

FACIAL EMOTION RECOGNITION



Face Detection

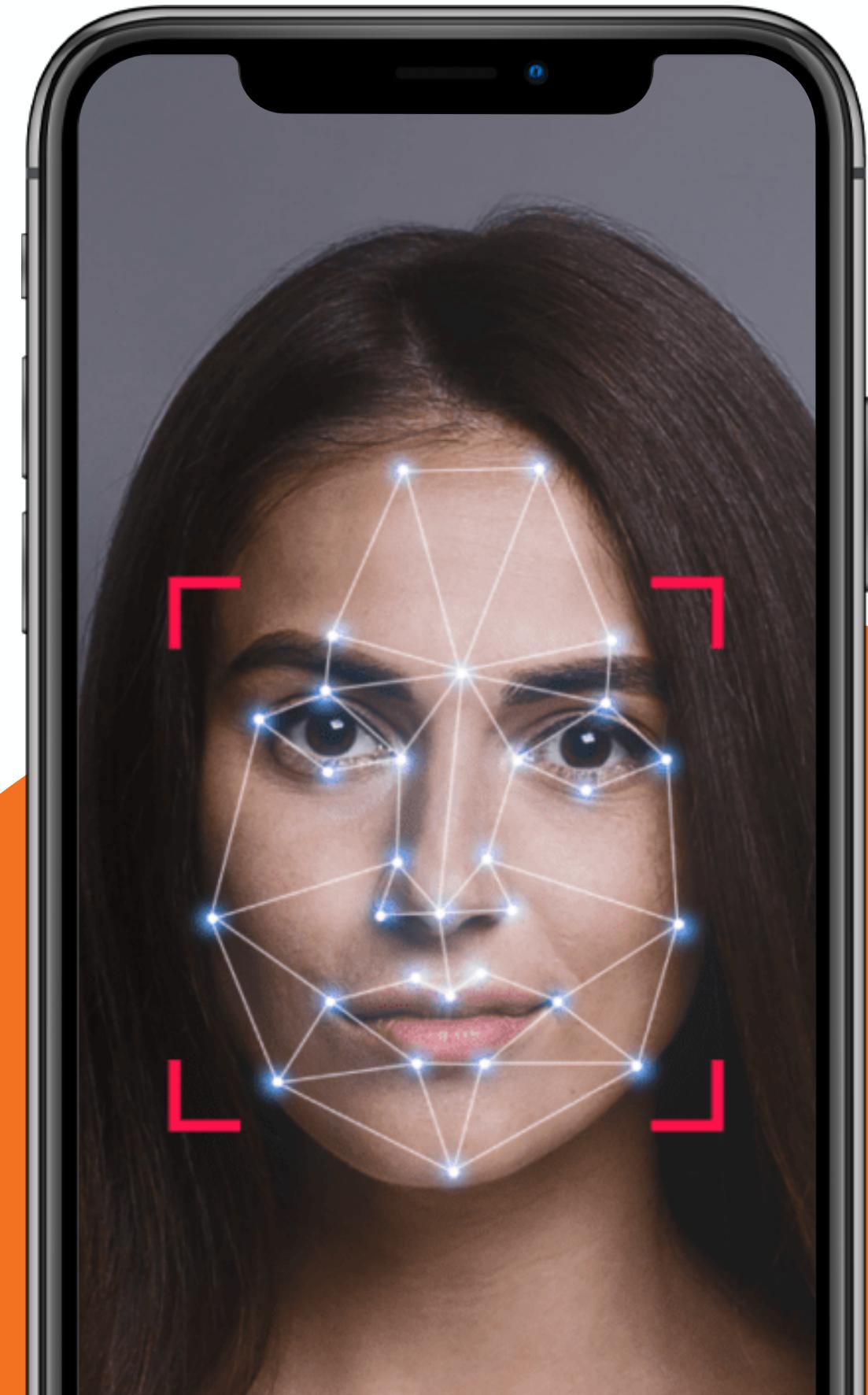
Facial Expression
Detection

Classification to
Emotional State "Joy"



OBJECTIVES

- 1.Why emotion detection
- 2.Technologies used
- 3.Facial Emotion Recognition by CNN
- 4.Data Description
- 5.Model Training
- 6.Output
- 7.Applications
- 8.Companies that use emotion detection



