Requirements

To efficiently run this code, ensure your system meets the following requirements:

Hardware

- **Memory**: At least 8GB of RAM (16GB recommended for larger datasets).
- **Storage**: Sufficient storage for datasets and model checkpoints (minimum 10GB free space).

Software

- **Operating System**: Linux, macOS, or Windows.
- **Python Version**: Python 3.8 or later

Libraries

Install the required Python libraries by running the below command:

- **pip install tensorflow numpy scikit-learn matplotlib**

Dataset

- Organize your dataset with the following structure:

Dataset/

    Train/

        Class1/

            Video1/

                Frame1.png

                Frame2.png

Test/

Class1/

Video1/

Frame1.png

Frame2.png

Output

- Training and validation accuracy and loss plots.
- Test set performance metrics including F1 score and AUC.

Troubleshooting

- Low GPU Memory: Reduce Batch_size or frame_size if encountering memory issues.
- Overfitting: Use data augmentation or adjust regularization settings (e.g., dropout rate).