Aim: To classify a given flower into one of the 5 classes: Daisy, Dandelion, Rose, Tulip and Sunflower. In simple words, this is a CNN architecture for flower recognition using keras.

Data:

The data for this task consists of 5 folders, each with images of a specific type of flower.

Link: https://www.kaggle.com/alxmamaev/flowers-recognition

General Idea:

The data preprocessing involves one-hot-encoding the labels, splitting the data into training set and test set and finally, image generation for more data. We create a CNN model with 4 Convolutional layers, 3 Max Pooling layers, 2 Dense layers and 1 Flatten layer. We use an Adam optimizer for adaptive learning rate.

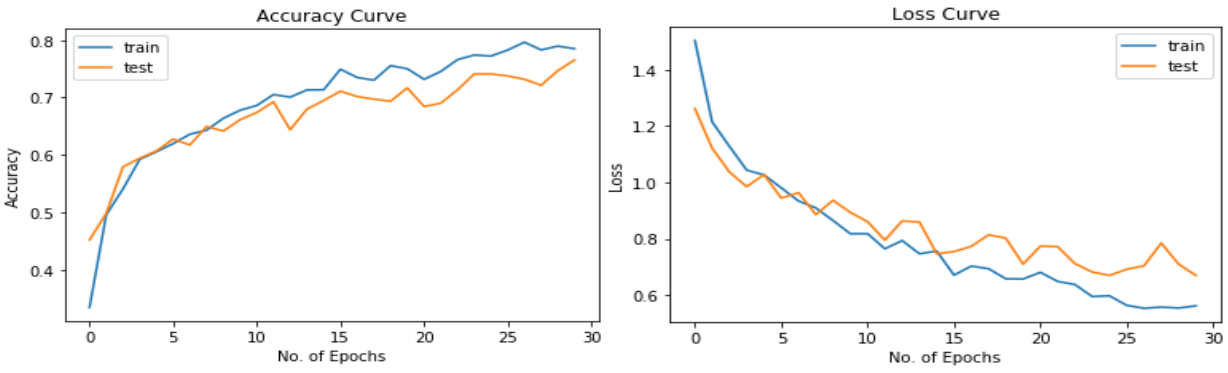
Procedure:

