

MAKING EMOTIONS EASIER TO READ

EmoR (Emotional Reader)

Jordan David Nalpon





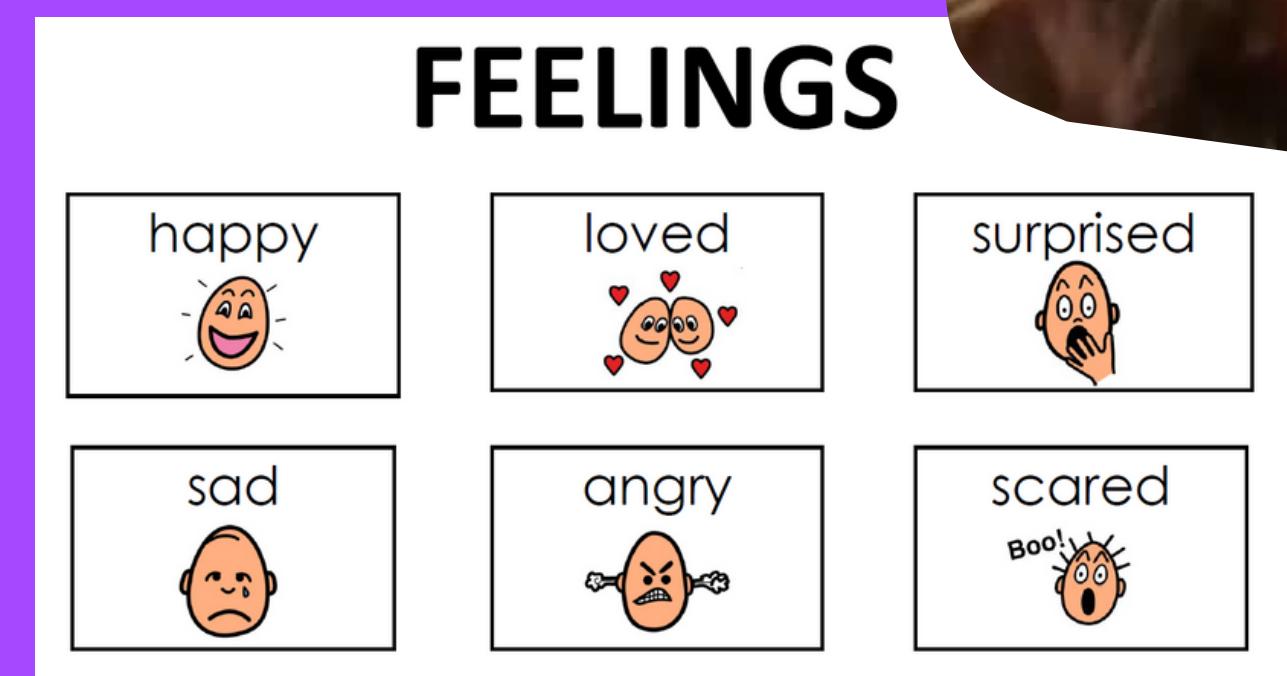
Problem Statement

Children with Autism often find it hard to recognise and manage emotions which can result in a lot of problems as they grow.

Would like to tackle this problem by helping them learn and read emotions better outside of the school environment.

Current Situation

Currently, teachers are using photos, movie clips and drawings to teach children with Autism how to read and understand different emotions.

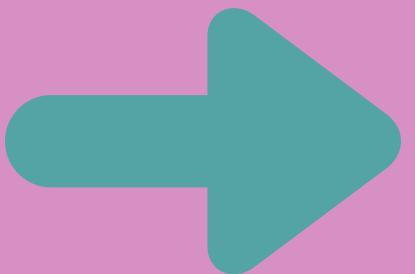


Anita
Senior Learning Facilitator
Rainbow Centre

EmoR (Emotional Reader)

EmoR is a python based programme that uses a dataset of several images showing different emotions and uses machine learning to predict what emotion is displayed in an image.

