**Machine Learning Project Documentation format**

# 1. Introduction

* **Project Title:** Pollen's Profiling: Automated Classification of Pollen Grains
* **Team Members:**

1. Eduri Maryjones (Data collection,Train the model,Application building)
2. Idimukkala Yasasswini (Train the model,save the model,Test the model,Application building)
3. Mamidela Venkata Naga Suseel Kumar (Read the data,Image pre-processing,Training the model,Save the model,Test the model,Application building)
4. Inturi Venkata Vikash (Data Collection,Exploratory Data Analysis,Image Pre-processing,Application Building)
5. J Pushpitha (Data Collection,Exploratory Data Analysis,Image Pre-processing,Application Building)

# 2. Project Overview

* **Purpose:** Automate pollen grain identification using a deep learning CNN model

based on image classification.

* **Features:** Image upload for pollen classification.

Prediction of pollen type.

Web-based interface using Flask.

# 3. Architecture

* **Frontend:** Describe the frontend architecture using React.
* **Backend:** Outline the backend architecture using Node.js and Express.js.
* **Database:** Detail the database schema and interactions with MongoDB.

# 4. Setup Instructions

* **Prerequisites:** Python, TensorFlow, Flask, OpenCV, Scikit-learn, Numpy, Pandas,

Matplotlib.

* **Installation:** git clone https://github.com/YourUsername/Pollens-Profiling.git

cd Pollens-Profiling

pip install -r requirements.txt

# 5. Folder Structure

* **Client:** Describe the structure of the React frontend.
* **Server:** Explain the organization of the Node.js backend.

# 6. Running the Application

• Provide commands to start the frontend and backend servers locally.

* **Frontend:** npm start in the client directory.
* **Backend:** npm start in the server directory.

# 7. API Documentation

* Document all endpoints exposed by the backend.
* Include request methods, parameters, and example responses.

# 8. Authentication

* Explain how authentication and authorization are handled in the project.
* Include details about tokens, sessions, or any other methods used.

1. **User Interface** 
   * Provide screenshots or GIFs showcasing different UI features.
2. **Testing** 
   * Describe the testing strategy and tools used.
3. **Screenshots or Demo** 
   * Provide screenshots or a link to a demo to showcase the application.
4. **Known Issues** 
   * Accuracy depends on dataset quality.
   * Misclassification in very similar pollen types.

# 13. Future Enhancements

* Deploy on cloud (Render, Heroku)
* Add user login to save predictions.
* Improve model with a larger dataset.