

Data Science Portofolio

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Background

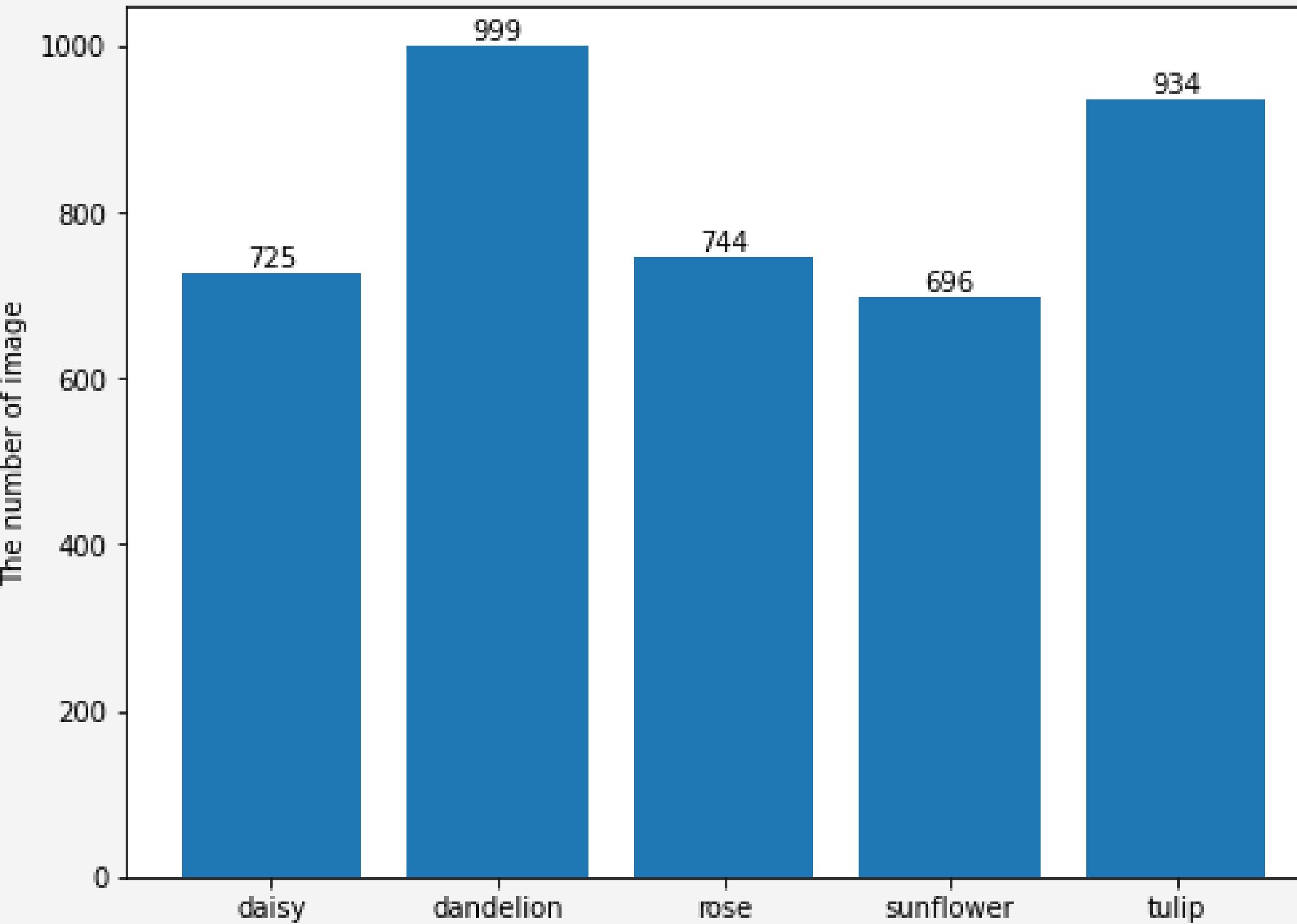
Children are visual learners, which makes the use of a flower classification model a great way to engage them in learning about different types of flowers.

By providing children with an interactive tool that enables them to identify and learn about flowers, the flower classification model can help spark their curiosity and encourage them to explore more about the natural world.



