DATASET LINK:-

https://www.kaggle.com/datasets/mohamedmustafa/real-life-violence-situations-dataset

Dataset Contains 1000 Violence and 1000 non-violence videos

Installation steps:-

1. Set Up Python Environment

- Ensure you have Python installed (preferably version 3.7 or higher).
- You can download Python from Python's official website or use Anaconda for easier package management.

2. Install Essential Libraries

- Use `pip` to install the required libraries. You can open a terminal or use a cell in Jupyter Notebook to run these commands.

 # For deep learning and data processing
pip install tensorflow keras numpy opencv-python-headless

 # For data visualization and analysis
pip install matplotlib seaborn scikit-learn

 # For image augmentation
pip install imgaug

 # Additional utility libraries
pip install pillow

These libraries include:

- **TensorFlow**: for deep learning model training and evaluation.
- **Keras**: for building and training neural networks.
- **NumPy**: for numerical operations on arrays.
- **OpenCV**: for video and image processing.
- **Matplotlib & Seaborn**: for data visualization.
- **Scikit-learn**: for metrics, model evaluation, and additional utilities.
- **Imgaug**: for image augmentation to improve model generalization.
- **Pillow**: for image manipulation.

3. Setting Up Google Colab (if using)

- If using Google Colab, you may need to mount your Google Drive to save or load data:

  ```
  from google.colab import drive
  drive.mount('/content/drive')
  ```

- For displaying images in Colab using OpenCV, use `cv2_imshow`:

  ```
  from google.colab.patches import cv2_imshow
  ```

4. Check for GPU/TPU Support (Optional)

- If your project requires high performance, check for GPU or TPU support.
- In Google Colab, go to **Runtime > Change runtime type** and select **GPU** or **TPU**.
- You can verify the GPU with:

  ```
  import tensorflow as tf
  print("Num GPUs Available: ", len(tf.config.list_physical_devices('GPU')))
  ```

5. Set Up Jupyter Notebook (if using locally)

- If you haven't already installed Jupyter Notebook, install it with:

  ```
  pip install jupyter
  ```

- Start Jupyter Notebook by running:

  ```
  jupyter notebook
  ```

6. Download and ensure MobileNetV2 Pre-trained Model is Available

- When using MobileNetV2 for transfer learning, Keras will automatically download the model weights during the first model load if they're not already available locally.

7. Dataset Preparation

- Place your labeled video dataset in a specific directory (e.g., "Violence" and "NonViolence" folders).
- Ensure the dataset path is correctly set in your code to match your directory structure.

8. Configuration for Jupyter Notebook or Colab

- Set %matplotlib inline in a Jupyter Notebook or Google Colab to enable inline plotting:

  ```
  %matplotlib inline
  ```

9. Optional: Create a Virtual Environment

- It's good practice to create a virtual environment to isolate project dependencies:

  ```
  python -m venv my_project_env
  source my_project_env/bin/activate  # On Mac/Linux
  my_project_env\Scripts\activate     # On Windows
  ```

- After activating the environment, install all necessary libraries within it.

10. Verify Installation

- After installation, run the following lines to check that the main libraries are working:

  ```
  import tensorflow as tf
  import keras
  import numpy as np
  import cv2
  import matplotlib.pyplot as plt
  ```