Step 1: Import required modules

Step 2: Data Preparation

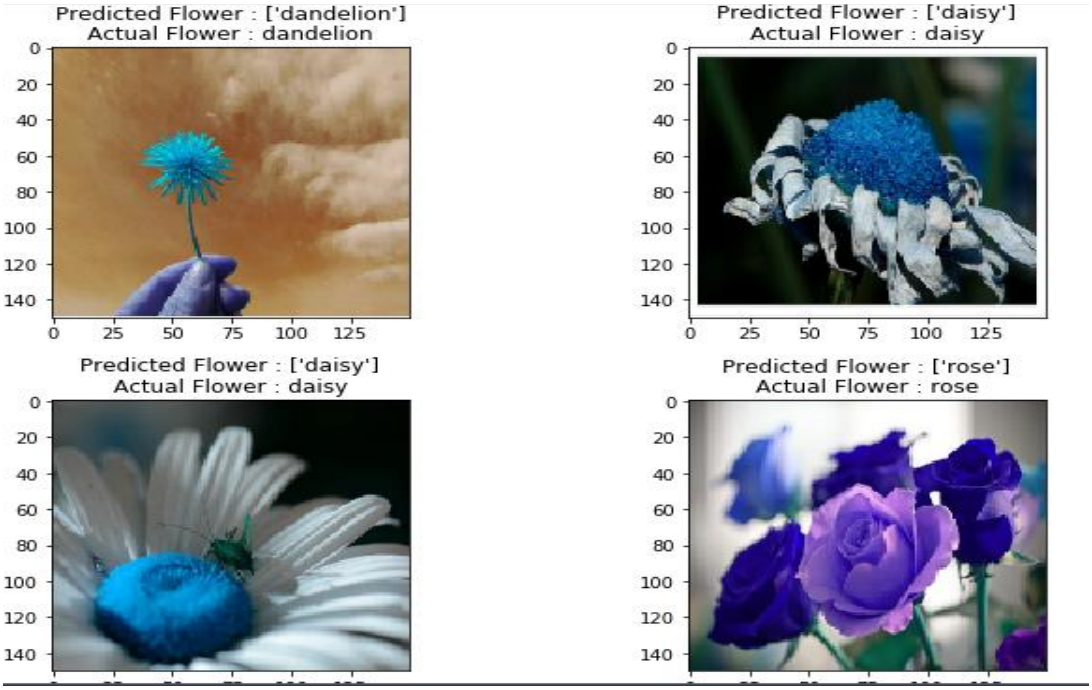
Step 3: Creating the model

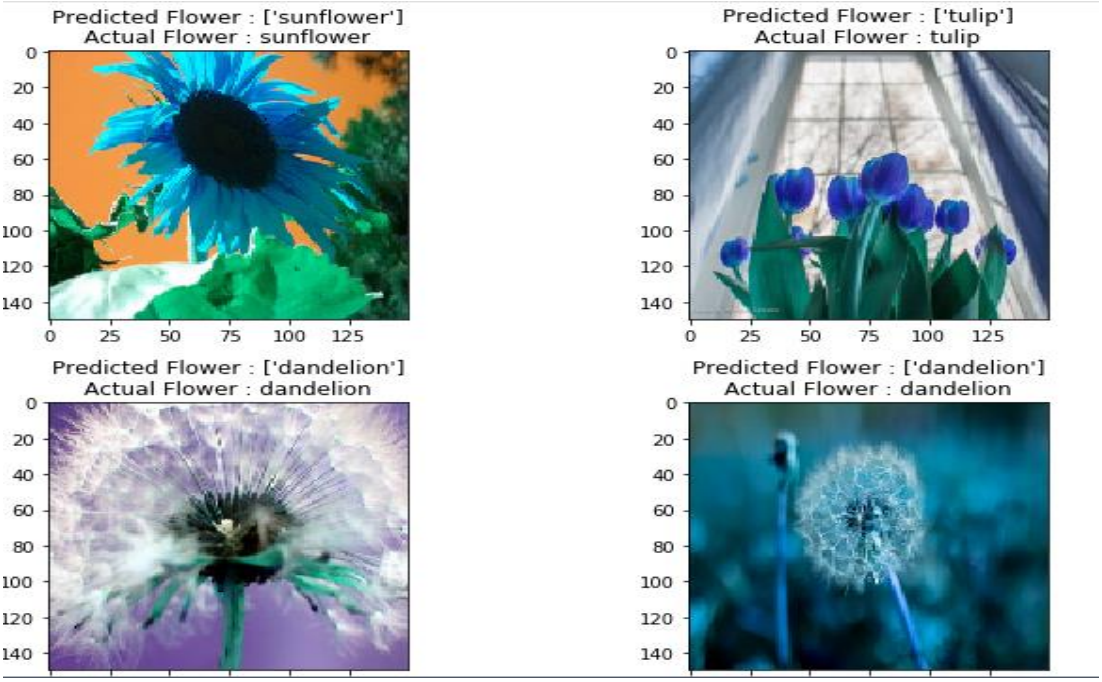
Step 4: Model Evaluation



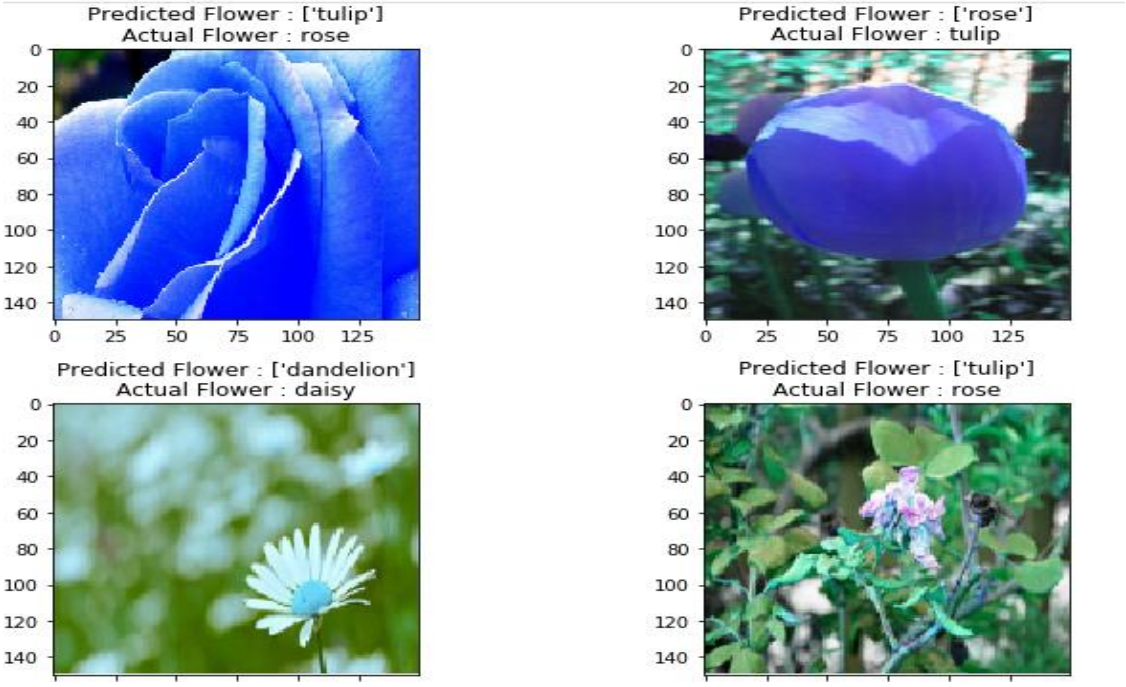
Step 5: Display results

1) Correctly Classified Images





2) Incorrectly classified images



Reasons for incorrectly classified images:

1. Data may not be correct or misplaced.
2. Flowers are not limited to a given color.
3. A particular variant of a flower can have a shape similar as some other
4. More noise or improper scaling of image.
5. Inappropriate features or low light intensity.

Drawbacks:

1. Time taking process due to more features and lesser learning rate.
2. A model with more convolutional layers can classify better.
3. Labelled data is scarce.
4. Normalization is required to prevent overfitting.
5. Finding the best architecture is trail and error method.