making & Real-Time Feedback	Not only provides the predictions, but also offers the users extra information about the predicted diseases.	Natural Language Processing (NLP).
4.	Multi-Disease Prediction	Can predict up to 42 different diseases.	The model is trained on extensive dataset.
5.	Symptom Severity Assessment	Not only prediction, it gives the users a guide on how severe the symptoms are.	Visual or text-based severity indicators can be displayed to the users.

#### References:

[https://www.ije.ir/article\\_169090\\_5525e34b7bd485c6f9f9cc710f62522f.pdf](https://www.ije.ir/article_169090_5525e34b7bd485c6f9f9cc710f62522f.pdf)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8896926/>

[https://www.researchgate.net/publication/357449131\\_THE\\_PREDICTION\\_OF\\_DISEASE\\_USING\\_MACHINE\\_LEARNING](https://www.researchgate.net/publication/357449131_THE_PREDICTION_OF_DISEASE_USING_MACHINE_LEARNING)