

Facial Recognition System

Using OpenCV and CNN

01

Introduction

While music genre plays an enormous role in building and displaying social identity, the emotional expression of a song and — even more importantly — its emotional impression on the listener is often underestimated in the domain of music preferences.

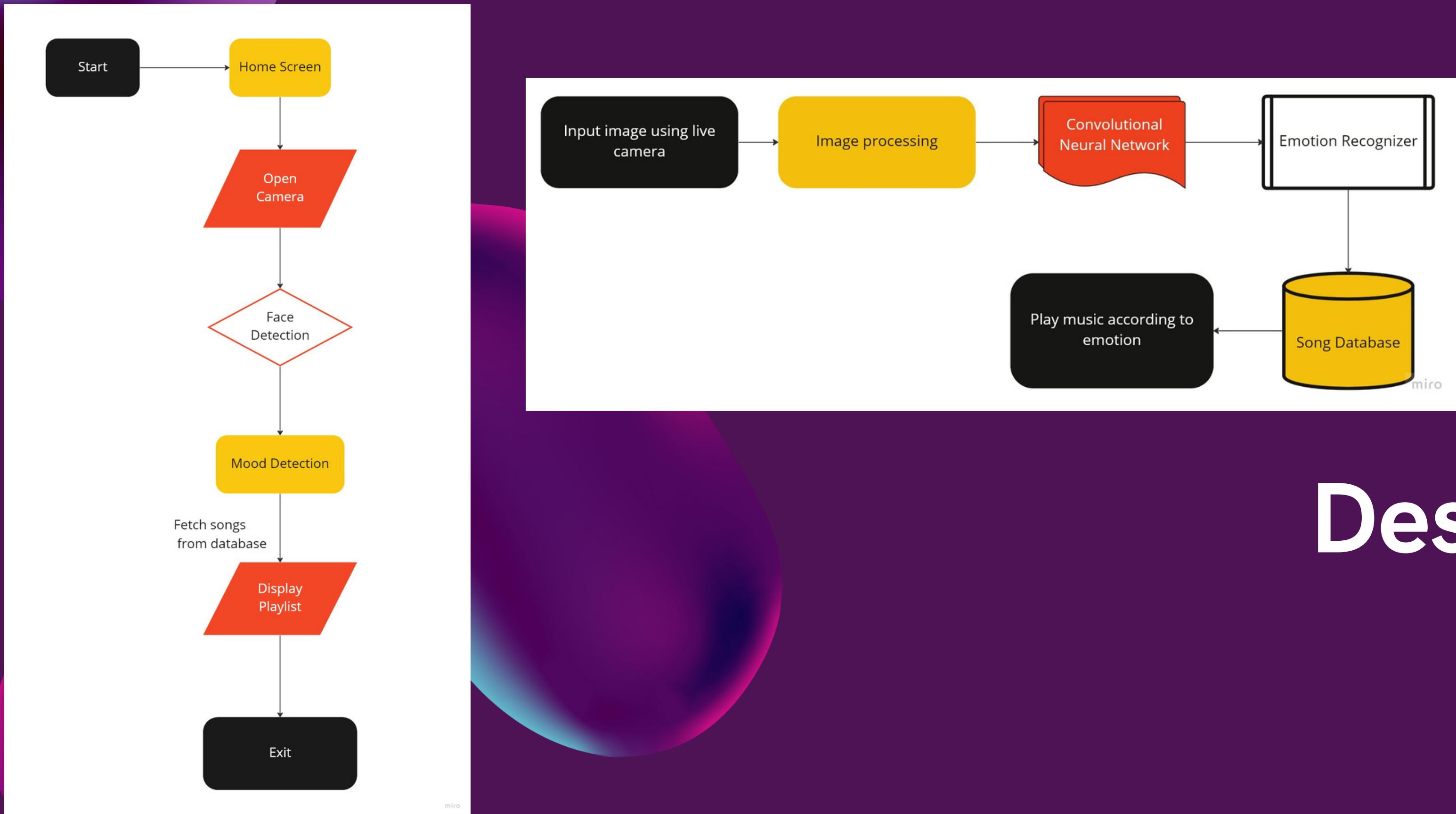
In this work, the aim is to create a music recommendation system/music player which will detect the user's face, identify the current mood and then recommend a playlist based on the detected mood.

02

Why CNN?

Compared to its predecessors, the main advantage of CNN is that it automatically detects the important features without any human supervision. This is why CNN is an ideal solution to computer vision and image classification problems.

Design



04 Training the Model

```
emotion_model = Sequential()

emotion_model.add(Conv2D(32, kernel_size=
|   3, 3), activation='relu', input_shape=(48, 48, 1)))
emotion_model.add(Conv2D(64, kernel_size=(3, 3), activation='relu'))
emotion_model.add(MaxPooling2D(pool_size=(2, 2)))
emotion_model.add(Dropout(0.25))
```

```
emotion_model.compile(loss='categorical_crossentropy', optimizer=Adam(
|   lr=0.0001, decay=1e-6), metrics=['accuracy'])

emotion_model_info = emotion_model.fit_generator(
|   train_generator,
|   steps_per_epoch=28709 // 64,
|   epochs=75,
|   validation_data=val_generator,
|   validation_steps=7178 // 64
| )
```

Accuracy of Existing Algorithms

S.No	Existing Algorithms	Accuracy (%)
1.	Eigenface based Algorithm	96%
2.	ANN based Algorithm	84.6%
3.	AdaBoost Algorithm	80%
4.	Hybrid Approach of Music Recommendation	80.7%
5.	A DL Approach to Music Recommendation System based on Facial Emotion Recognition	93.7%

06

References

Author Title Year	Advantages	Disadvantages	How to overcome disadvantages?
AUTHOR: JANVI PATEL TITLE: MOOD BASED MUSIC RECOMMENDATION SYSTEM YEAR : 2021	CUSTOMER SATISFACTION	COLD START PROBLEMS IN COLLABORATIVE FILTERING	DEVELOPMENT OF A HYBRID RECOMMENDATION SYSTEMS
AUTHOR: DENY JOHN SAMUEL TITLE: MUSIC RECOMMENDATION SYSTEM YEAR : 2020	ACCURATE CLASSIFICATION	LACK OF EXPRESSION THROUGH FACIAL EMOTION	USE OF EMOJIS

Thank You!