

Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	14 November 2023
Team ID	591954
Project Name	Weather Classification Using Deep Learning

Technical Architecture:

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

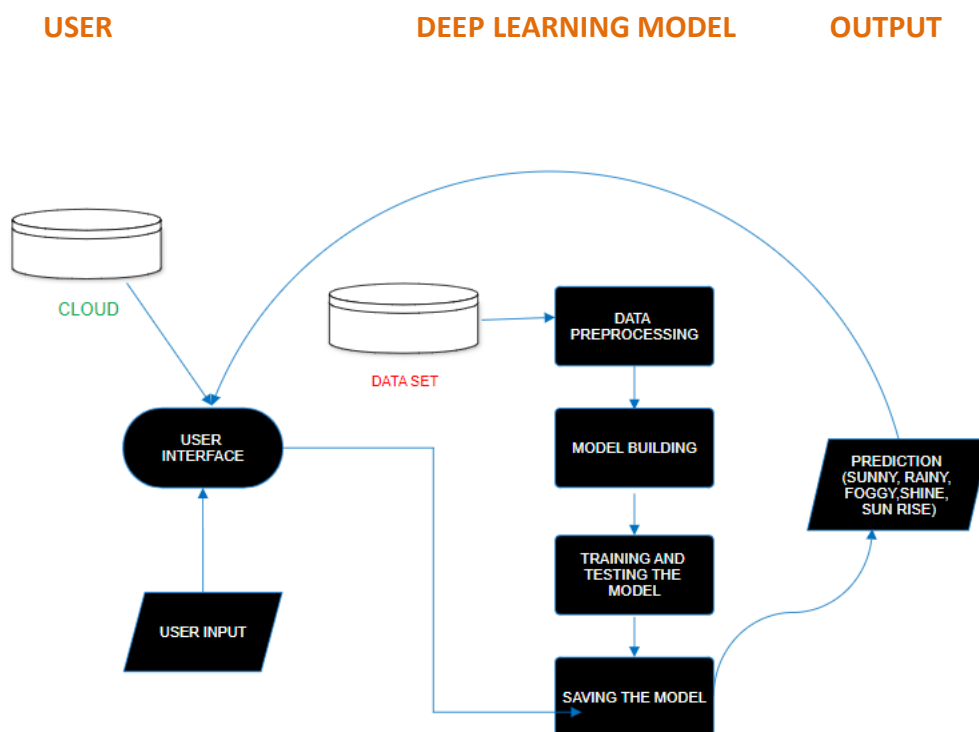


Table - 01 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User interacts with deep learning model with Web interface that deployed using flask.	HTML, CSS, Flask Framework
2.	Image Preprocessing	Adding the image augmentation techniques like brightness, rotation, zoom, shear, flip etc	Python (Keras library ImageDataGenerator)
3.	Model Building	Selecting best pre-trained model For better accuracy and performance of model.	VGG16(Tensorflow library, Python pre-trained model)
4.	Deep Learning Model	The Model will classify the weather image into foggy, cloudy, sunrise, rainy and shine.	Tensorflow libraries, Image processing, Keras libraries, Numpy, Pandas (Python Language)
5.	File Storage	Dataset to train the model, User need to upload the weather image of jpg, jpeg File format from their system.	Google Drive or Local File System
6.	Model Saving	Saving the model for future use .h5 format	Tensorflow, keras libraries
7.	Infrastructure (Server / Cloud)	Deploying the model integrated with flask application. Local Server Configuration: Cloud Server Configuration :	Local Server(local host), AWS

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Tensorflow, keras, VGG19, Keras, Numpy, Pandas, Flask	Python Libraries
2.	Security Implementations	CSRF Protection, Secure Flag For Cookies	SHA-256, Encryptions, IAM Controls, OWASP
3.	Scalable Architecture	3-tier, Micro-services	Micro Web Application by Flask.
4.	Availability	Use of load balancers (ALB), distributed servers etc.	Application Load balancer ,Sinatra Ruby Framework
5.	Performance	Orm-Agnostic, Web Framework,Wsgi 1.0 Compliant, Http Request Handling Functionality High Flexibility	SQLAlchemy,Extensions, Werkzeug,Jinja2,Sinatra Ruby Framework