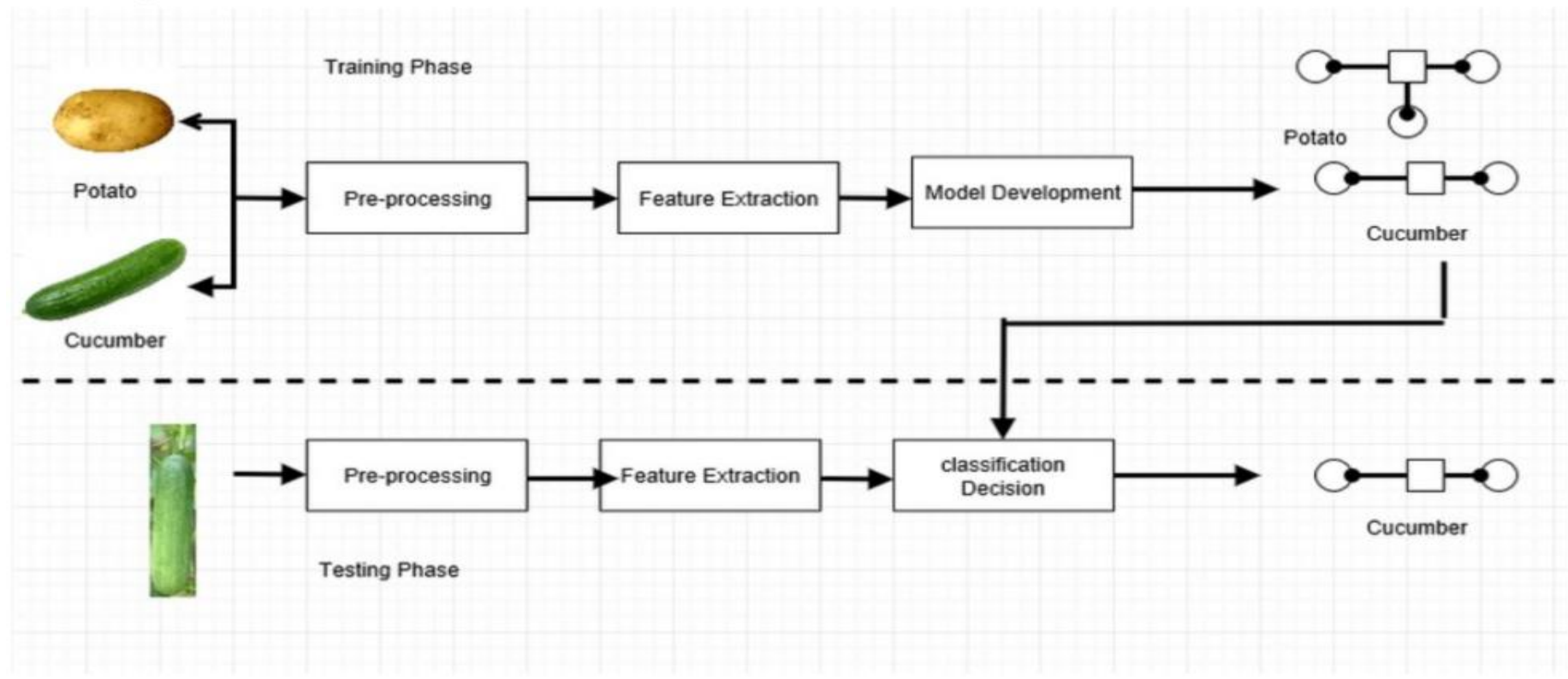


**Project Design Phase-II**  
**Technology Stack (Architecture & Stack)**

Date	09 November 2023
Team ID	592290
Project Name	<b>GreenClassify: Deep Learning-Based Approach For Vegetable Image Classification</b>
Maximum Marks	4 Marks

**Technical Architecture: GreenClassify - Deep Learning-Based Approach for Vegetable Image Classification-**

**Diagram-**



<b>Reference</b>	<a href="https://github.com/smartinternz02/SI-GuidedProject-594533-1697298206">https://github.com/smartinternz02/SI-GuidedProject-594533-1697298206</a>
Guidelines	
1. Include all the processes (as an application logic / Technology Block)	Data collection, preprocessing, model selection, model training, evaluation metrics, model optimization, post-processing, deployment, continuous learning and improvement, monitoring and maintenance, documentation and reporting, security and privacy considerations, scale and integration, user interface development
2. Provide infrastructural demarcation (Local / Cloud)	The system for vegetable image classification using deep learning techniques can be deployed on cloud services like AWS or Azure, or on-premises servers
3. Indicate external interfaces (third-party APIs, etc.)	The system can have external interfaces such as APIs for easy interaction with the model.
4. Indicate Data Storage components / services	Data storage components or services in the GreenClassify project may include data stores for storing images, feedback data, and user account information, as well as external entities such as external databases or APIs for data exchange.
5. Indicate interface to machine learning models (if applicable)	

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

S.No	Component	Description	Technology
1	User Interface	How users interact with the application	Web UI
			HTML, CSS, JavaScript / React
2	Application Logic-1	Image preprocessing and feature extraction	Python
3	Application Logic-2	Deep Learning Model for Image Classification	TensorFlow, Keras
4	Application Logic-3	Model Inference and Classification	Python
5	Database	Data Storage for image metadata and classifications	PostgreSQL

S.No	Component	Description	Technology
6	Cloud Database	Cloud-based storage for images	AWS S3
7	File Storage	Storage for model checkpoints and training data	Local Filesystem
8	External API-1	Purpose of External API used in the application	Image data retrieval and augmentation
			<a href="#">Unsplash API</a>
9	External API-2	Purpose of External API used in the application	Weather data for crop recommendations
			<a href="#">OpenWeather API</a>
10	Machine Learning Model	Deep Learning Model for Vegetable Image Classification	Convolutional Neural Networks (CNNs)
11	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud	
		Local Server Configuration:	
		- CPU: Intel Core i7	
		- GPU: NVIDIA GeForce RTX 3080	
		- RAM: 32GB	
		- Storage: 1TB SSD	
		- OS: Ubuntu 20.04	
		Cloud Server Configuration:	
		- CPU: 8 vCPUs	
		- GPU: NVIDIA Tesla V100	

S.No	Component	Description	Technology
		- RAM: 64GB	
		- Storage: 500GB SSD	
		- OS: Ubuntu 20.04	

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	List the open-source frameworks used	TensorFlow, Keras
2	Security Implementations	List all the security / access controls implemented, use of firewalls, etc.	Data encryption in transit and at rest, IAM controls for data access
3	Scalable Architecture	Justify the scalability of architecture (e.g., 3-tier, Micro-services)	Scalable with microservices and containerization (Docker, Kubernetes)
4	Availability	Justify the availability of the application (e.g., use of load balancers, distributed servers, etc.)	Load balancing for high availability
5	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's, etc.)	Optimized for high performance with GPU acceleration and caching strategies