Project Proposal: Face Emotion Recognition

Project Title:
Facial Emotion Recognition Using Deep Learning

1. Objective

To develop a deep learning-based application that detects and classifies human emotions from facial images using Convolutional Neural Networks (CNN) and provides results through a web interface built with Streamlit.

2. Tools & Technologies

- Programming Language: Python
- Libraries: TensorFlow, Keras, OpenCV, NumPy, Streamlit, Matplotlib
- Development Environment: Jupyter Notebook, VS Code
- Dataset: FER2013 (grayscale 48x48 images categorized by emotion)
- Deployment: Streamlit (Localhost / Streamlit Cloud)

3. Workflow

1. Prepare dataset folders for training and validation
2. Preprocess the images (resize to 48x48, grayscale)
3. Design and train a CNN model with dropout and batch normalization
4. Save the trained model as face_emotion_classification.keras
5. Build a Streamlit app to allow user input and display prediction result
6. (Optional) Deploy the app using Streamlit Cloud for public access

4. Expected Output

- A .keras model capable of classifying 7 facial emotions
- An interactive app that takes image input and shows detected emotion
- Supporting files: presentation, flowchart, README, and video demo

5. Deliverables

- Trained Model File (.keras)
- Source Code (Jupyter Notebook & app.py)
- Project Presentation Slide (PPTX/PDF)
- Flowchart of Workflow

- Demo Video
- GitHub Repository with README
- Proposal Document (This file)

6. Emotion Classes

- Angry
- Disgust
- Fear
- Happy
- Neutral
- Sad
- Surprise

7. Developed By

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