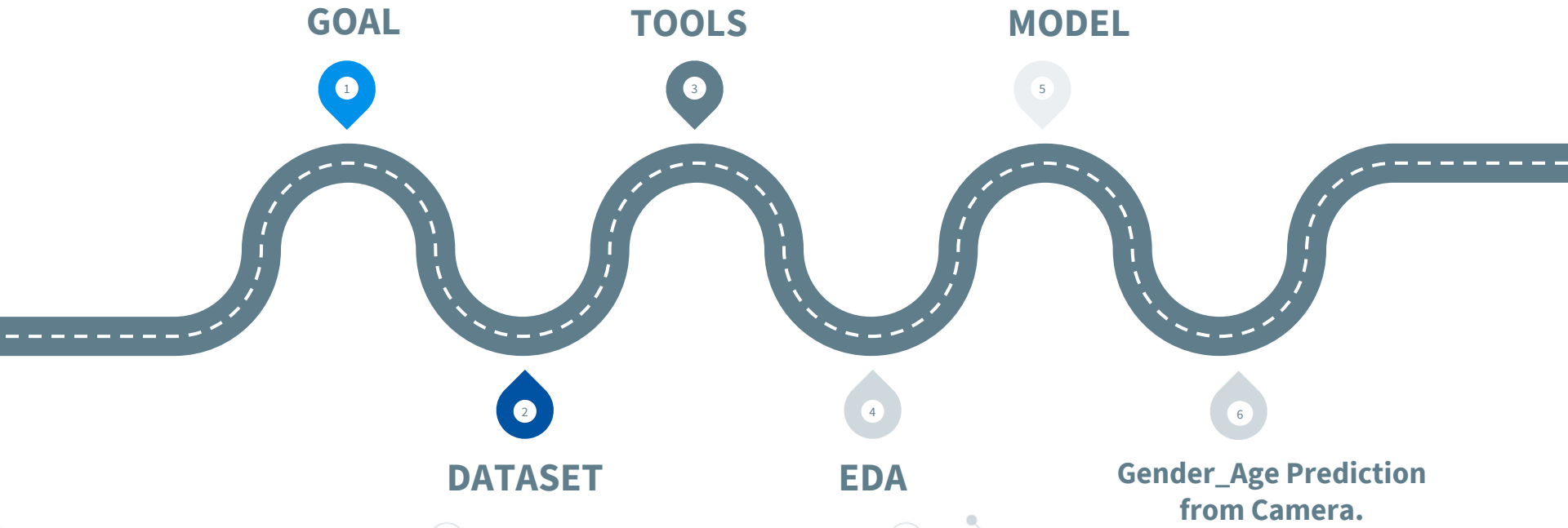
Age Detection from facial images

Done by:
Eman Alshehri – Hind Alamri

Content


GOAL
TOOLS
MODEL
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DATASET
EDA
Gender_Age Prediction
from Camera.

1. Goal

The main objective of this project is to use Neural Network which is a type of deep-learning algorithms in order to estimate the age from facial images.

2. Dataset

The UTK Face dataset consists of over 20,000 **face images**.

The labels of each image is embedded in the file name, formatted like [age]_[gender]_[race]_[date&time]. jpg

So, we extracted each feature to different arrays to deal with it easily.

Age is an integer from 0 to 116.
Gender is either 0 (male) or 1 (female).
Race is an integer from 0 to 4 denoting White, Black, Asian, Indian, and Others.
Date and time is in the format of yyyymmddHHMMSSFFF, showing the date and time an image was collected to UTKFace. .