WHY EMOTION DETECTION



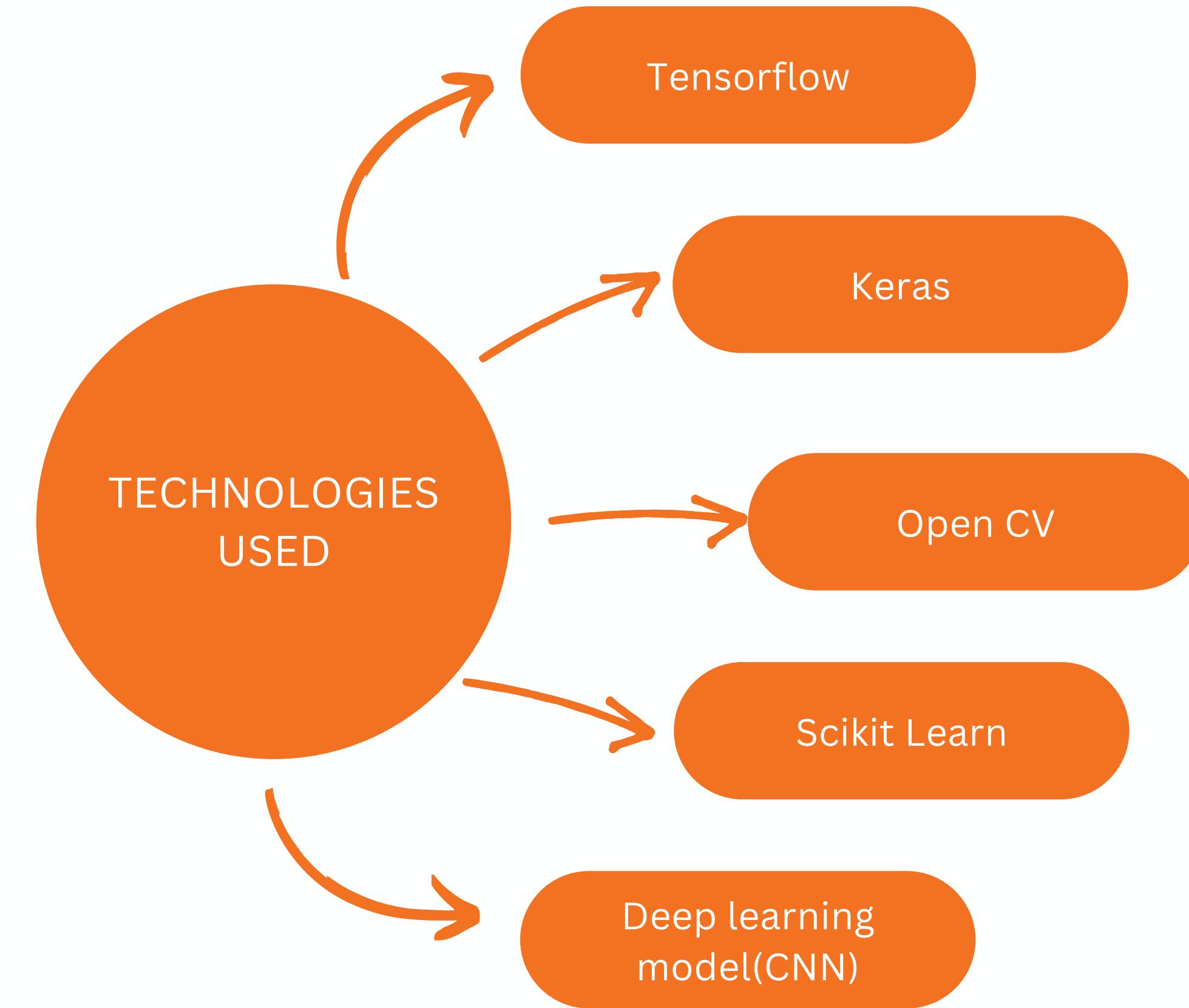
Emotion Detection through facial gestures is a technology that aims to improve product and services performance by monitoring customer behaviour to certain products or service staff by their evaluation.



The primary objective of this project is to create a robust and efficient system capable of recognizing a spectrum of human emotions, such as happiness, sadness, anger, surprise, fear, disgust, and neutrality.



Emotion detection through facial recognition serves as a bridge between human emotions and technological applications, enabling systems to understand, interpret, and respond to emotional cues



FACIAL EMOTION RECOGNITION USING CNN

01

Data
Preprocessing.

02

Image
Augmentation.

