

Project Design Phase-II

Solution Requirements (Functional & Non-Functional)

Date	31 January 2025
Team ID	LTVIP2025TMID32756
Project Name	Pollen Profiling: Automated Classification of Pollen Grains
Maximum Marks	4 Marks

Functional Requirements

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Pollen Image Upload & Preprocessing	Upload high-resolution pollen images Auto-crop/align images Noise reduction
FR-4	Automated Pollen Classification	Extract morphological features (size, shape, texture) Classify using ML model (e.g., CNN)
FR-5	Results Visualization & Export	Display classification results (species, confidence score) Export data to CSV/PDF

Non-Functional Requirements

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	Intuitive UI for biologists with minimal technical training.
NFR-2	Security	Secure user data storage (encryption) and role-based access control.
NFR-3	Reliability	99.9% accurate classification under standard lighting/imaging conditions.

NFR-4	Performance	Process and classify images within 5 seconds per sample.
NFR-5	Availability	System accessible 24/7 with <1hr/month downtime for maintenance.
NFR-6	Scalability	Support concurrent uploads from 100+ users; scalable ML model for new pollen species.

Key Notes

1. Functional Focus:

- - FR-3/FR-4 address core AI/ML tasks (image preprocessing, feature extraction, classification).
- - FR-5 ensures practical utility for researchers.

2. Non-Functional Priorities:

- - NFR-3/NFR-4 critical for scientific credibility and user satisfaction.
- - NFR-6 accommodates future expansion (e.g., adding rare pollen types).