# AI Project (AI101B)

## Even Semester

## Session 2024-25

**Facial Emotion Recognition using AI**

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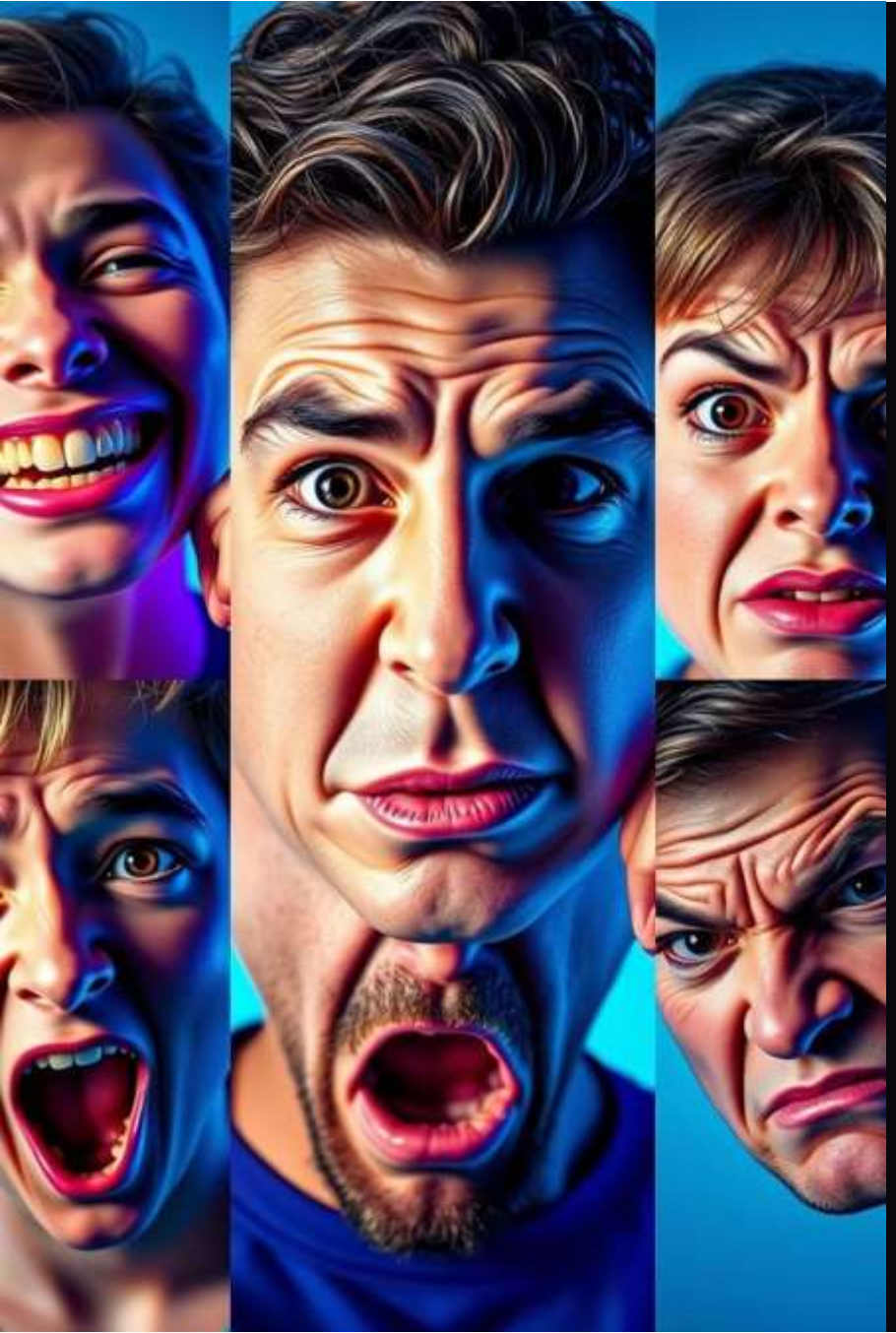
# Facial Emotion Recognition with DeepFace AI

Leveraging deep learning to detect emotions from facial expressions. Revolutionizing how humans interact with machines. Applications span healthcare, security, marketing, and more.



# Introduction to Facial Emotion Recognition (FER)

## What is FER?

Recognizing emotions from facial expressions using AI.

## Key Milestones

From early psychology research to advanced deep learning systems.

