

Project Design Phase

Proposed Solution Template

Date	15 February 2025
Team ID	LTVIP2025TMID32756
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 is time-consuming, error-prone, and requires expertise. There is a need for an automated solution for accurate classification.
2	Idea / Solution description	The solution involves using machine learning and image processing techniques to automate the profiling and classification of pollen grains from microscopic images.
3	Novelty / Uniqueness	Combines AI-based image recognition with botanical classification, reducing dependency on human expertise and improving accuracy and speed significantly.
4	Social Impact / Customer Satisfaction	Enables researchers, environmentalists, and agricultural experts to make faster, more reliable assessments. Promotes biodiversity studies and allergy forecasting.
5	Business Model (Revenue Model)	Subscription-based access for academic institutions and environmental agencies, licensing for research labs, and API

		integration for health or agricultural apps.
6	Scalability of the Solution	The model can be trained for other microscopic biological entities. It can also be scaled to global datasets with minimal retraining through transfer learning.