Data Preparation

The number of image in a dataset

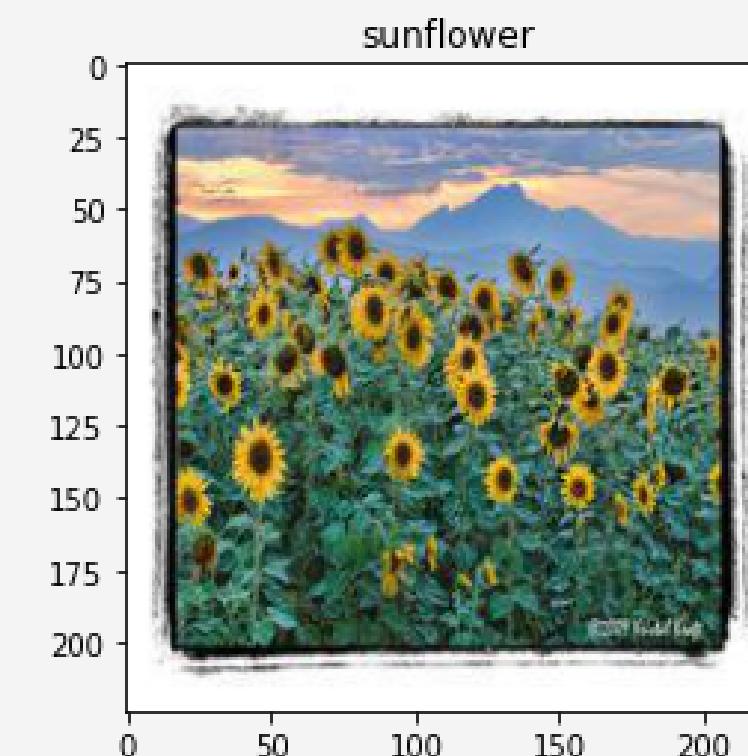
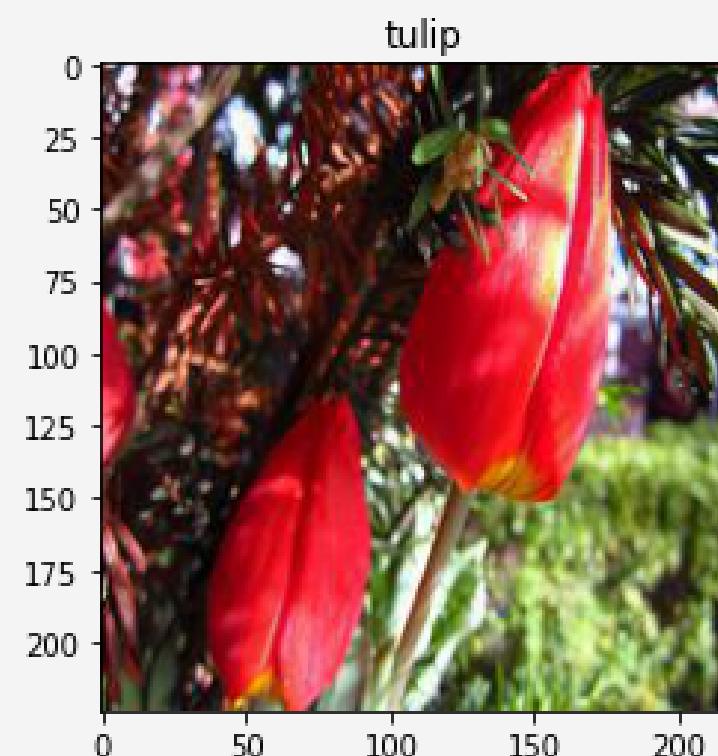
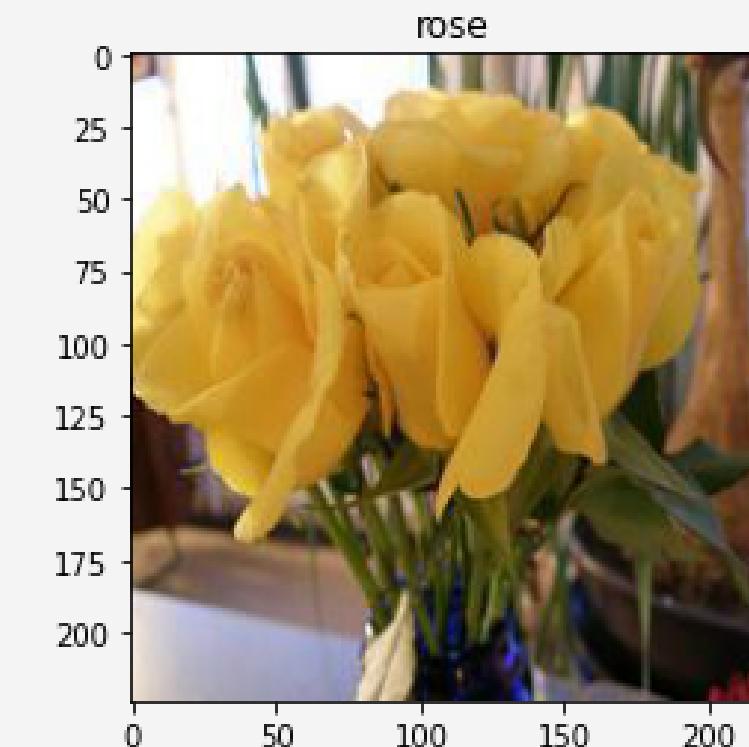
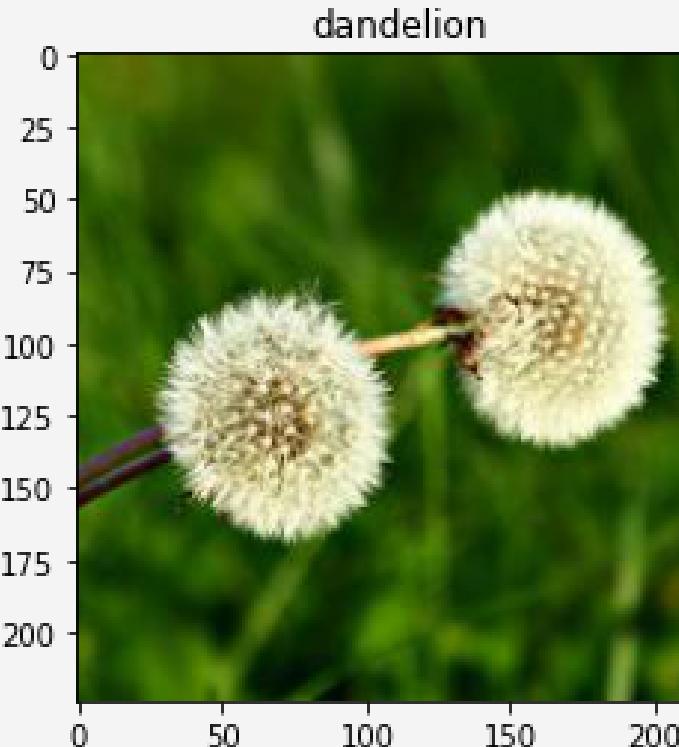
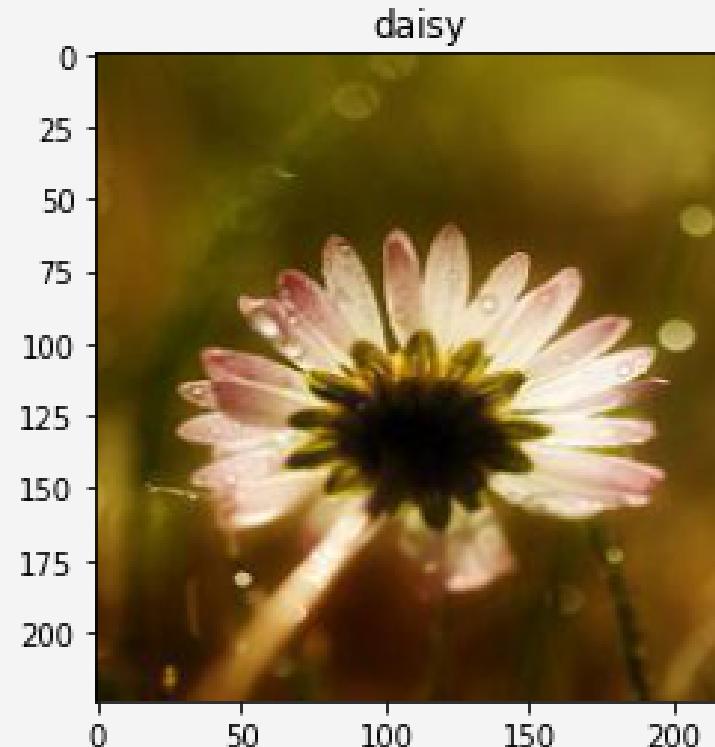


