FACIAL IMAGE ANALYSIS FOR GLASSES DETECTION

Enrollment no:54

P .Sriram - 2203A51516
P .Nagavardhan - 2203A51505

INTRODUCTION

Biometrics, user customization, and security all make extensive use of facial image analysis. The goal of this project is to use face photos to determine whether a person is wearing glasses. This technology uses image processing and machine learning approaches to recognize glasses accurately from a variety of angles and face types . The goal of this project is to develop a technology that can accurately detect glasses.

OVERVIEW

The dataset includes 3,562 photos of people , mostly from staff and colleges. The two classes in the dataset are with_glasses and without_glasses. There are 1,762 photos in the with_glasses class. This category depicts people in side-profile photos who are either wearing glasses or not.

PROBLEM STATEMENT

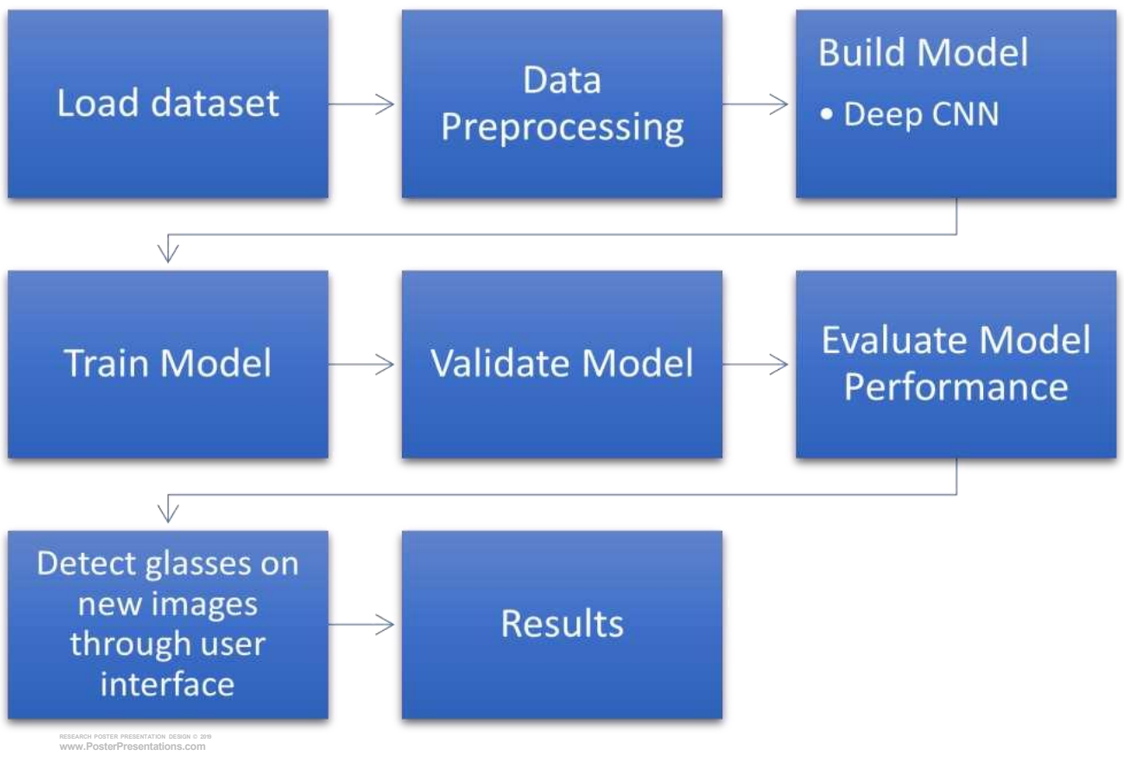
In applications such as biometric authentication, online tests, or secure access systems, glasses may make it more difficult to recognize face features and confirm identities. These systems may be less successful due to reflections or ostacles from glasses , which could result in inaccurate identification or an inability to record facial characteristics.

OBJECTIVES

Accurate Classification: Create a CNN model that can reliably differentiate between faces wearing and not wearing spectacles, with high recall and precision. **Detection in Real Time:** Make the model as fast and effective as possible so that it may be used in real-time applications such as user authentication and monitoring. **Robustness Across Variations:** Guarantee steady performance in spite of changes in illumination, facial features, picture angles, and eyeglass styles.

