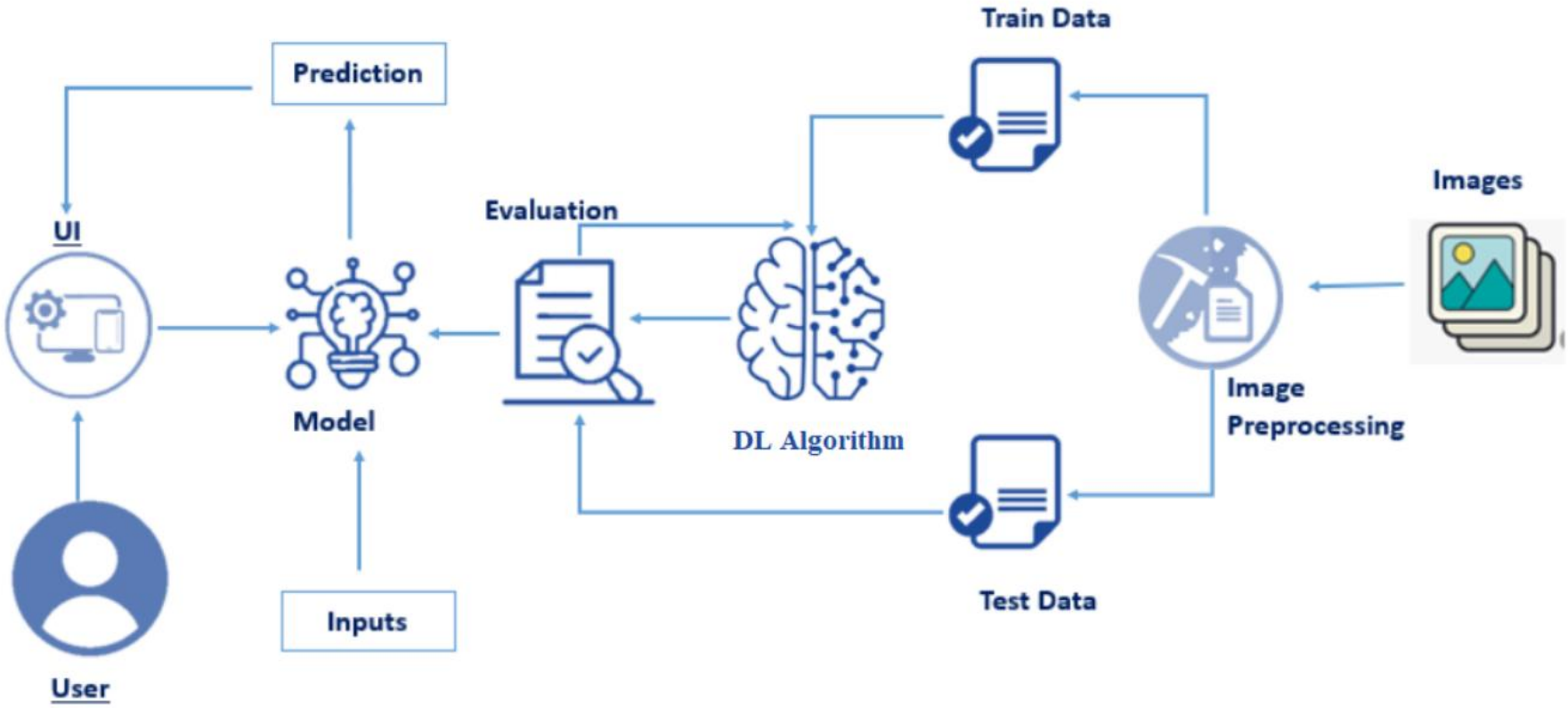
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	25 June 2025
Team ID	LTVIP2025TMID59524
Project Name	Pollen's Profiling: Automated Classification of Pollen Grains
Maximum Marks	4 Marks

Technical Architecture:

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



S.No	Component / Characteristic	Description	Technology / Approach

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1	User Interface	Web UI for uploading images and showing predictions	HTML, CSS, JavaScript, React.js
2	Backend API	Handles requests, user authentication, and prediction calls	Python (Flask or Django REST Framework), REST APIs
3	Image Processing Pipeline	Preprocess and transform images before prediction	OpenCV, Pillow
4	Machine Learning Inference	Predict fresh vs. rotten produce using trained models	TensorFlow / Keras, MobileNetV2 Model Serving
5	Database & Storage	Store user data, logs, and uploaded images	MongoDB, MongoDB Atlas, AWS S3
6	Security & Authentication	Secure data transfer, encrypt information, manage user access	SSL/TLS, JWT Authentication, IAM Policies
7	Scalability & Availability	Auto-scaling backend services and load balancing	Docker, Kubernetes, AWS Load Balancer, Auto-Scaling Groups
8	Performance Optimization	Fast predictions, caching, CDN for static content	Redis Caching, CloudFront CDN, TensorFlow Model Server