03

Feature
Extraction

04

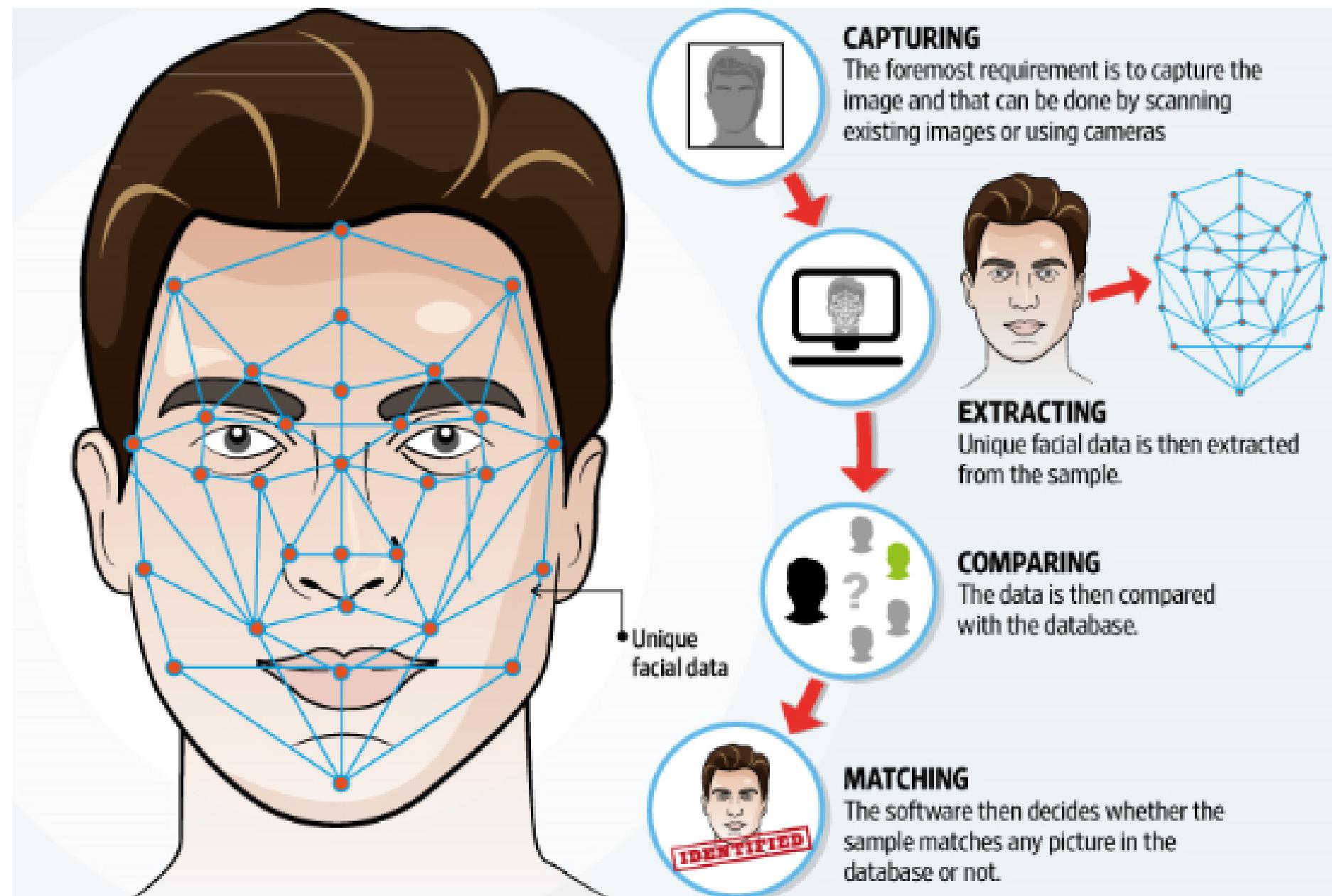
Training

05

Validation

06

Emotion
Identification.