Total : 4098

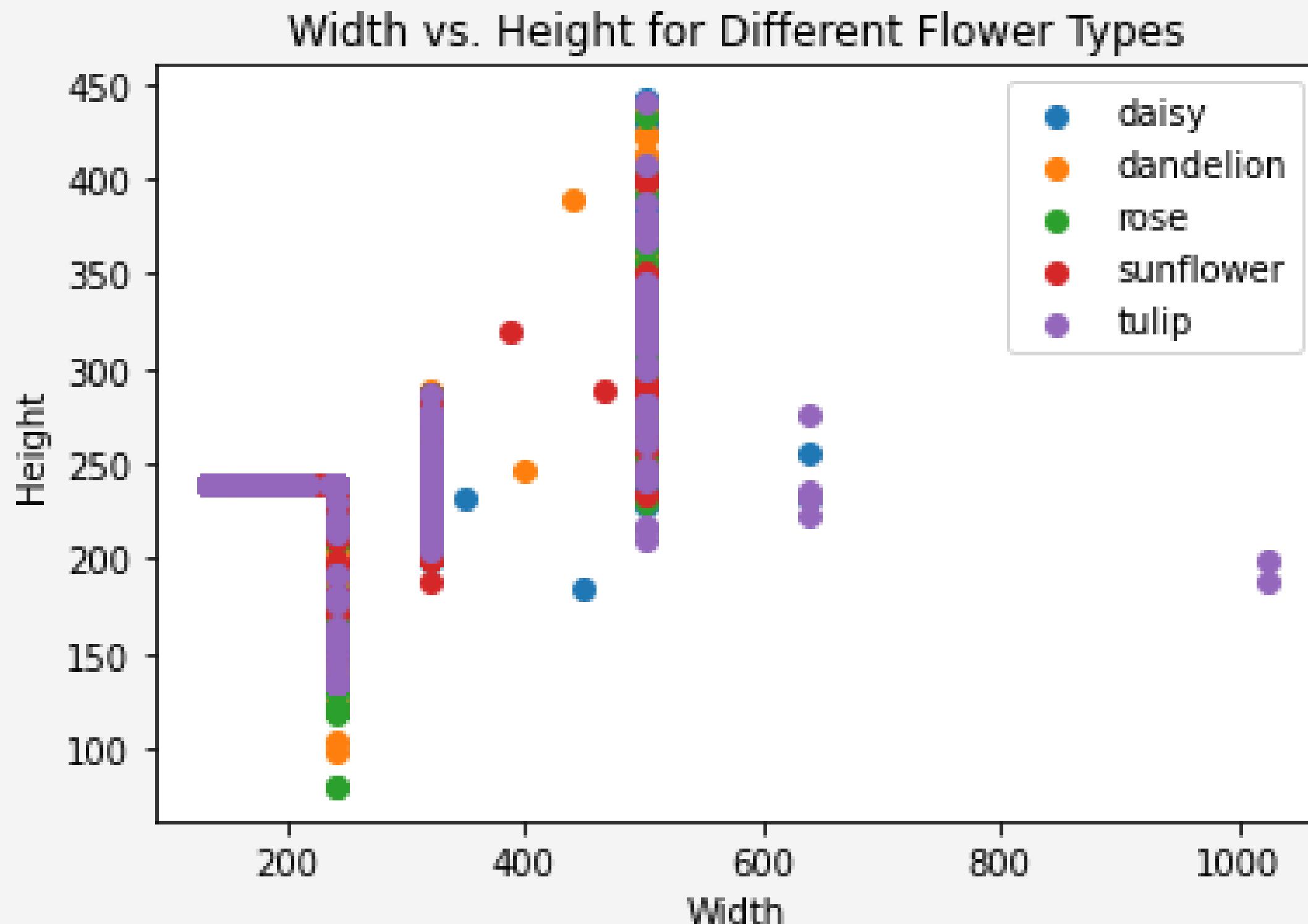
Classes :

- Daisy
- Dandelion
- Rose
- Sunflower
- Tulip

Data Understanding



Data Understanding



Data Preparation



Split Data
80:20

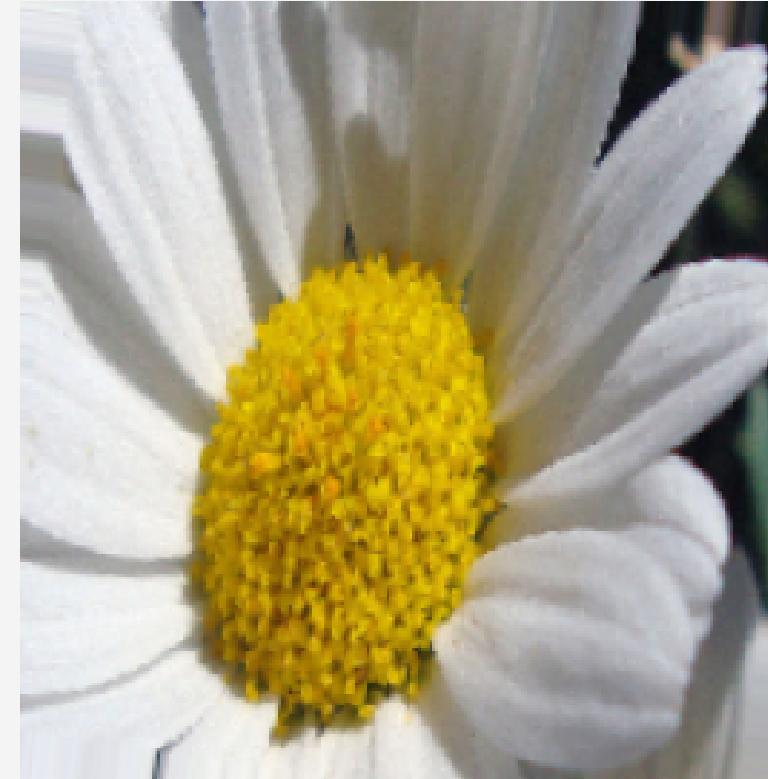
Augmentation Data
**Rescale,Flip,Rotation,
Zoom**