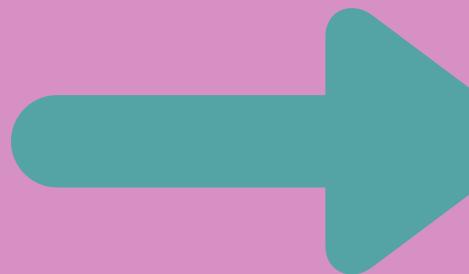
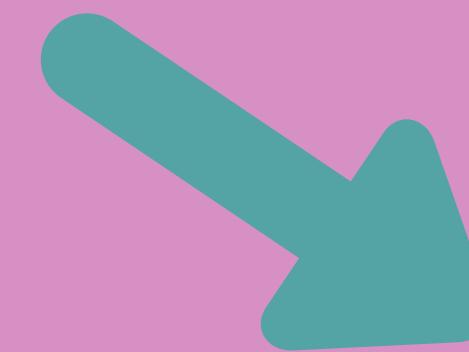
Eli5 of how EmoR works



A model of patterns in each emotion

Haar Cascade
frontalface
(face coordinates)

Shape_predictor_68
(facial reader)



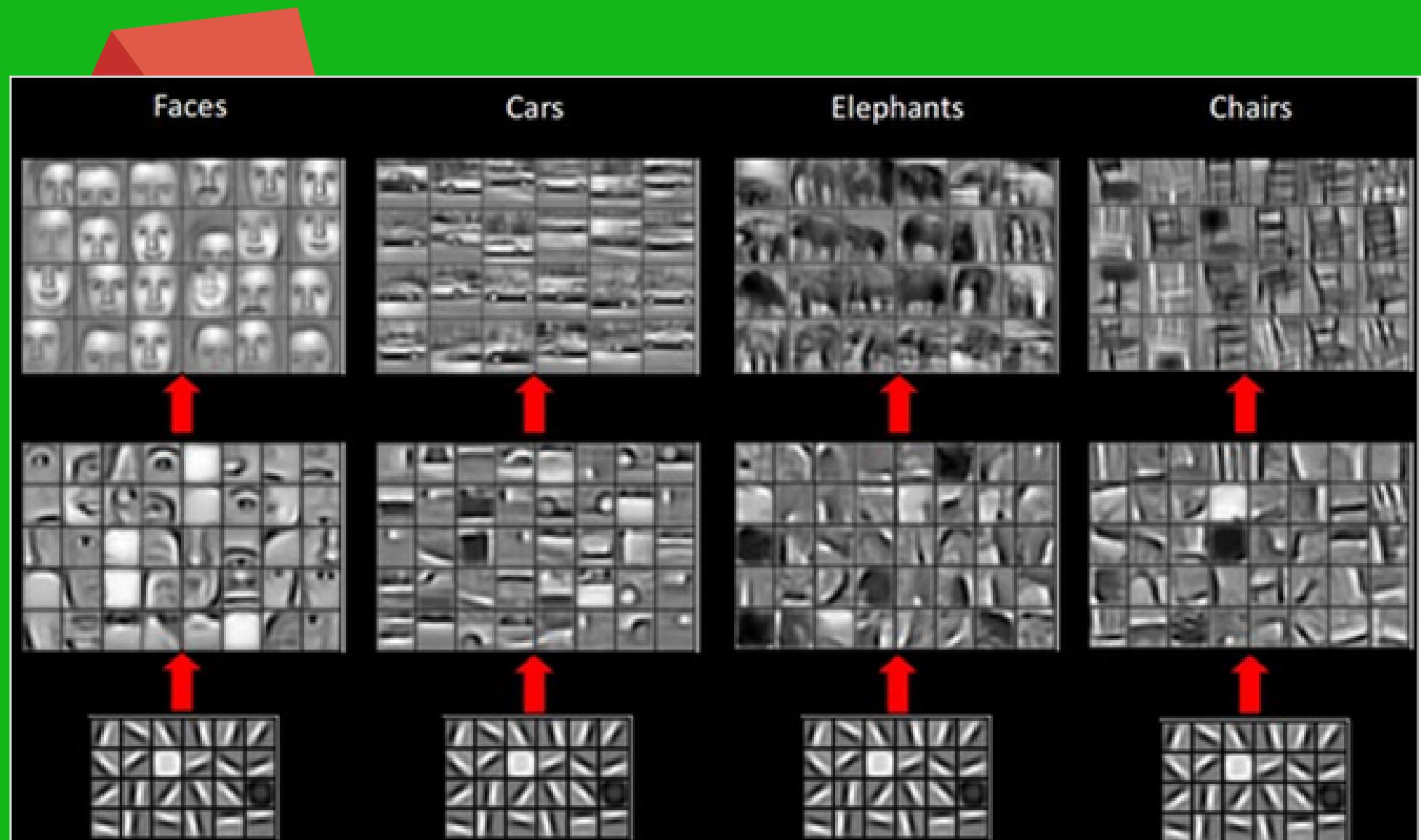
EmoR



Labelled Emotions and Convolutional Neural Networks (CNN)

FINDING PATTERNS IN EMOTIONS

I have over 35,000 images organised into 7 different emotions; angry, happy, fear, neutral, sad and surprise, which I put into my Convolutional Neural Network (CNN) which then produce a model.