DATASET DESCRIPTION

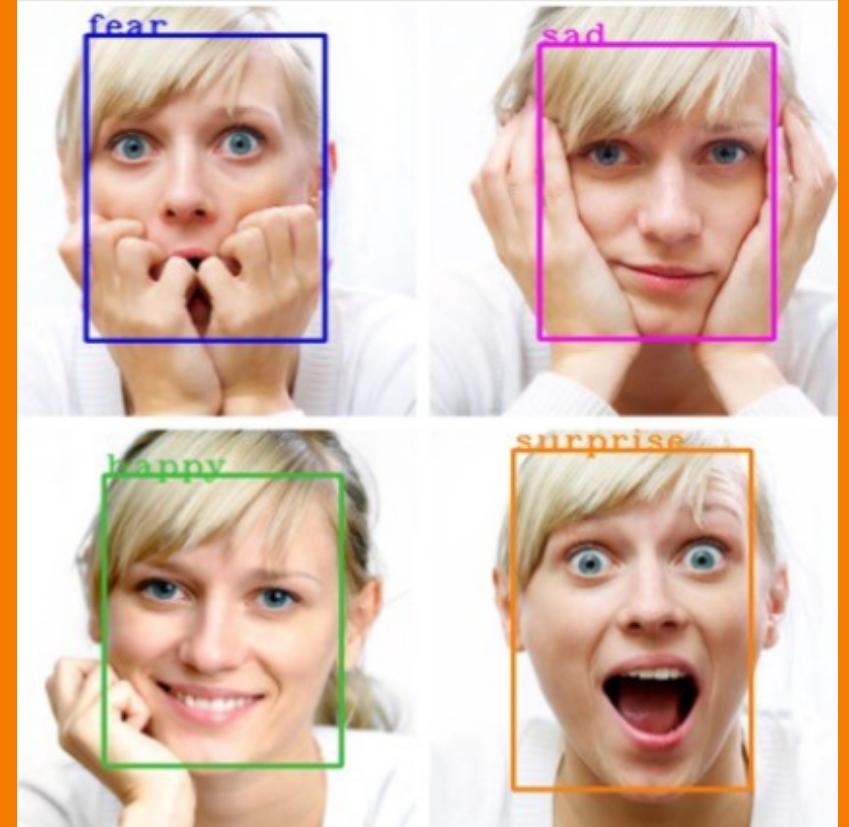
- The data consists of 48*48 pixel grayscale images of faces. The faces have been categorized into facial expression into one of seven categories (0=Angry, 1=Disgust, 2=Fear, 3=Happy, 4=Sad, 5=Surprise, 6=Neutral).
- The training set consists of 28,709 examples. The public test set used for the leaderboard consists of 3,589 examples. The final test set, which was used to determine the winner of the competition, consists of another 3,589 examples. This dataset was prepared by **Pierre-Luc Carrier** and **Aaron Courville**, as part of an ongoing research project.