Data Preparation

Original Image



Augmented Image 1



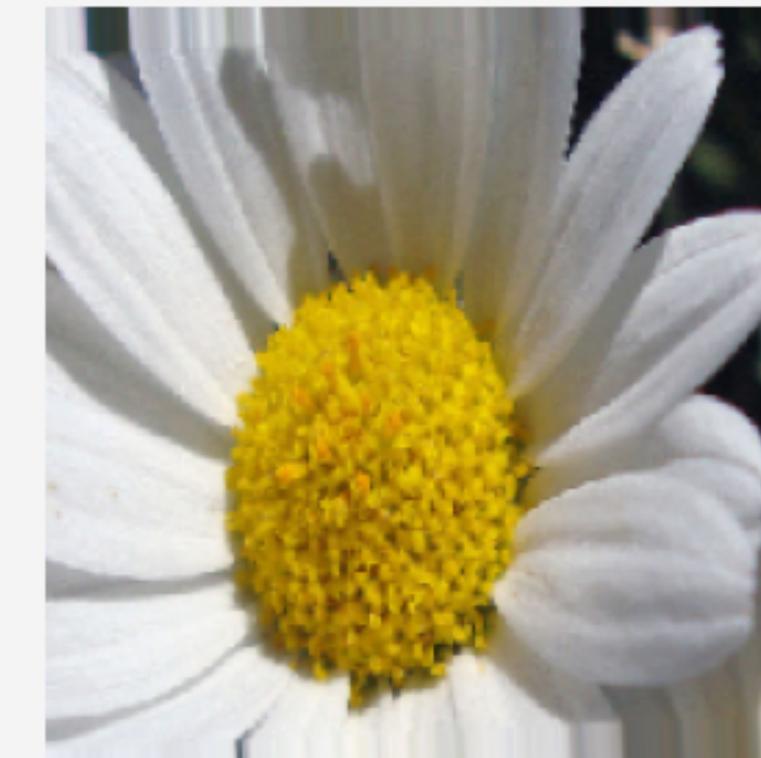
Augmented Image 2



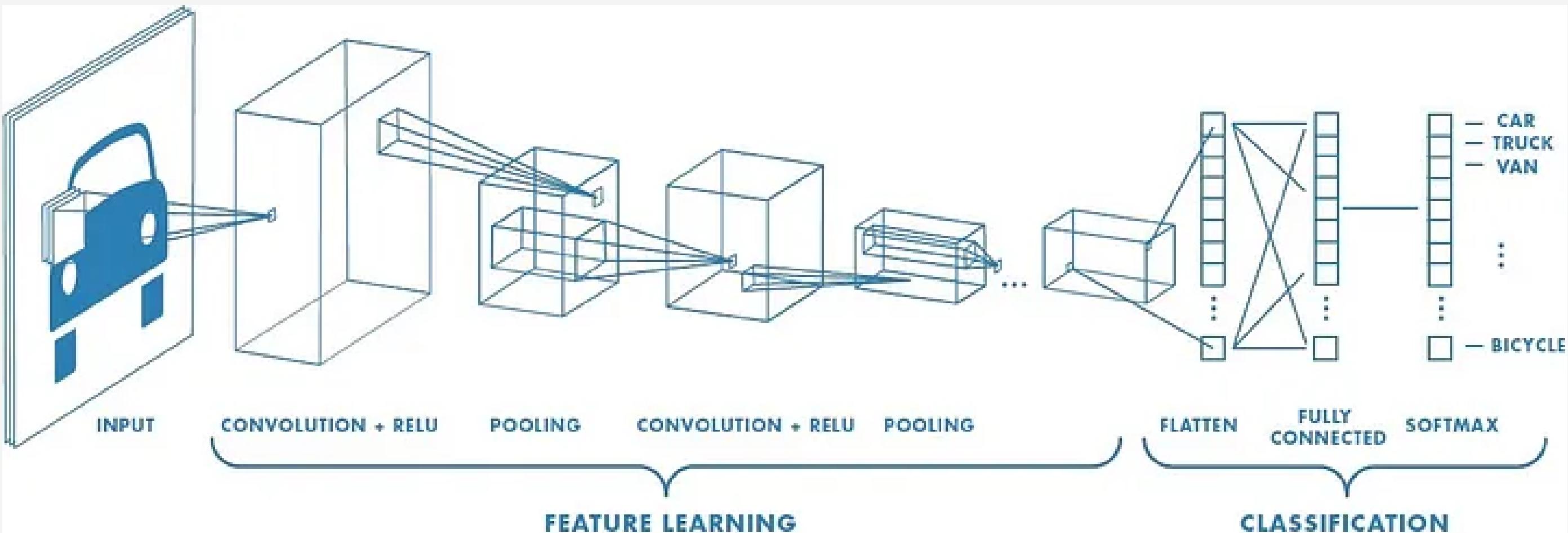
