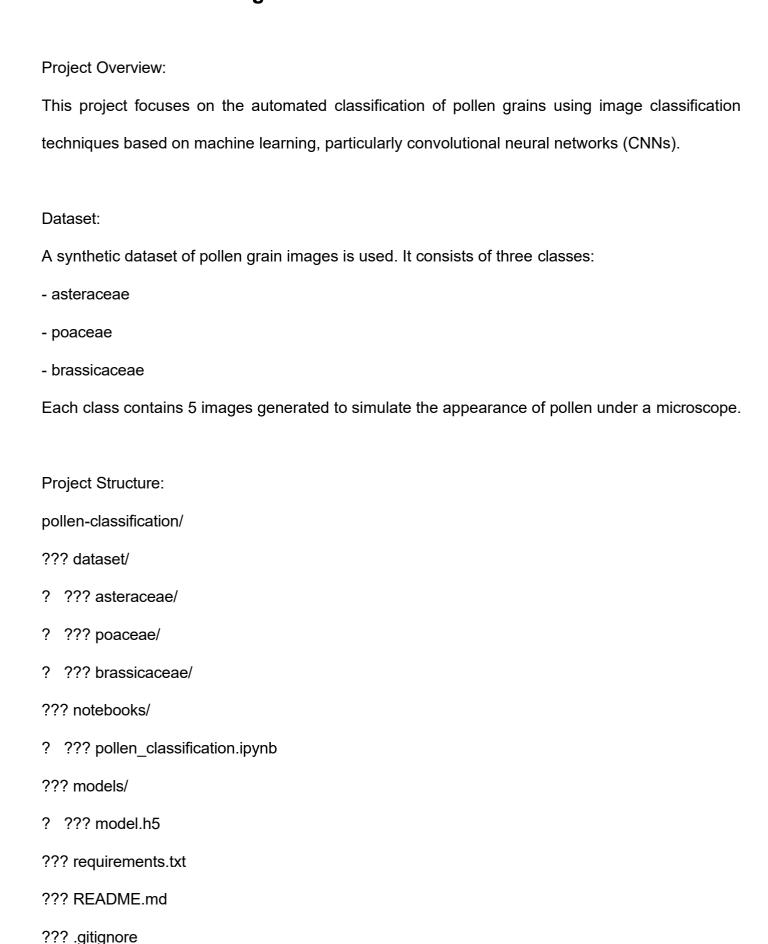# Internship Project Documentation

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Project Title: Pollen's Profiling: Automated Classification of Pollen Grains

# Pollen's Profiling: Automated Classification of Pollen Grains

Project Overview:

This project focuses on the automated classification of pollen grains using image classification techniques based on machine learning, particularly convolutional neural networks (CNNs).

Dataset:

A synthetic dataset of pollen grain images is used. It consists of three classes:

- asteraceae

- poaceae

- brassicaceae

Each class contains 5 images generated to simulate the appearance of pollen under a microscope.

Project Structure:

pollen-classification/

??? dataset/

?   ??? asteraceae/

?   ??? poaceae/

?   ??? brassicaceae/

??? notebooks/

?   ??? pollen_classification.ipynb

??? models/

?   ??? model.h5

??? requirements.txt

??? README.md

??? .gitignore

Technologies Used:

- Python

- TensorFlow / Keras

- OpenCV

- Scikit-learn

- Matplotlib

Instructions:

1. Install dependencies using `pip install -r requirements.txt`.

2. Run the Jupyter notebook provided in the `notebooks/` folder.

3. Train the model on the dataset.

4. Evaluate performance and use the trained model to classify new images.

Outcome:

The model aims to classify pollen grain images into one of the predefined classes with high accuracy.

GitHub:

**https://github.com/AkhilaSarvepalli2/Pollen-grains-.git**