Instructions to Run the Provided Codes (Jupyter Notebook)

This guide explains how to execute five different machine learning and computer vision models using Jupyter Notebook (.ipynb format).

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1. CNN Premodel - 9 Epochs

Description:

CNN model fine-tuned on a dataset using a pre-trained base (like ResNet, VGG), trained for 9 epochs.

Steps to Run:

- Open Anaconda Prompt or Terminal.
- Install required libraries:

pip install tensorflow keras numpy matplotlib

- Launch Jupyter Notebook:

jupyter notebook

- Open the notebook file (e.g., cnn_premodel_9epochs.ipynb).
- Run the notebook cell by cell (Shift + Enter).

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2. CNN - 15 Epochs

Description:

CNN model trained for 15 epochs for potentially better learning compared to 9 epochs.

Steps to Run:

- Ensure all packages are installed:

pip install tensorflow keras numpy

- Launch Jupyter Notebook:

jupyter notebook

- Open the file (e.g., cnn_15epochs.ipynb).

- Execute each cell in order.

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3. CNN_Fruit_CLAHE

Description:

CNN model for fruit classification, applying CLAHE (Contrast Limited Adaptive Histogram Equalization) for image preprocessing.

Steps to Run:

- Install dependencies:

pip install tensorflow keras opencv-python numpy

- Start Jupyter Notebook:

jupyter notebook

- Open cnn_fruit_clahe.ipynb.

- Make sure fruit images are correctly loaded and CLAHE preprocessing steps are run.

- Execute the cells sequentially.

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4. K-Nearest Neighbors (KNN)

Description:

Implementation of KNN algorithm for classification tasks based on feature similarity.

Steps to Run:

- Install necessary libraries:

pip install scikit-learn numpy matplotlib

- Launch Jupyter Notebook:

jupyter notebook

- Open the notebook (e.g., knn.ipynb).

- Run each block of code one after another.

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5. Matching by Correlation

Description:

Matching images or regions by computing correlation between them (useful in template matching).

Steps to Run:

- Install OpenCV and Numpy:

pip install opencv-python numpy

- Launch Jupyter Notebook:

jupyter notebook

- Open the notebook (e.g., matching_by_correlation.ipynb).

- Run all cells to perform matching.

dataset link:-

--- https://www.kaggle.com/datasets/sriramr/fruits-fresh-and-rotten-for-classification