Augmented Image 3



Augmented Image 4



Modeling

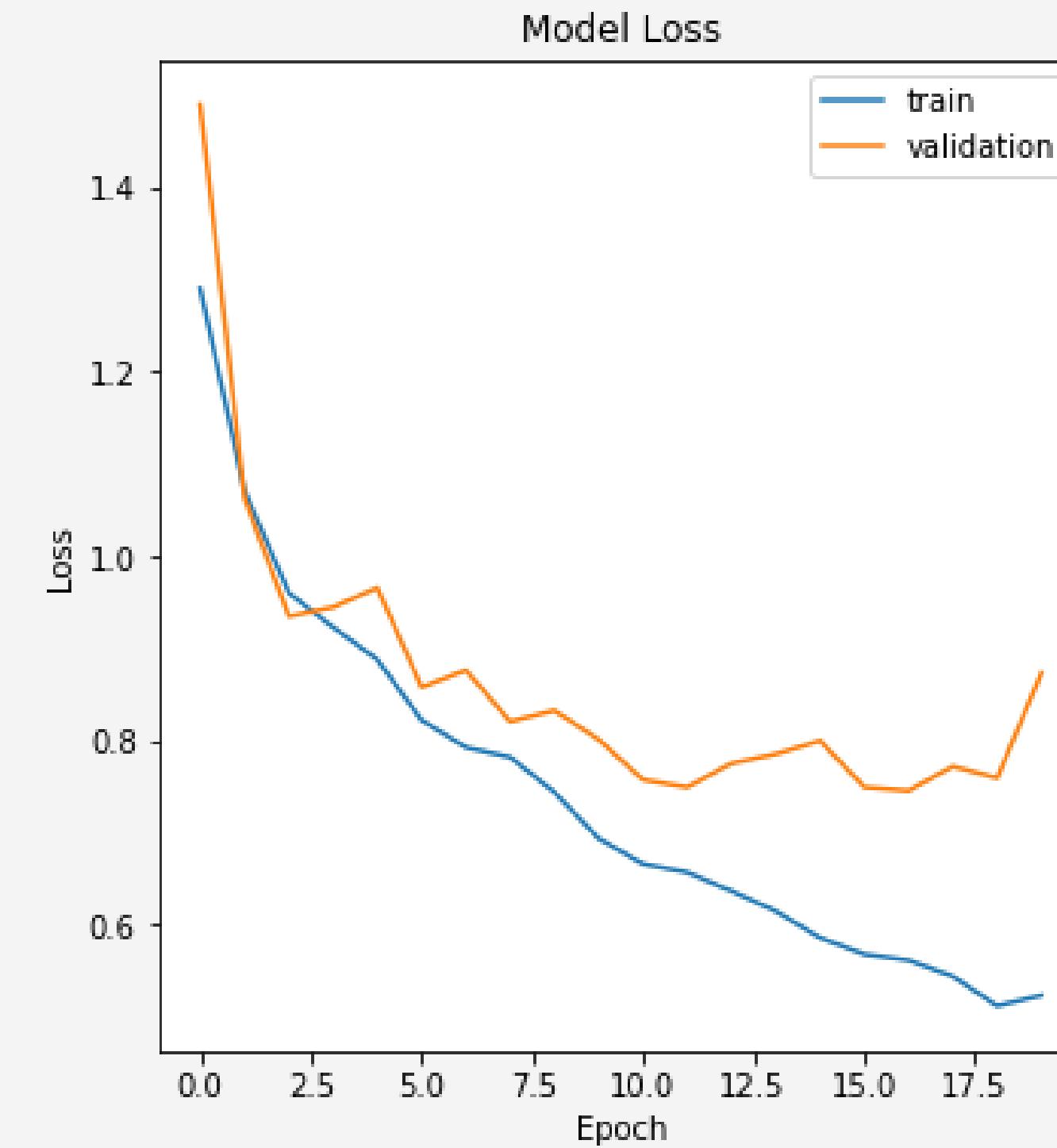
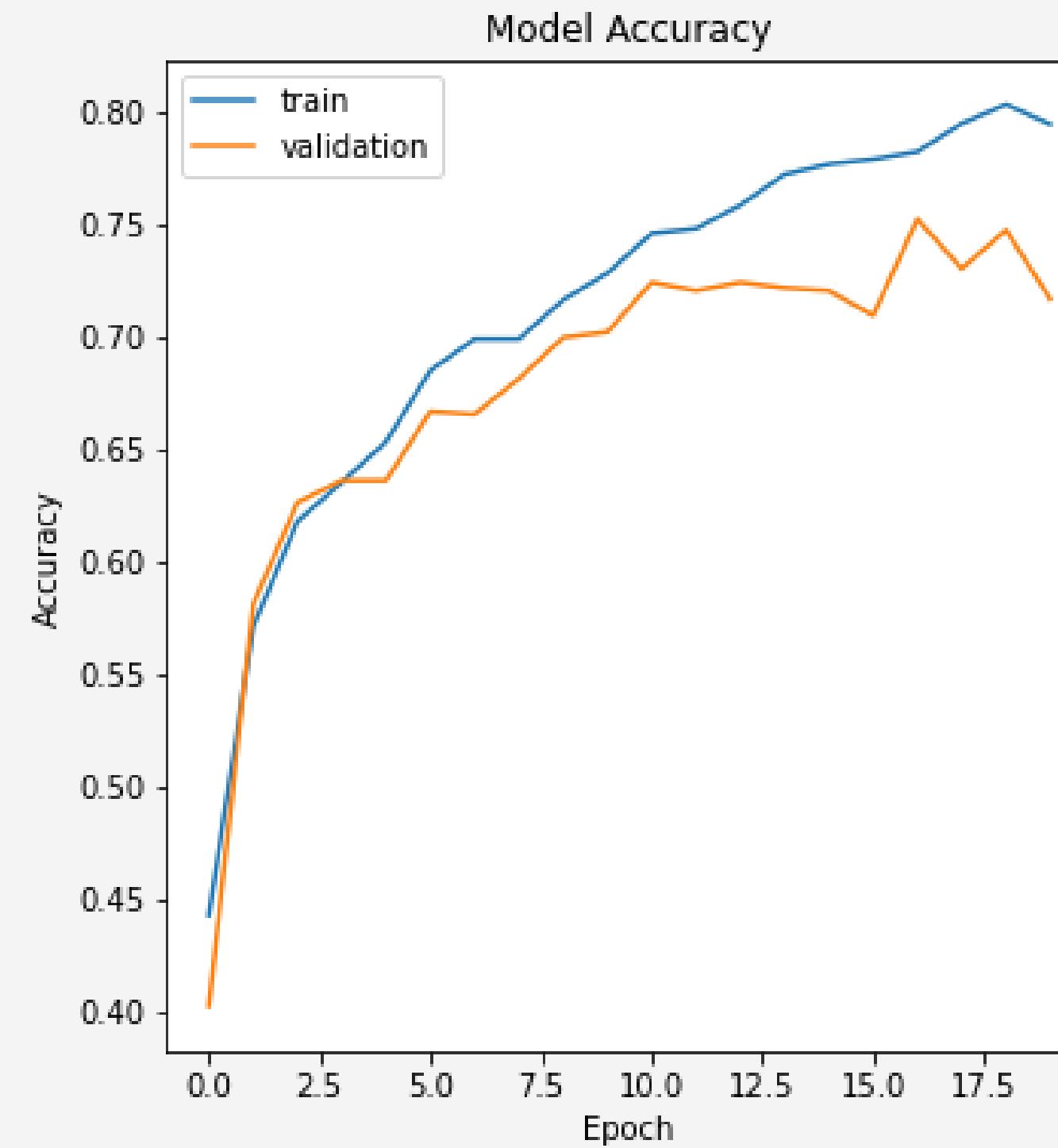