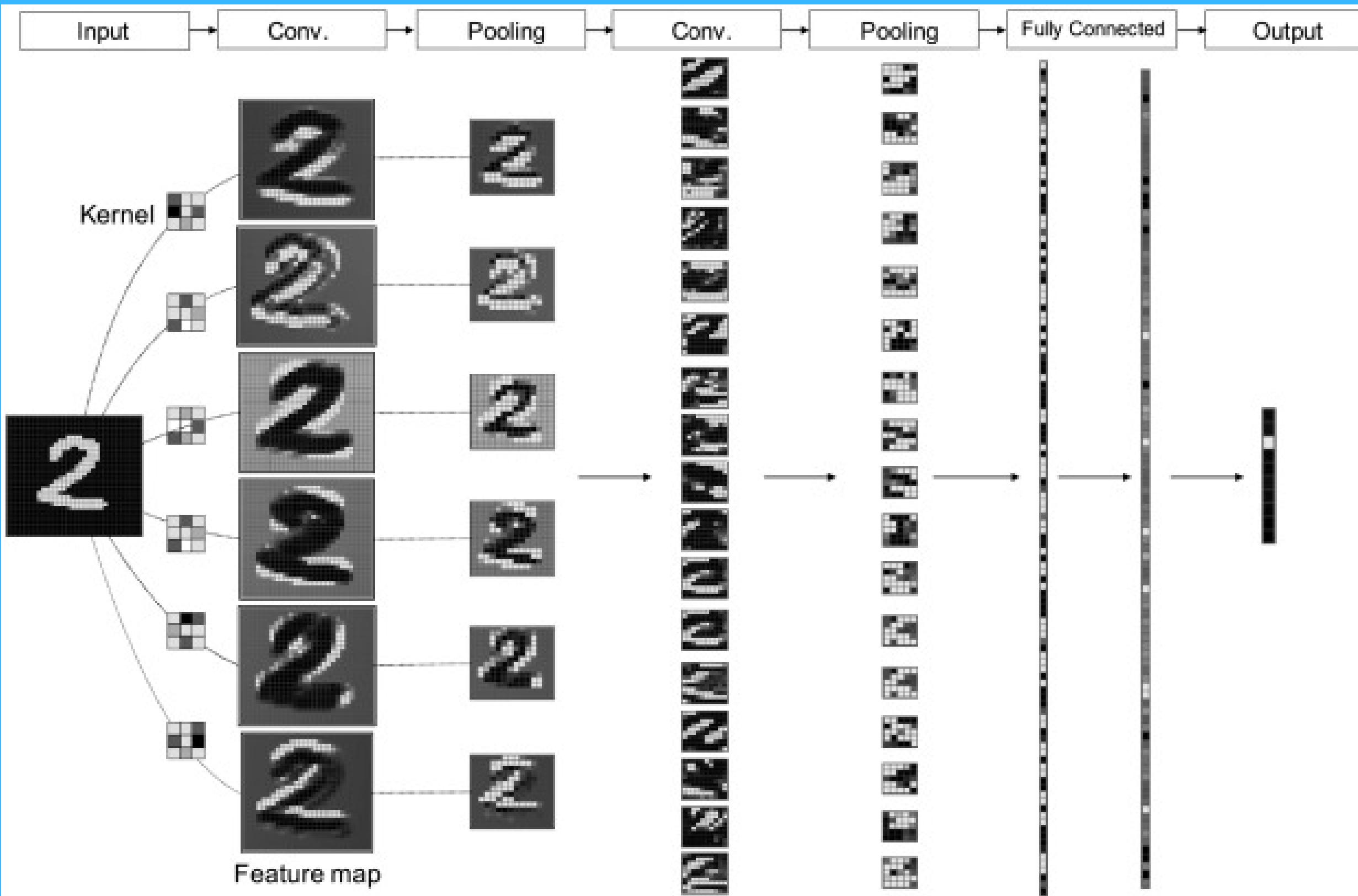


What is Convolutional Nural Networks (CNN) And How Does It Work?



Convolutional Nural Networks (CNN)

Briefly Explained



How Well Did The CNN Model Do?



