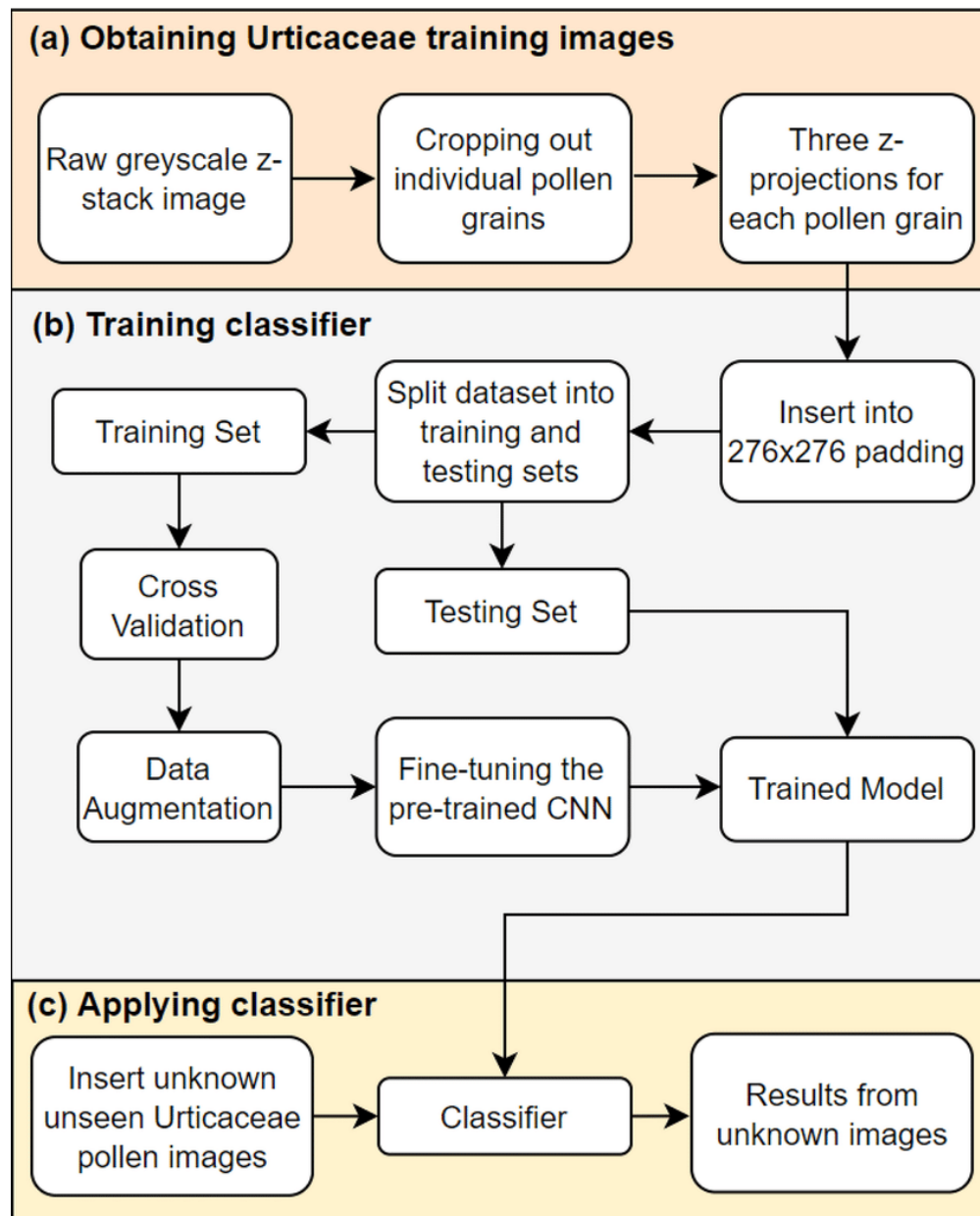| Date	22 June 2025
Team ID	LTVIP2025TMID59524
Project Name	Pollen's Profiling: Automated Classification of Pollen Grains
Maximum Marks	4 Marks

Data Flow Diagrams:

Pollen's Profiling: Automated Classification of Pollen Grains

using transfer learning to detect pollen grains. It outlines the key components—image input, preprocessing, feature extraction via a pre-trained CNN (like VGG16), classification, and actionable sorting decisions.

Let me know if you'd like the diagram to emphasize any particular aspect, such as integration with Flask or front-end feedback loops!

Example: DFD Level 0 for pollen grains

(a) Obtaining Urticaceae training images

```
Raw greyscale z-stack image  →  Cropping out individual pollen grains  →  Three z-projections for each pollen grain
```

(b) Training classifier

```
Insert into 276x276 padding  →  Split dataset into training and testing sets  →  Training Set
                                                                              ↓
                                 Split dataset into training and testing sets  →  Testing Set
                                         ↓
Training Set  →  Cross Validation  →  Data Augmentation  →  Fine-tuning the pre-trained CNN  →  Trained Model
Testing Set  →  Trained Model
```

(c) Applying classifier

```
Insert unknown unseen Urticaceae pollen images  →  Classifier  →  Results from unknown images
```

User Stories for Pollen Grains Classification System

User Type	Epic	Story #	User Story	Acceptance Criteria	Priority	Release
Researcher/Botanist	Registration	PG-US-1	As a researcher, I can register using my email and password.	Can log in successfully after registration.	High	Sprint-1
Researcher/Botanist	Image Upload	PG-US-2	As a user, I can upload microscopic images of pollen grains for classification.	System accepts and confirms image upload.	High	Sprint-2
Researcher/Botanist	Prediction	PG-US-3	As a user, I can view the predicted pollen type and its confidence score.	System displays label and confidence after classification.	High	Sprint-2
Researcher/Botanist	View History	PG-US-4	As a user, I can view the history of previous image uploads and results.	Records show image, date, and prediction outcome.	Medium	Sprint-3
Admin	Manage Users	PG-US-5	As an admin, I can view, edit, or delete registered users.	Admin dashboard lists users with view/edit/delete options.	Medium	Sprint-3
Admin	Model Feedback & Tuning	PG-US-6	As an admin, I can review user feedback and retrain the classification model.	Can access feedback logs and initiate model retraining process.	High	Sprint-4