◆ **CNN**

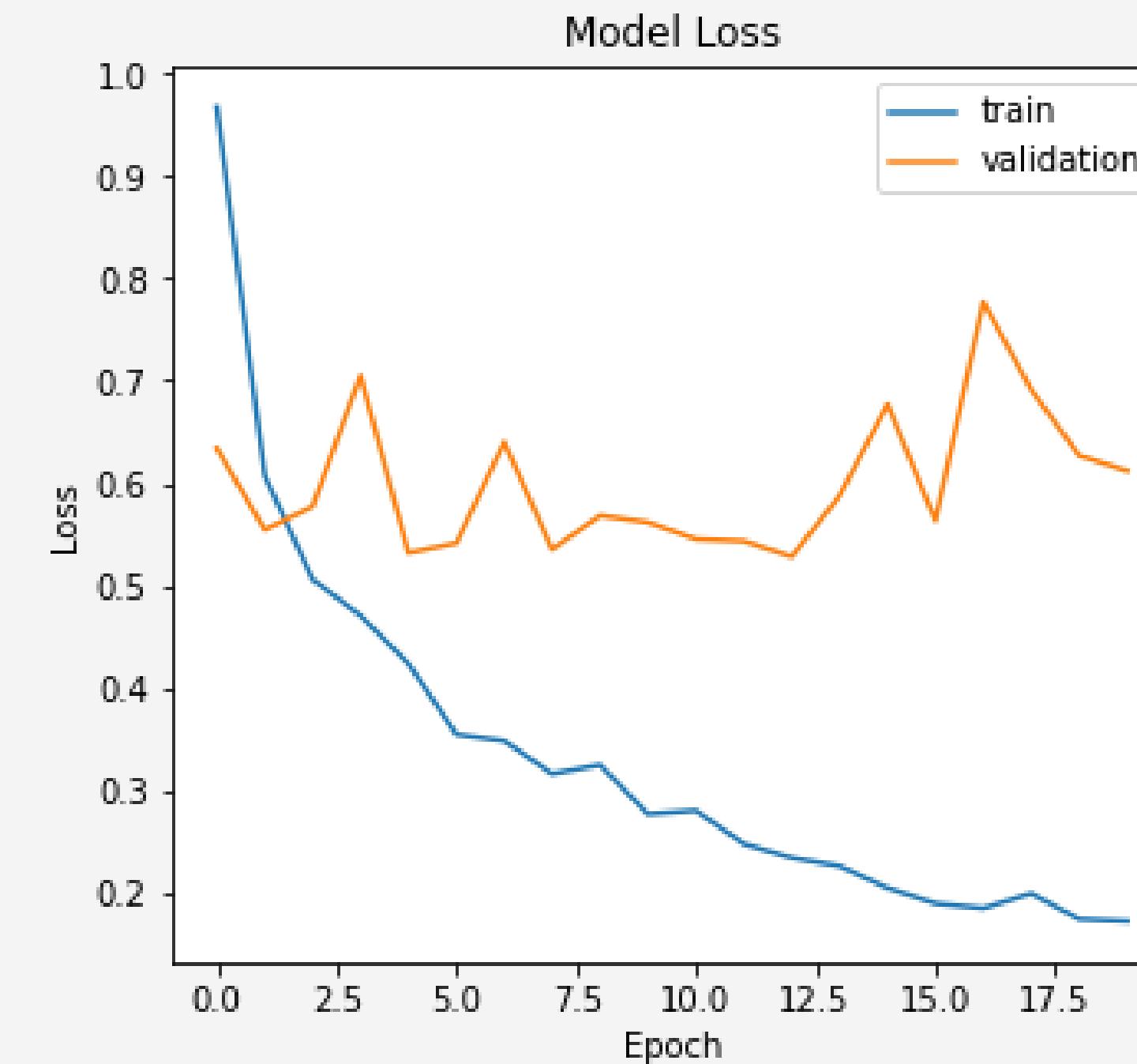
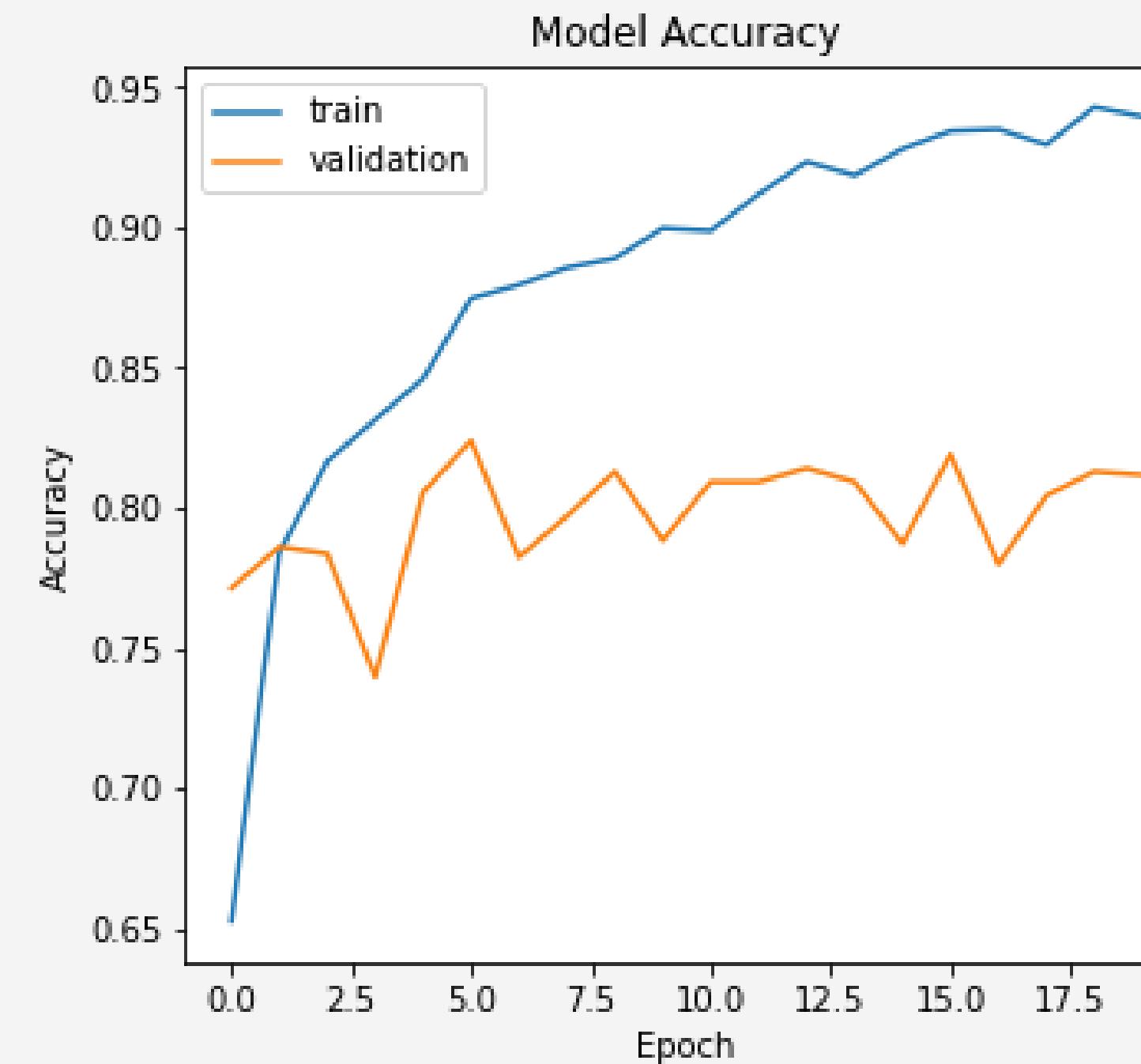
◆ **VGG16**