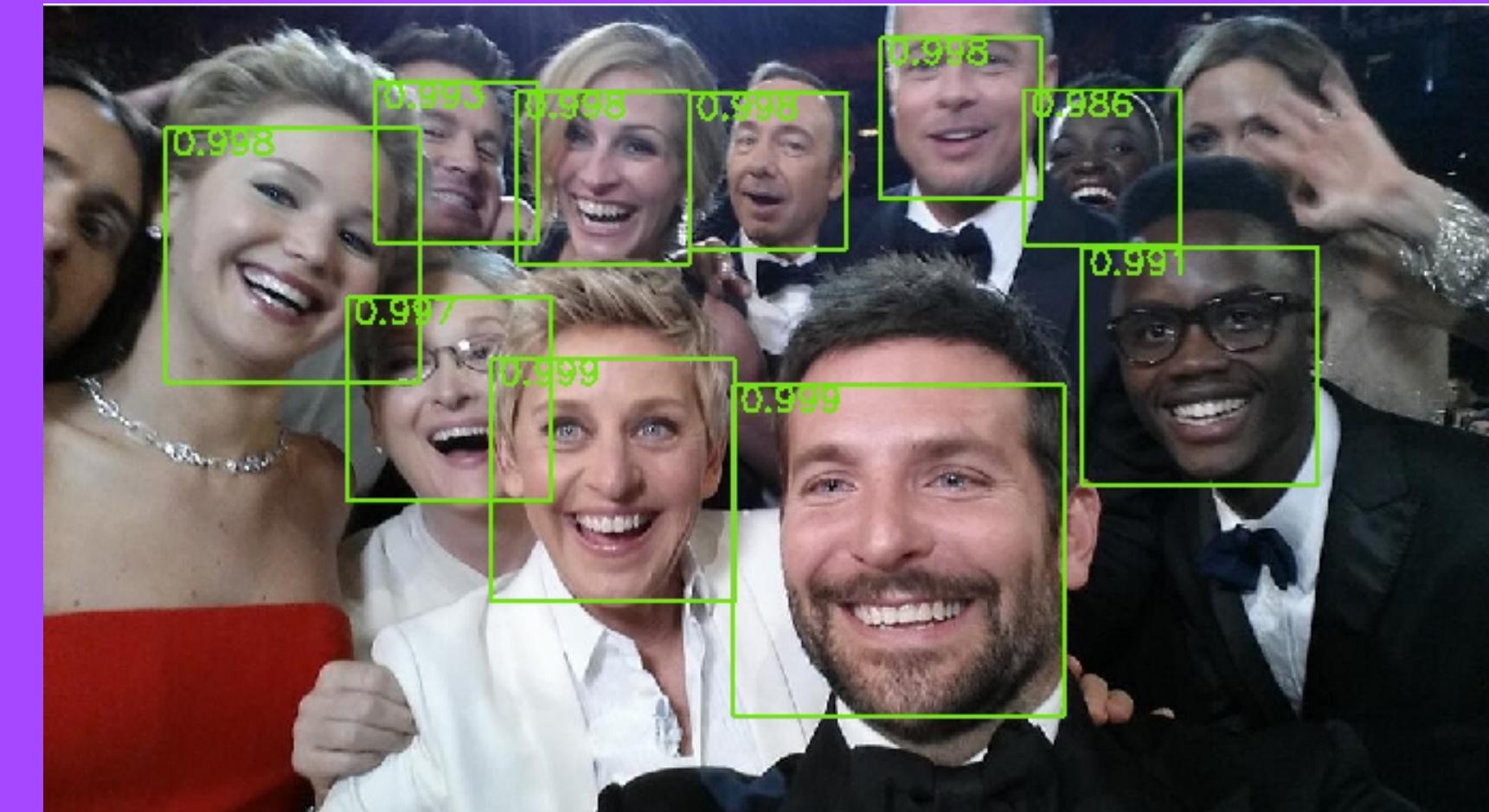
Before Cleaning

After Cleaning

Confusion matrix							
Actual	angry	4	49	51	123	78	13
	disgust	29	26	3	2	6	8
	fear	107	2	191	34	137	86
	happy	38	0	22	1245	83	22
	neutral	56	0	31	66	679	72
	sad	92	1	69	40	198	240
	surprise	17	0	47	52	27	8
	Predicted	angry	disgust	fear	happy	neutral	sad

What is Haar Cascade frontalface?