## Emotion Categories

Happy, sad, angry, surprise, fear, neutral, disgust.

## Significance

Helps AI better understand human feelings and behavior.

# DeepFace AI Library: An Overview

## Developed by Facebook AI

Open-source library for advanced face recognition tasks.

## DeepFace Model Accuracy

Reached 97.35% accuracy on the Labeled Faces in the Wild benchmark.

## Capabilities

- Face detection
- Emotion recognition

# DeepFace Architecture: Key Components

## CNN Models

Powerful convolutional neural networks extract facial features accurately.

## Training Data

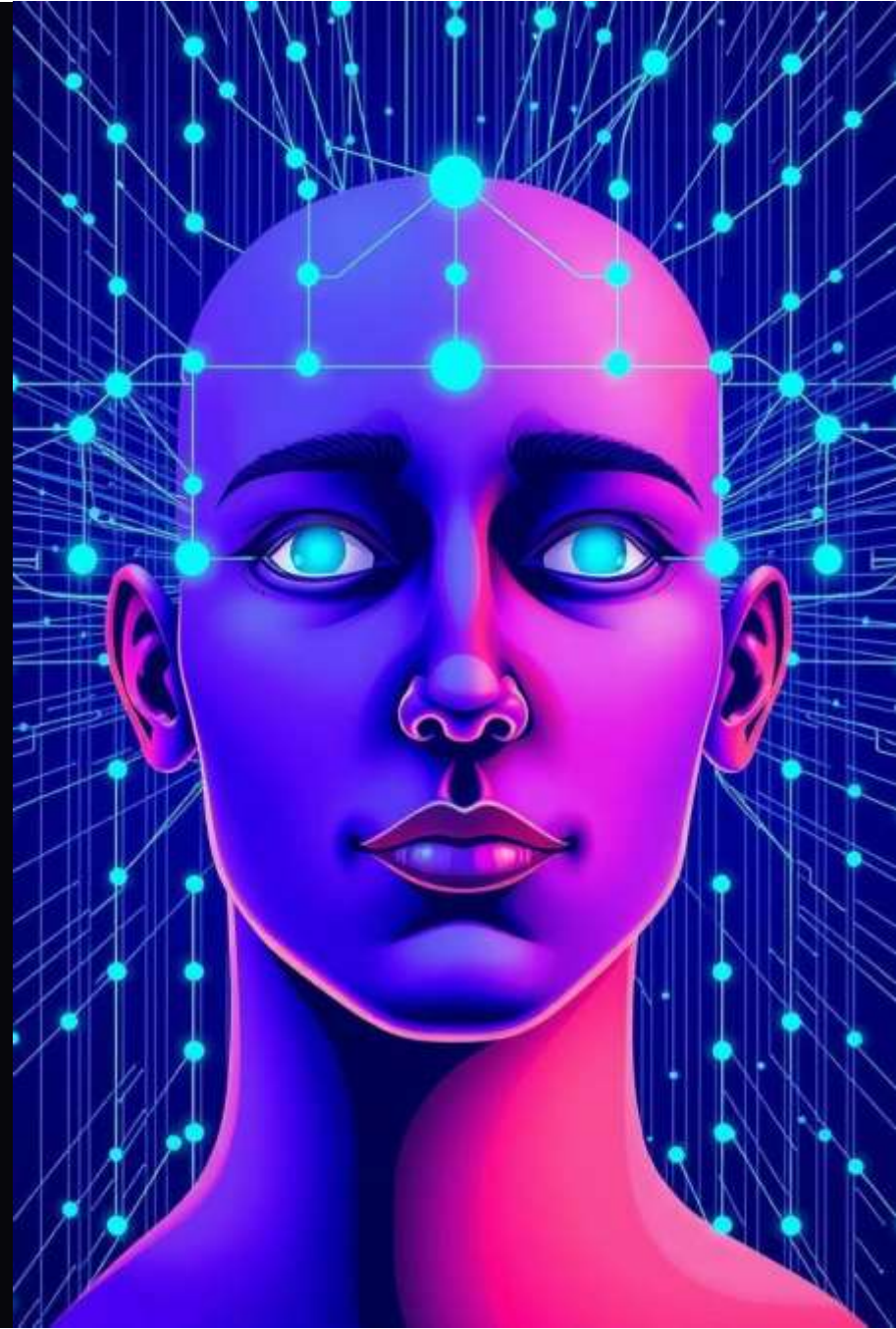
Millions of facial images used to train robust models.

