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

Date	18 May 2023
Team ID	NM2023TMID22579
Project Name	Automated Weather Classification Using Transfer Learning

Technical Architecture:

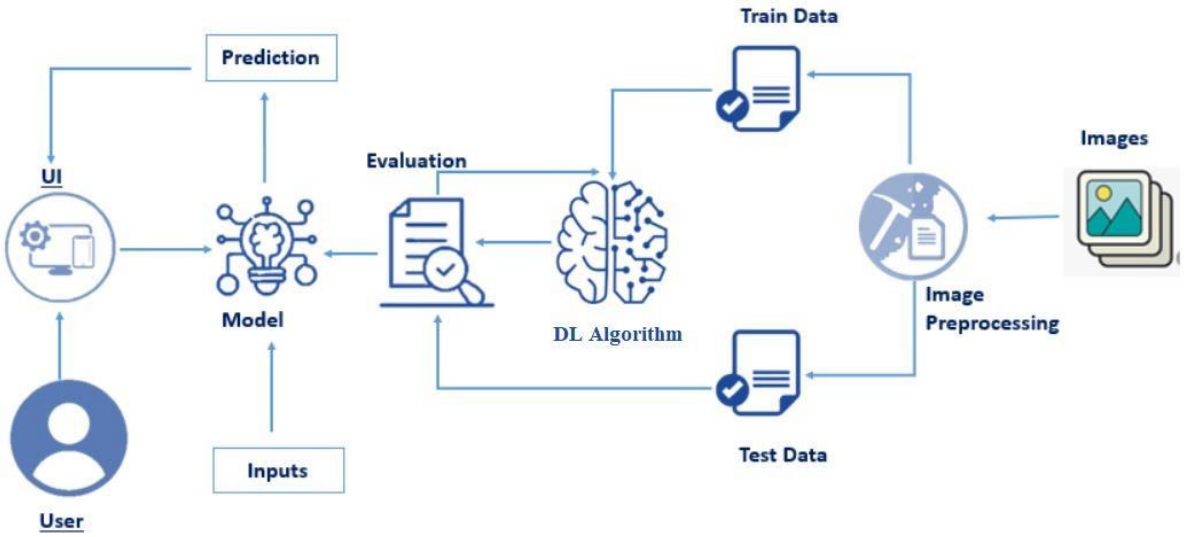

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User can login and provides access to the system .The user can upload weather data for classification. Allow users to choose the pre-trained model they want to use for weather classification. Display the classification results to users after they have uploaded the weather data.	HTML, CSS, Python
2.	Data Preprocessing	Normalize and preprocess the weather data, including resizing images, converting formats, and cleaning the data to ensure consistency and quality.	numpy,pandas
3.	Data visualizations	Allows users to input new weather data for classification, view classification results, and visualize weather patterns. Interactive data visualization techniques, such as charts, maps, and dashboards, can be integrated to facilitate data exploration and interpretation.	matplotlib,seaborn
4.	Machine learning Model	Regression machine learning algorithms is implemented on the dataset using the tools of scikit-learn python library.	Scikit learn

4.	Database	NoSQL databases is helpful in store data both structured and unstructured formats such as csv formats.	NoSQL Database
5.	Web framework	Python flask is a web framework used for integrating the user interface with the Machine learning model	Python flask

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	The numpy and pandas are used for applying data preprocessing techniques on dataset. The Matplotlib and seaborn are used for applying data visualization techniques on dataset	numpy, pandas, Matplotlib, seaborn, scikit-learn
2.	Scalable Architecture	Continuous monitoring of the system's performance, data quality, and model accuracy is crucial. Monitoring tools and frameworks can be implemented to track system metrics, detect anomalies, and trigger alerts. Additionally, the architecture should be designed with scalability in mind, allowing for easy scaling of computational resources to	Transfer learning model

		handle increasing data volumes or user demands.	
3.	Availability	The deployment of the System is in cloud environment, so the System is available everywhere and anyone with a device and internet can access it.	IBM cloud
4.	Performance	Design consideration for the performance of the application(number of requests per sec,use of cache,use of CDN's)etc.	1 request per second