Training Report – Day 21

Topic Covered Today:

- Introduction to **Final Project: Facial Emotion Detection System**
- Understanding project workflow and dataset preparation
- Installing required libraries and setting up environment

Key Learning:

Today, I began working on my **final AI/ML project – Facial Emotion Detection**, which aims to identify human emotions such as *happy*, *sad*, *angry*, *surprise*, and *neutral* from facial expressions using image data.

Objective:

To build a system that can automatically recognize a person's emotion from a live camera feed or image input using **Deep Learning and Computer Vision techniques**.

Project Workflow Overview:

1. **Dataset Collection:** Using Kaggle's *Facial Expression Recognition (FER2013)* dataset containing thousands of labeled images.
2. **Data Preprocessing:**
    - Converting images to grayscale
    - Resizing all images to the same dimensions (48×48)
    - Normalizing pixel values
3. **Model Building:** Using **Convolutional Neural Networks (CNNs)** for emotion classification.
4. **Training and Testing:** Splitting dataset into training and test sets to evaluate accuracy.
5. **Deployment:** Using webcam or static images for real-time emotion prediction.

Environment Setup:

Installed and configured the following libraries in Jupyter Notebook / VS Code:

```
pip install tensorflow keras opencv-python numpy matplotlib pandas
```

Key Concepts Revised:

- Image preprocessing

- CNN architecture for feature extraction
- Categorical classification using Softmax activation

Activities / Assignments:

- Defined project goal and workflow.
- Downloaded and explored **FER2013 dataset**.
- Installed all necessary libraries for TensorFlow and OpenCV.
- Created project folder and initialized training script in Jupyter Notebook.

Personal Reflection for Day 21:

Starting this project was exciting because it combines **AI, deep learning, and human emotion recognition** — one of the most practical and interesting ML applications. I gained a clear understanding of how to structure a deep learning project from scratch.