

Project Design Phase
Proposed Solution Template

Date	27 June 2025
Team ID	LTVIP2025TMID38971
Project Name	pollen's profiling: automated classification of pollen grains
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Manual identification of pollen grains under a microscope is time-consuming, expertise-driven, and prone to human error. Automation is needed to ensure accuracy, speed, and consistency.
2.	Idea / Solution description	The proposed system uses deep learning (CNN) to automatically classify pollen grains from microscopic images. A user-friendly interface allows users to upload images and receive instant classification results.
3.	Novelty / Uniqueness	Unlike traditional systems, this solution uses image-based deep learning techniques for real-time, accurate pollen classification with minimal human intervention.
4.	Social Impact / Customer Satisfaction	Enables faster and more reliable pollen analysis for researchers, agricultural experts, and allergen tracking, ultimately improving environmental monitoring and healthcare applications.
5.	Business Model (Revenue Model)	The system can be offered as a subscription-based SaaS model for labs, research institutes, or agricultural services, with options for API access and enterprise licensing.
6.	Scalability of the Solution	The architecture is scalable for cloud deployment, with support for expanding to multiple pollen species, integrating mobile apps, and handling large image datasets using containerized microservices.