MODEL TRAINING

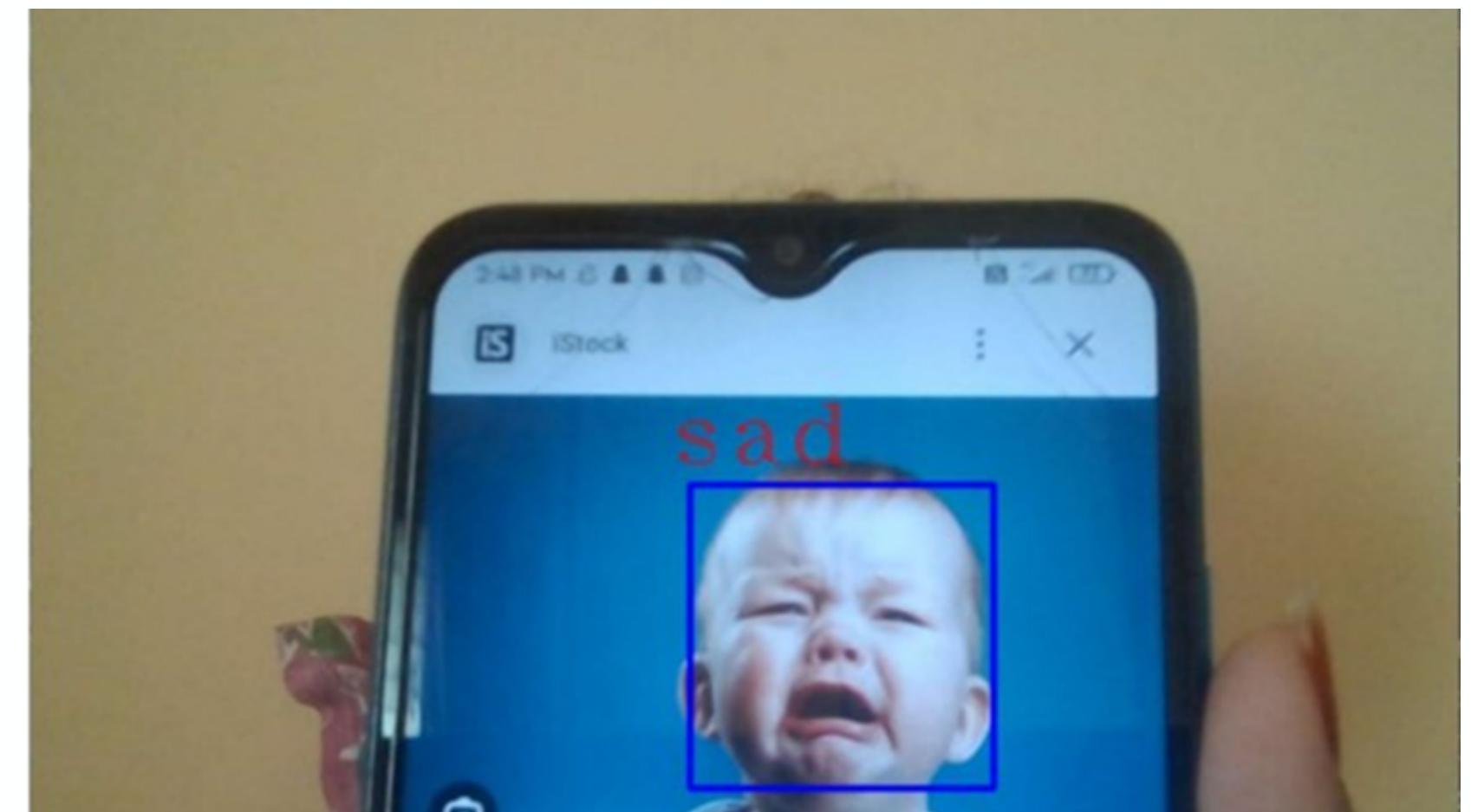
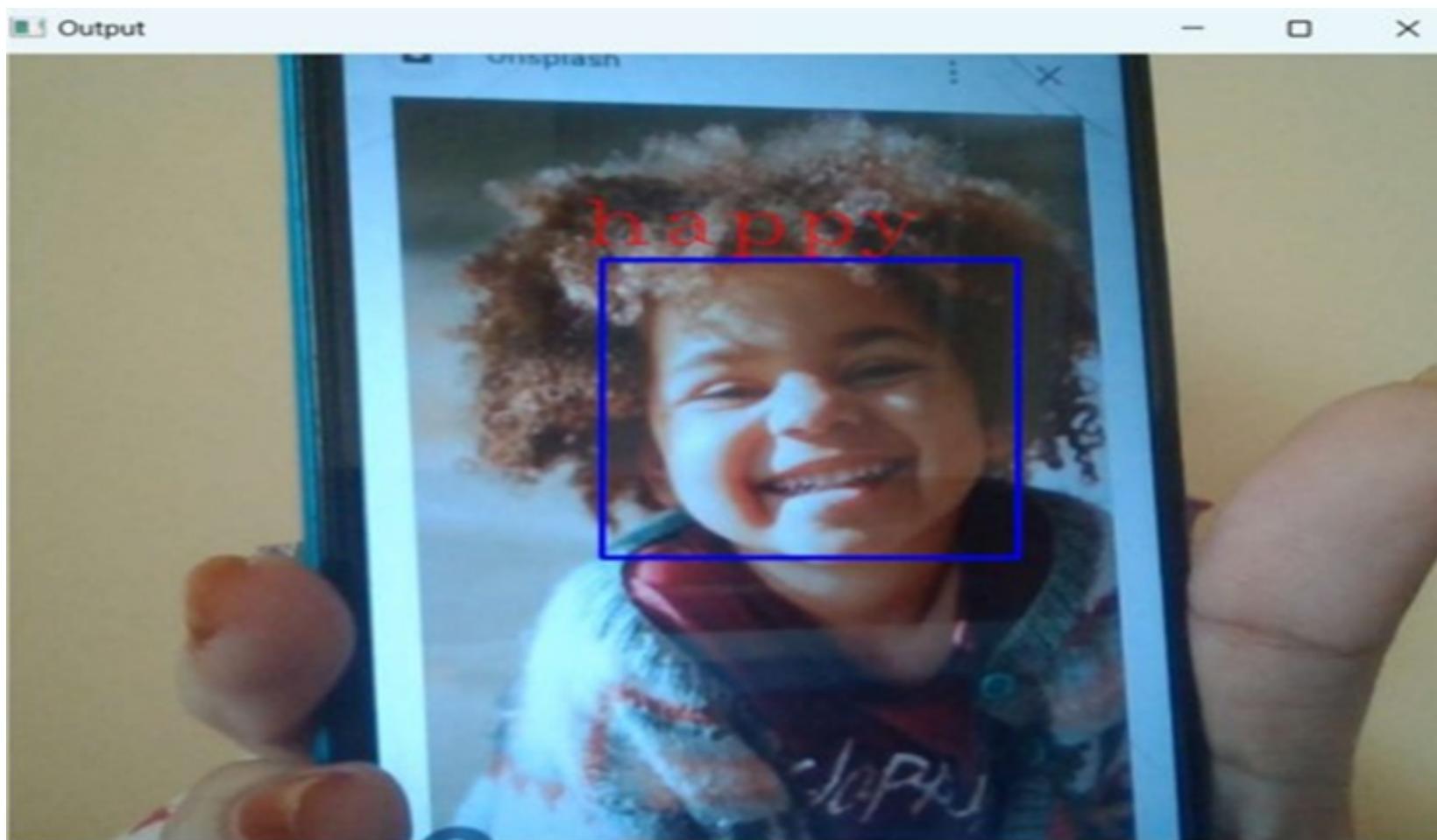
- We used Convolutional Neural Network to train the model. We used activation function RELU for hidden layers and Softmax to classify emotions in Output layer.
- We used ADAM optimizer to monitor and improve performance of model.

```
model = Sequential()  
# convolutional layers  
model.add(Conv2D(128, kernel_size=(3,3), activation='relu', input_shape=(48,48,1)))  
model.add(MaxPooling2D(pool_size=(2,2)))  
model.add(Dropout(0.4))  
  
model.add(Conv2D(256, kernel_size=(3,3), activation='relu'))  
model.add(MaxPooling2D(pool_size=(2,2)))  
model.add(Dropout(0.4))  
  
model.add(Conv2D(512, kernel_size=(3,3), activation='relu'))  
model.add(MaxPooling2D(pool_size=(2,2)))  
model.add(Dropout(0.4))  
  
model.add(Conv2D(512, kernel_size=(3,3), activation='relu'))  
model.add(MaxPooling2D(pool_size=(2,2)))  
model.add(Dropout(0.4))  
  
model.add(Flatten())  
# fully connected layers  
model.add(Dense(512, activation='relu'))  
model.add(Dropout(0.4))  
model.add(Dense(256, activation='relu'))  
model.add(Dropout(0.3))  
# output layer  
model.add(Dense(7, activation='softmax'))
```

```
model.compile(optimizer = 'adam', loss =  
'categorical_crossentropy', metrics = 'accuracy' )
```