◆ **DenseNet121**

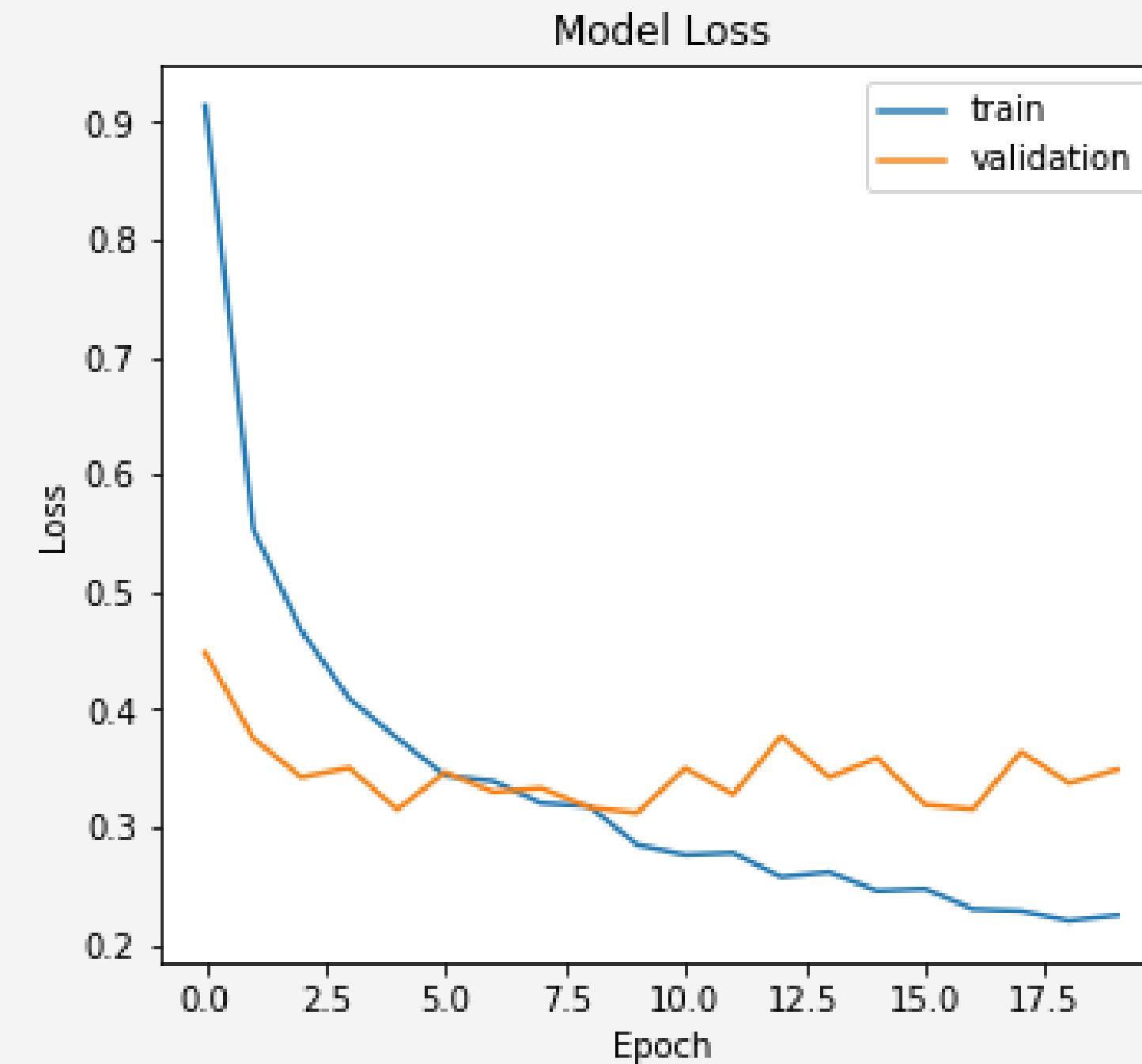
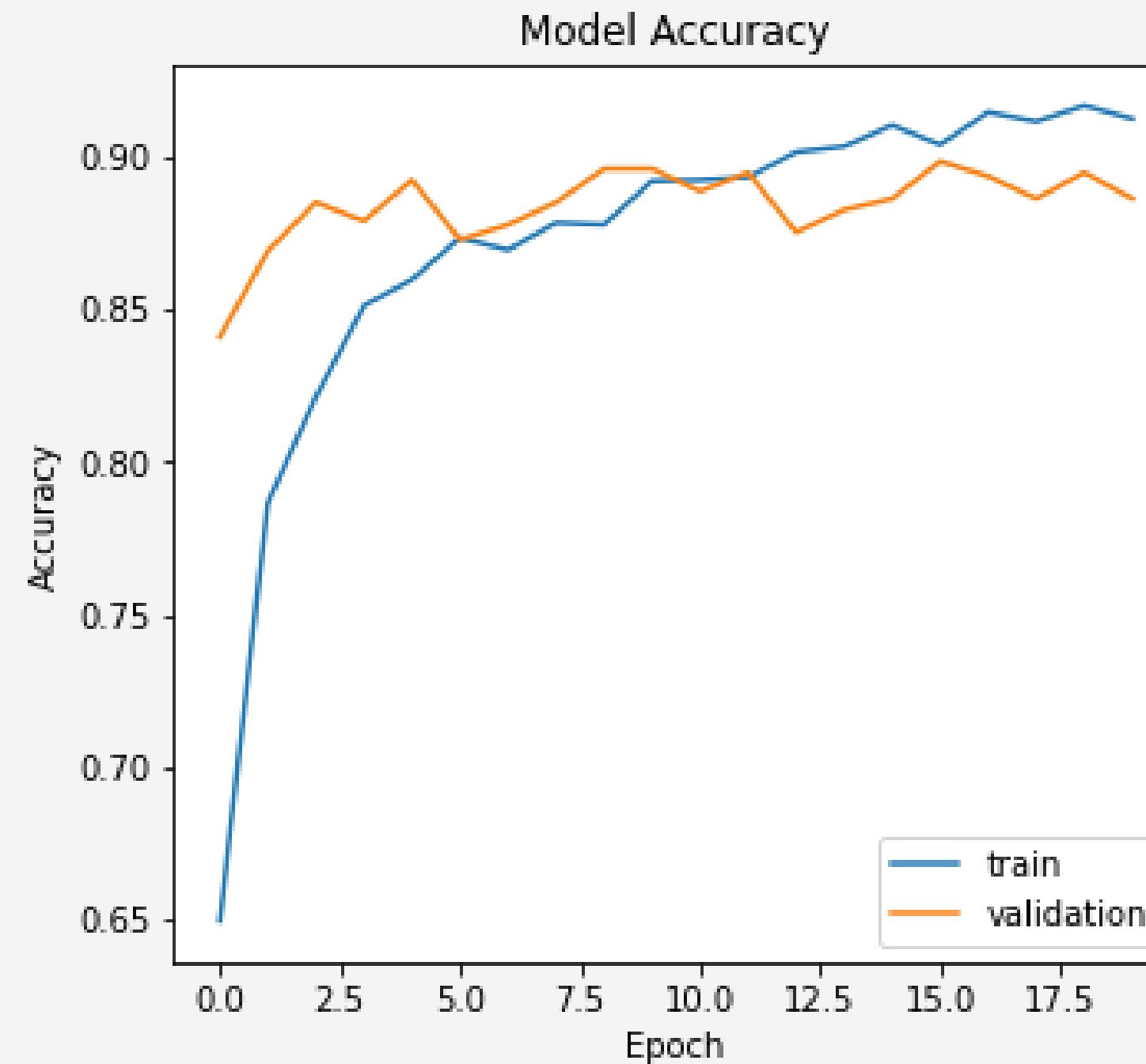
CNN