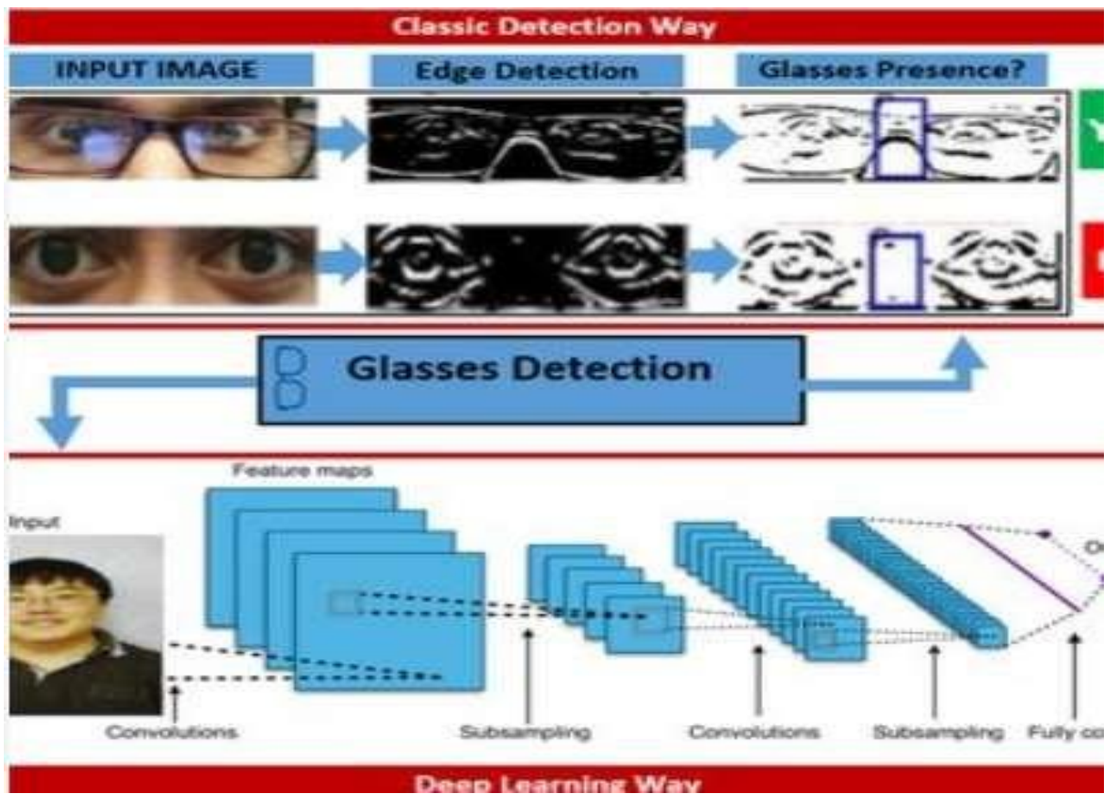
MODELS USED

Our deep learning strategy makes use of the Deep Convolutional Neural Network (Deep CNN) model, a kind of neural network that excels at handling data sequences like photographs.



LIMITATIONS

One of the biggest challenges in glasses recognition is the fluctuation of lighting conditions. In real-world scenarios where lighting conditions might change, shadows, reflections, and glare on the lenses can all impair the clarity of glasses .These charateristics may lead to detection errors since the model cannot distinguish the glasses from other facial features or background items.



PROPOSED METHODOLOGY

The research trains a deep CNN for glasses identification using a labeled dataset of facial pictures that have been preprocessed with augmentation, normalization and scaling . The model uses the Adam optimizer to optimize its softmax output for binary classification and convolutional layers for feature extraction. Real-time detection is made possible by a Gradio-based interface, and the trained model is optimized for accuracy before being used in scalable applications.

REFERENCES

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PROJECT GUIDE – Ms.Sudha Rani V, Associate.Prof.,CSAI Dept

CO-ORDINATOR – Md.Sallauddin,Prof.,CSAI Dept