Face Mask Detection with Live Alert System

Introduction:

This project aims to develop a real-time face mask detection system using computer vision and deep learning. The goal is to detect whether individuals are wearing a face mask in public areas to support safety regulations.

Abstract:

The system uses a Convolutional Neural Network (CNN) model to classify faces as "Masked" or "Unmasked." OpenCV is used for real-time face detection and image processing, and the Haar Cascade Classifier detects faces from a live webcam feed. The model is trained on a labeled dataset of masked and unmasked face images.

Tools Used:

- Python
- TensorFlow/Keras
- OpenCV
- Haar Cascade Classifier
- Jupyter Notebook

Steps Involved:

1. Dataset collection from Kaggle (masked/unmasked faces)
2. Image preprocessing (resizing, normalization)
3. Model training using CNN
4. Integration with OpenCV for real-time webcam input
5. Face detection using Haar Cascade

6. Classification using trained CNN model

7. Displaying results and alerts based on detection

Conclusion:

The developed system is effective in identifying whether a person is wearing a face mask in real-time with good accuracy. This solution can be deployed in public areas to monitor compliance with mask regulations. It provides a practical example of combining computer vision and deep learning in a socially beneficial application.