Project Initialization and Planning Phase

Date	12TH JULY 2024
Team ID	SWTID1719935963
Project Title	Automated Weather Classification using Transfer Learning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template: Develop a project using transfer learning for automated weather classification, aiming to enhance real-time accuracy, robustness across diverse weather patterns, and resource efficiency, integrating seamlessly with existing prediction systems.

Project Overview	
Objective	1. Improve Accuracy of Weather Classification 2. Reduce Training Time and Computational Resources 3. Enhance Generalization Across Diverse Weather Conditions 4. Facilitate Real-Time Weather Classification
Scope	**Wide Range of Weather Conditions:** Classify diverse weather types accurately and efficiently. **Scalability Across Geographical Regions**: Adaptable models for different locations globally. **Integration with Real-Time Systems:** Seamless incorporation into live weather monitoring setups. **Resource-Efficient Model Training:** Reduced computational cost and time for training.
Problem Statement	
Description	The project involves using transfer learning to fine-tune pre-trained convolutional neural networks (CNNs) on a comprehensive dataset of labeled weather images, enabling efficient and accurate classification of diverse weather conditions such as sunny, cloudy, rainy, and snowy, while ensuring scalability, robustness, and real-time performance for integration into live weather monitoring systems.
Impact	**Economic Benefits**

	Improved Public Health
	Efficient Energy Management
	Optimization of Agricultural Practices
	Increased Safety and Preparedness
Proposed Solution	
Approach	The approach involves fine-tuning pre-trained neural networks on a labelled weather image dataset to efficiently classify various weather conditions with high accuracy.
Key Features	**Scalable and Flexible** **Automated Feature Extraction** **Robust Generalization** **Fast Training and Inference** **High Accuracy and Precision**

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	e.g., 2 x NVIDIA V100 GPUs
Memory	RAM specifications	e.g., 8 GB
Storage	Disk space for data, models, and logs	e.g., 1 TB SSD
Software		
Frameworks	Python frameworks	e.g., Flask

Libraries	Additional libraries	e.g., tensorflow
Development Environment	IDE, version control	e.g., google collab, Git
Data		
Data	Source, size, format	e.g., Kaggle dataset, 1531 images