## Transfer Learning

Leverages pre-trained models to improve performance and reduce training time.

## Emotion Classification

Softmax layer assigns probabilities to emotion categories.



# Implementing FER with DeepFace AI

1

## Installation

Install via pip: pip install deepface

2

## Simple Code

Use DeepFace.analyze('img.jpg', actions=['emotion']) to detect emotions.

3

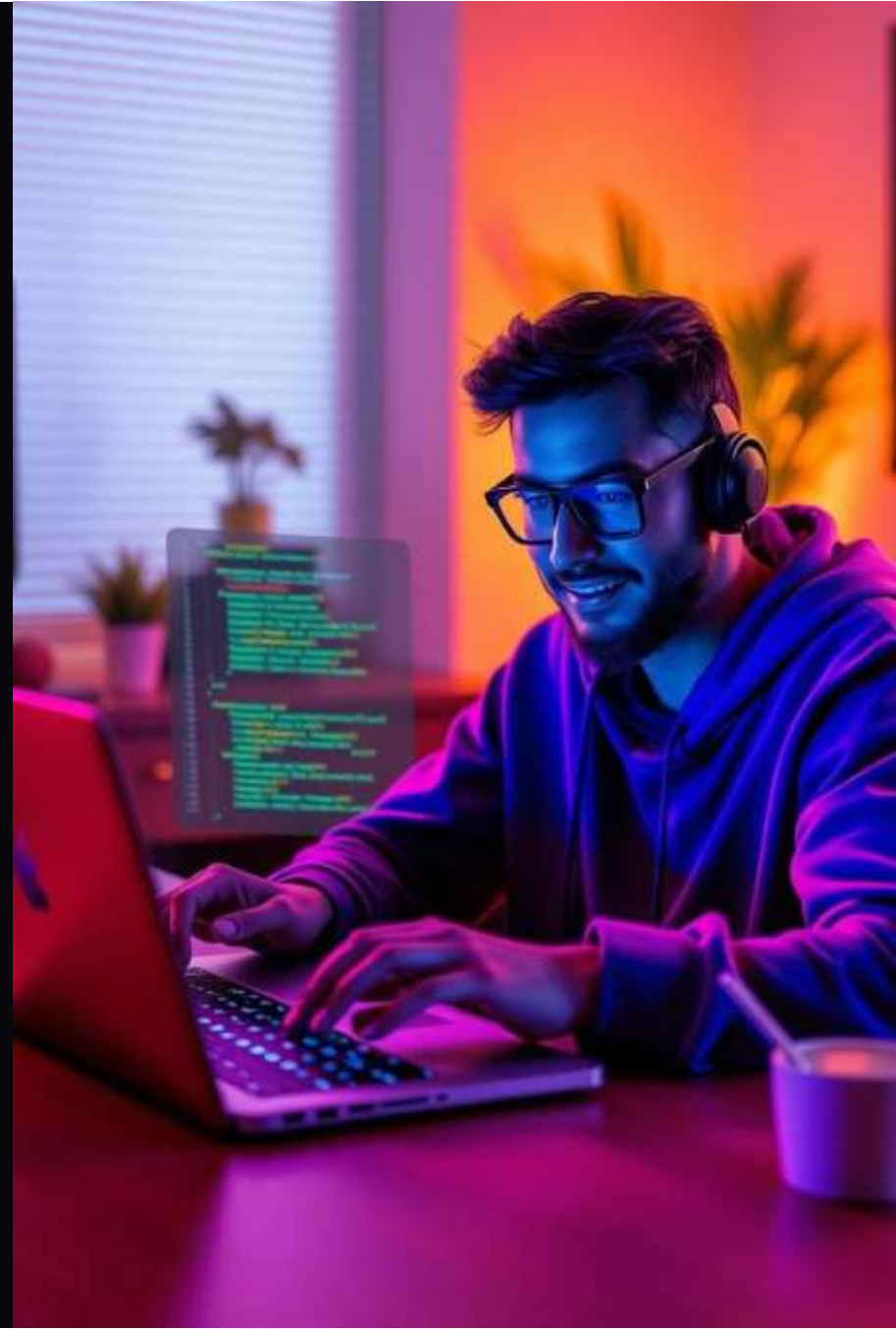
## Preprocessing

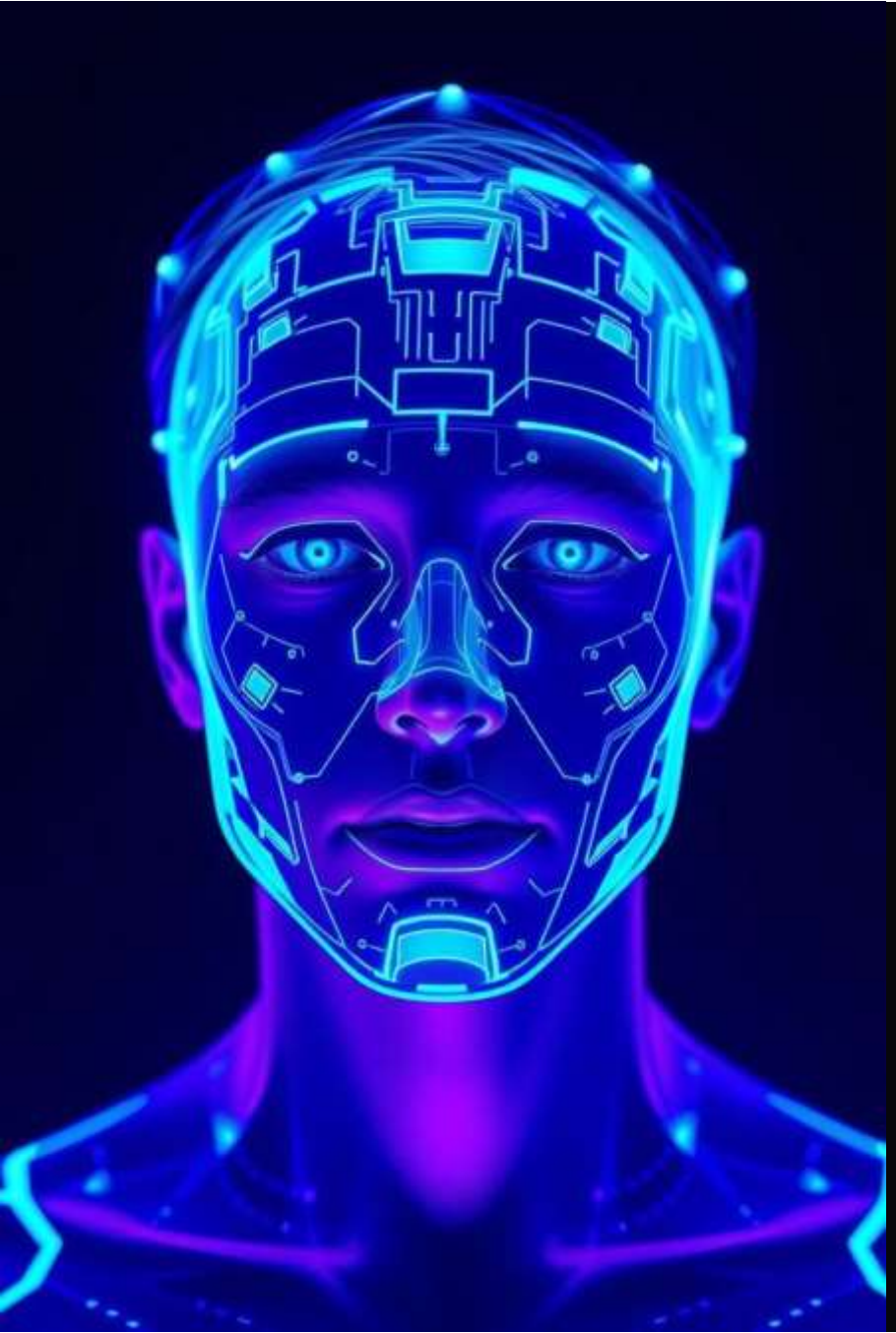
Ensure images are properly cleaned and aligned for best results.

4

## Customization

Fine-tune models for specific applications and improved accuracy.





# Conclusion: The Future of FER

## Ethical Considerations

Addressing privacy and bias in emotion recognition.

## Advancements Ahead

Continued progress in emotion AI and deeper understanding.

## Call to Action

Explore DeepFace AI9s capabilities for your projects.

## Impact

Transforming industries and enhancing human-computer interaction.