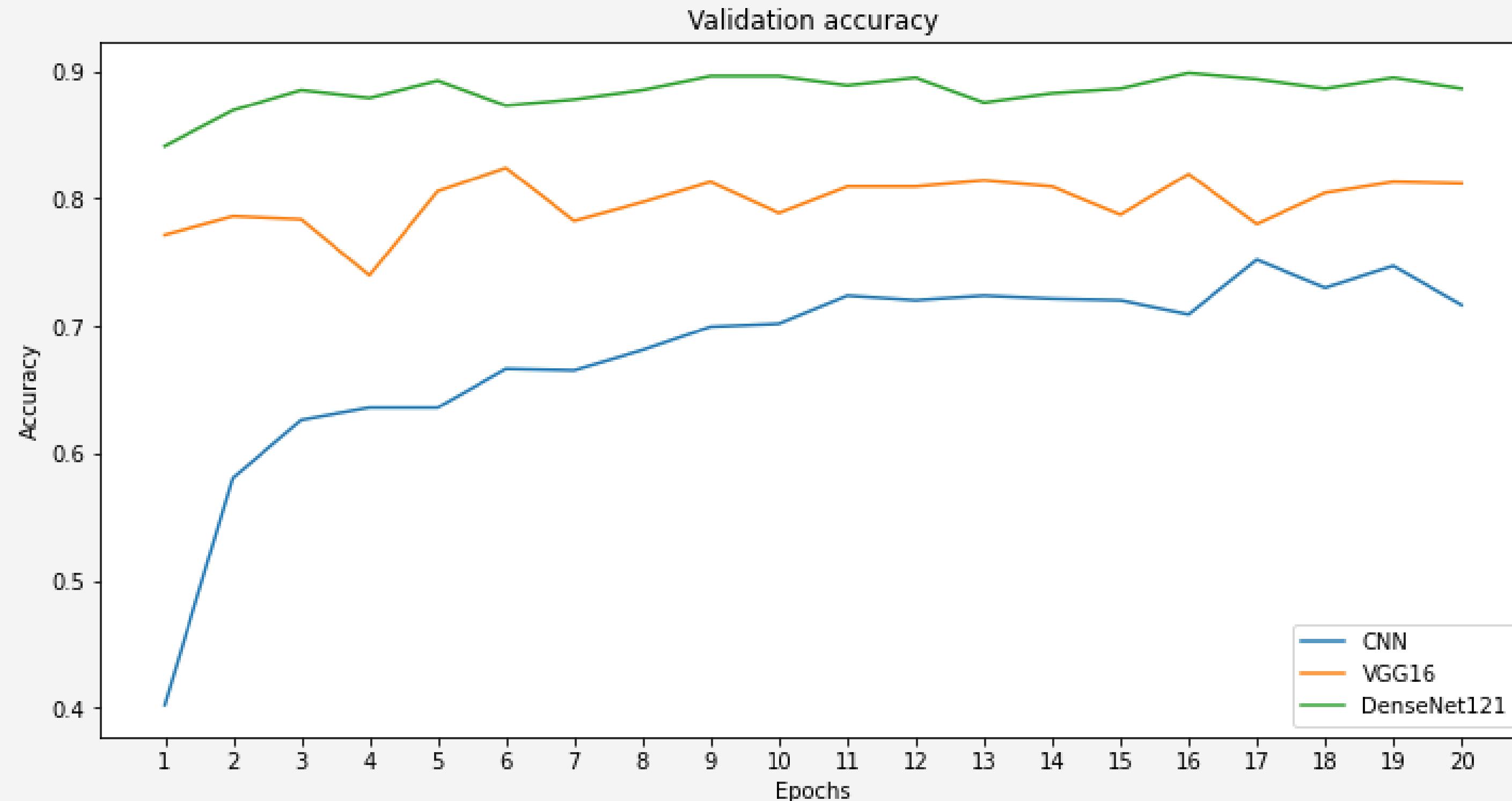
VGG16



DenseNet121



Best Performance



Test

```
▶ class_indices = train_data.class_indices
  class_indices = dict((v,k) for k,v in class_indices.items())
  class_names = list(class_indices.values())

  # load image
  img_path = '/content/drive/MyDrive/Dataset/Flower/test/tulip/7003964080_4566470798_n.jpg'
  img = image.load_img(img_path, target_size=(224, 224)) # resize the image to 224 x 224
  x = image.img_to_array(img)
  x = np.expand_dims(x, axis=0)

  # predict
  preds = model_densenet_nt.predict(x, batch_size=32)
  class_idx = np.argmax(preds)

  # get actual class name from image path
  actual_class_name = img_path.split('/')[-2]

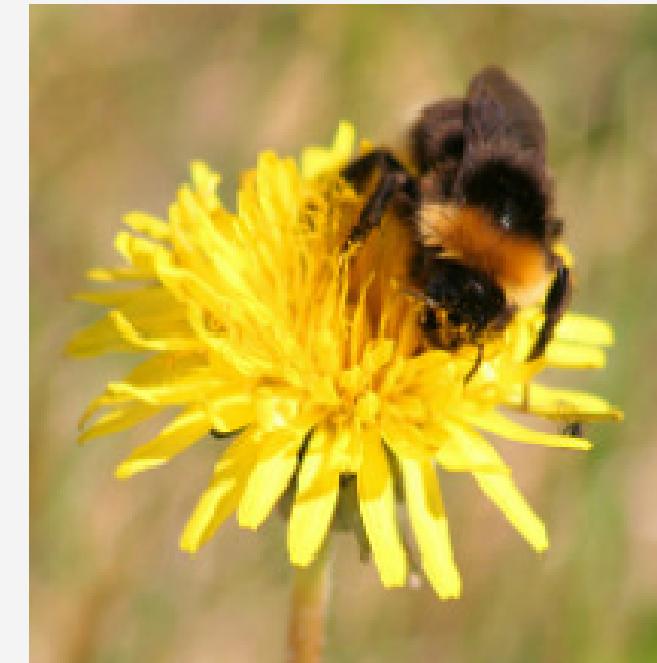
  # show image and prediction
  plt.imshow(img)
  plt.axis('off')
  plt.title(f"Actual flower class: {actual_class_name} | Predicted flower class: {class_names[class_idx]}")
  plt.show()
```

Test

Actual flower class: daisy
Predicted flower class: daisy



Actual flower class: dandelion
Predicted flower class: dandelion



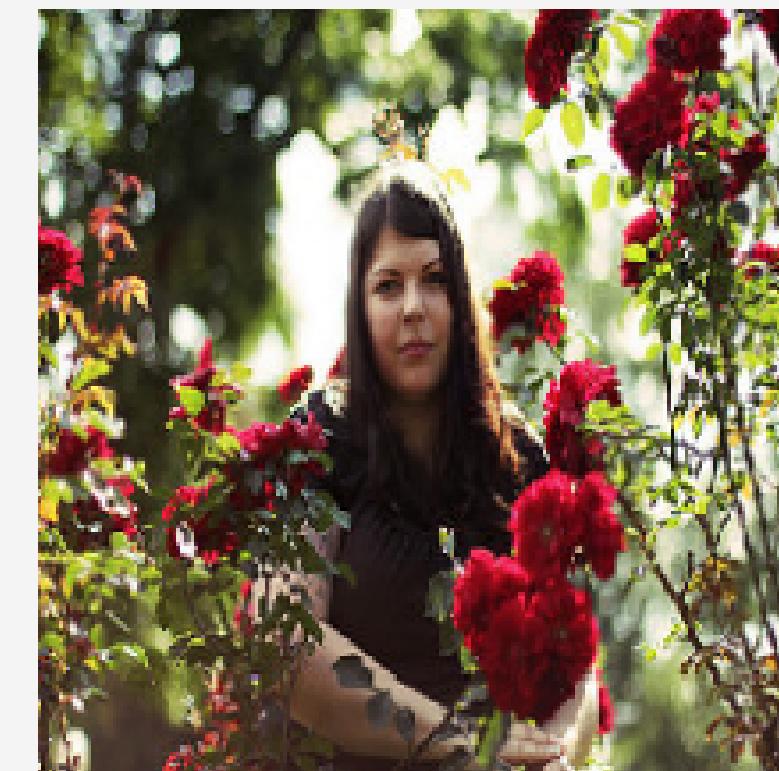
Actual flower class: sunflower
Predicted flower class: sunflower



Actual flower class: tulip
Predicted flower class: tulip



Actual flower class: rose
Predicted flower class: rose

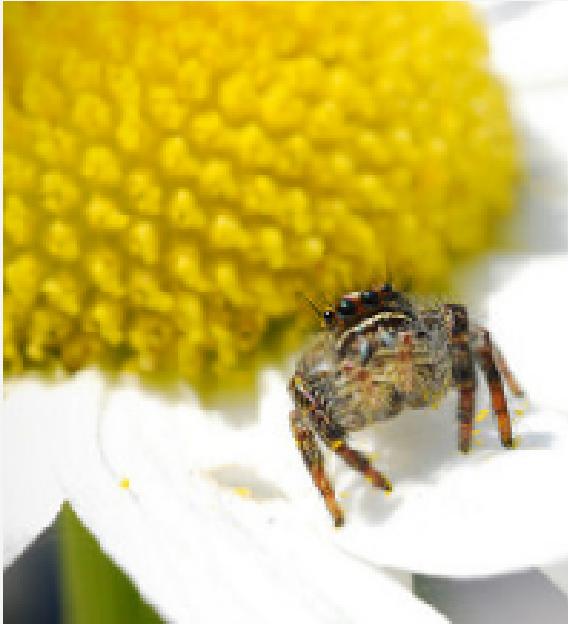


Test

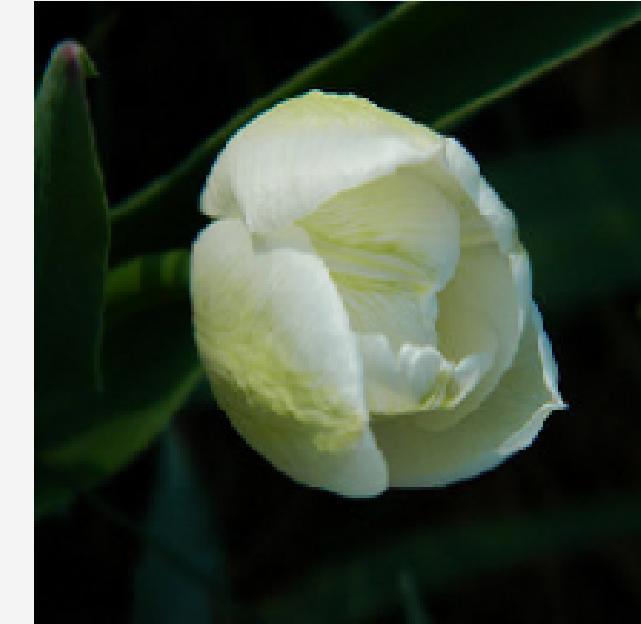
Actual flower class: rose
Predicted flower class: sunflower



Actual flower class: daisy
Predicted flower class: dandelion



Actual flower class: tulip
Predicted flower class: rose



Actual flower class: daisy
Predicted flower class: tulip



Actual flower class: sunflower
Predicted flower class: daisy



Actual flower class: dandelion
Predicted flower class: daisy



Conclusion

- ◆ All three CNN models can be used for flower classification
- ◆ The best model is Densenet with an accuracy of around 90%

Recommendation

- ◆ The dataset can be expanded to increase the number of types of flowers that can be classified

Thank You

Thank you for reviewing my portfolio. I look forward to potentially working with you in the future. If you require any further information or have any questions, please feel free to contact me via email at Adrianfirmansyah33@gmail.com.