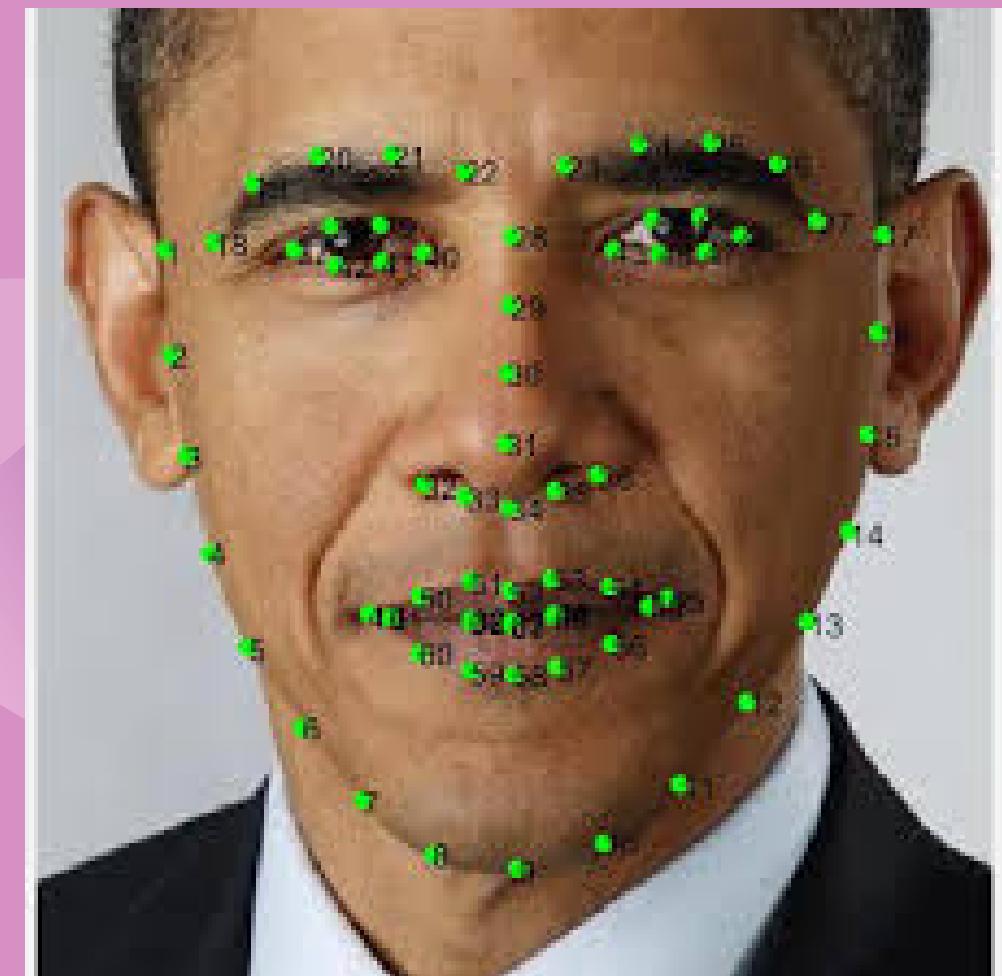
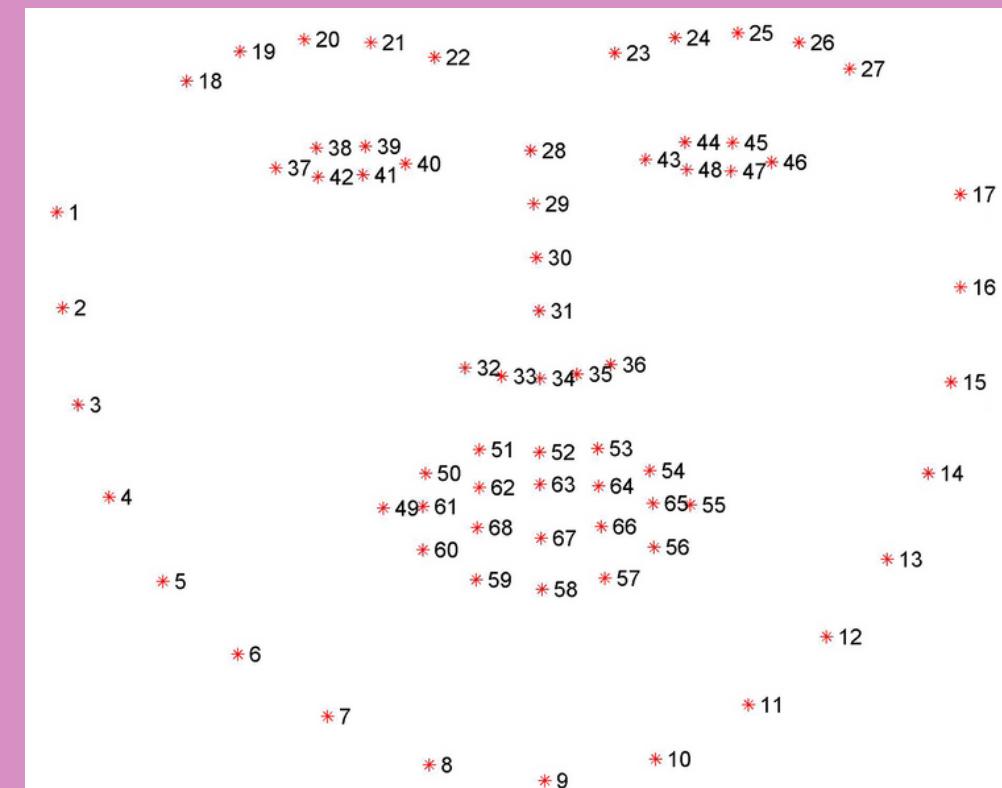
It is a pre-trained model that detects faces in images and able to give the coordinates of those faces.



What about Shape_predictor_68?

It is a pre-trained model that detects 68 different points on the face and able to detect the space difference between them.

It is capable to detecting if the person is smiling or giving a frown.



What happens when you combine all 3 things?



HAAR CASCADE FRONTFACE

Detects and give coordinates on where are the faces in the image.

SHAPE PREDICTOR 68

Places 68 feature points on the face and give the positions of each point.

CNN MODEL

Using the positions of the 68 points, it will predict what emotion the face is making.

Presenting EmoR!



Questions?