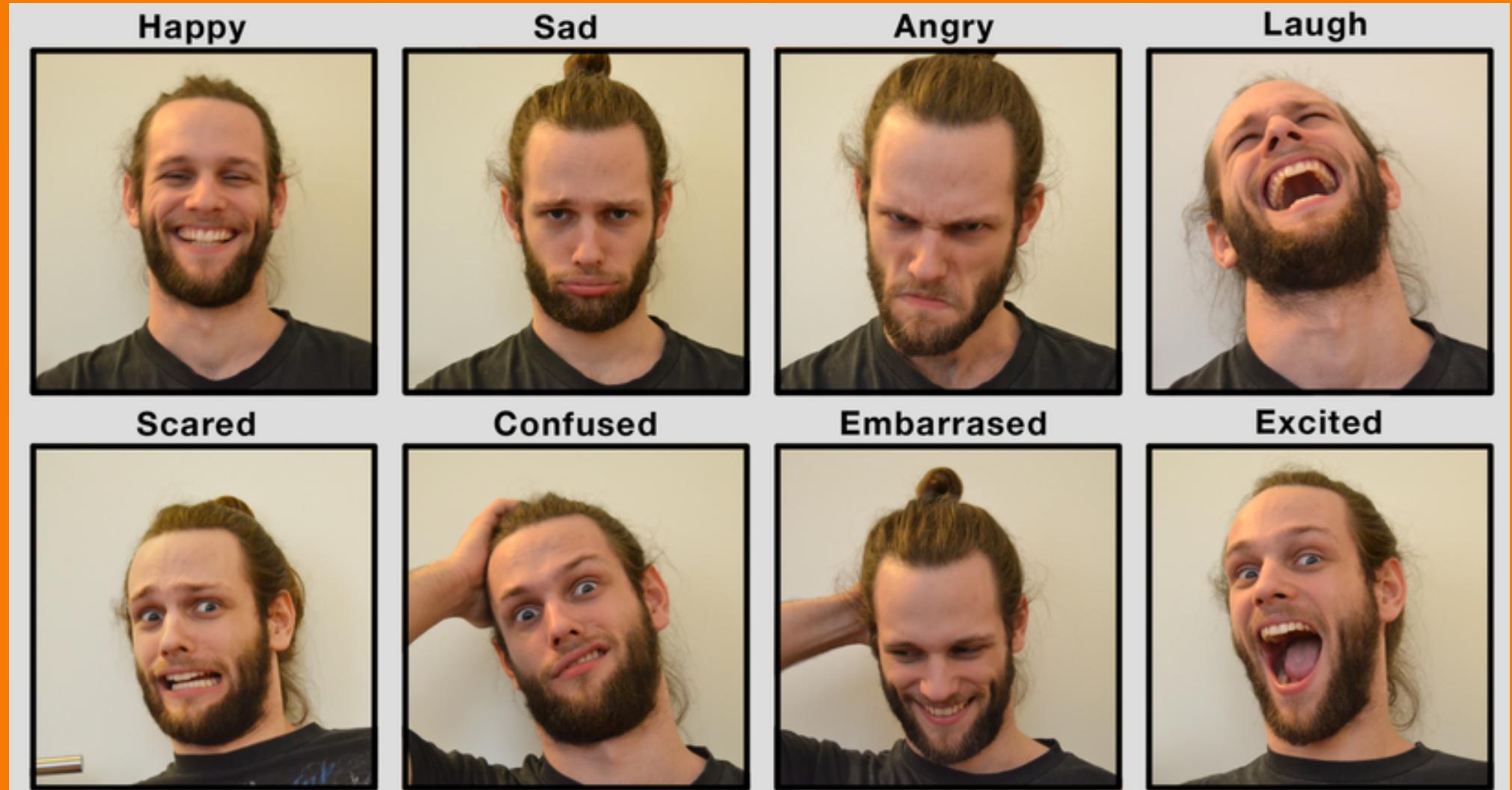


OUTPUT



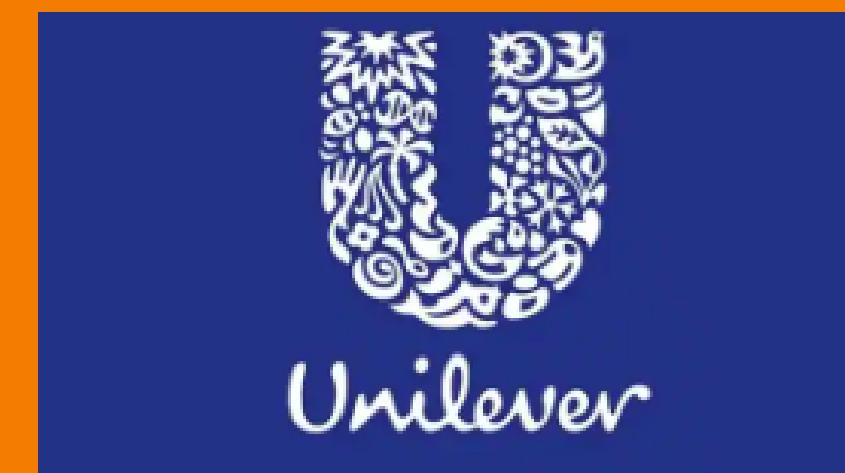
APPLICATIONS

- Behavioral assessment
- Facial nerve disorders
- Security systems
- Lie detection
- Emotion for animation
- Mental Health Diagnosis
- Games on player's emotion



COMPANIES THAT USE EMOTION DETECTION

- While Disney uses emotion detection tech to find out opinionon a completed project, other brands have used it to directly inform advertising and digital marketing.
- Kellogg's is just one high profile example, having used Affectiva's software to test audience reaction to ads for its cereal.
- Unilever does this, using HireVue's AI powered technology to screen prospective candidates based on factors like body language and mood .In doing so, the company is able to find the person whose personality and characteristics are best suited to the job.



**THANK
YOU!**