3.Tools

Tensorflow

Seaborn

Pandas

Keras

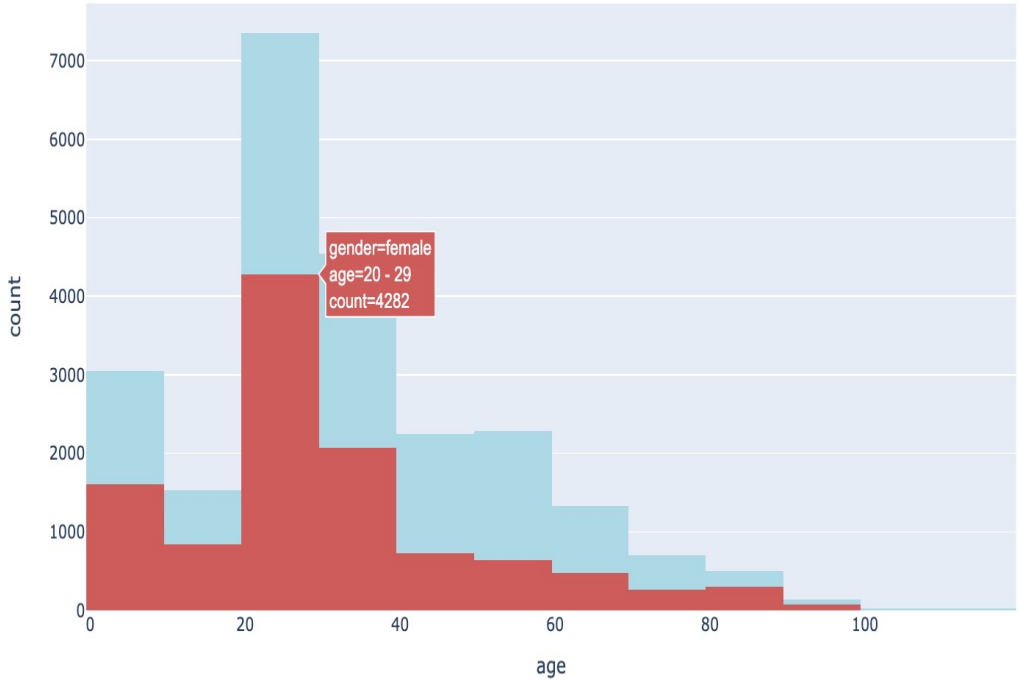
Plotly

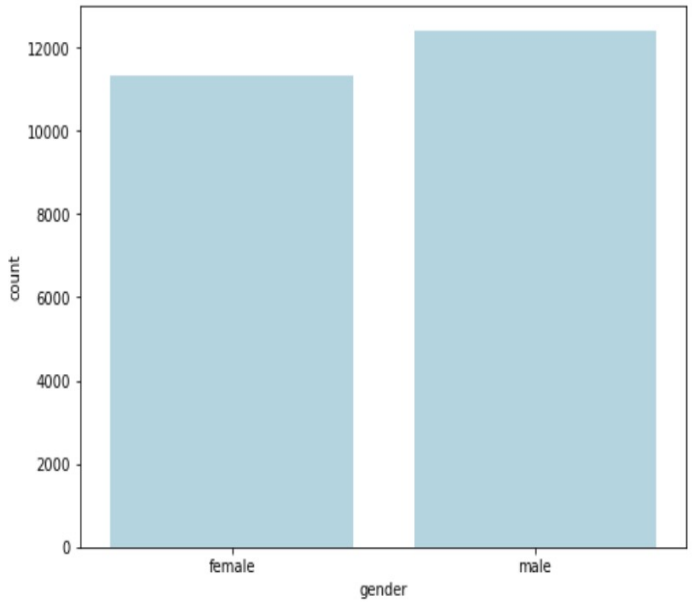
Matplotlib

Scikit-Learn

Numpy

2. EDA


gender
female
male
gender=female
age=20 - 29
count=4282
count
age
0
1000
2000
3000
4000
5000
6000
7000
0
20
40
60
80
100


count
gender
female
male
0
2000
4000
6000
8000
10000
12000

5.Model


Logistic Regression
Simple Nurture Network
Convolutional Neural Network
Convolutional Neural Network (2)
Transfer Learning

Logistic Regression model (Baseline) for Age

Logistic Regression Metric

Accuracy score.

Logistic Model

Train accuracy:

0. 687

Validation accuracy:

0. 479

Simple Neural Network model (NN) for Age

Hidden Layers: 4

Units: 388

Epochs : 30

Callbacks : **early stopping**

Train accuracy:

0. 32305

Validation accuracy:

0. 3040

Convolutional Neural Networks (First attempt) for Age

Hidden Layers: 8

Units: 316

Epochs : 30

Callbacks : **early stopping**

Droup out : 20%

Train accuracy:

0. 3230

Validation accuracy:

0. 3040

Convolutional Neural Networks (Second attempt) for Age

Hidden Layers: 12

Units: 306

Epochs : 30

Callbacks : **early stopping**

Droup out : 20%

Train accuracy:

0. 5358

Validation accuracy:

0. 4611

Test accuracy: 0. 365

Transfer Learning (VGG16) for Age

Hidden Layers: 7

Units: 907

Droup out : 50%

Train accuracy:

0. 414

Validation accuracy:

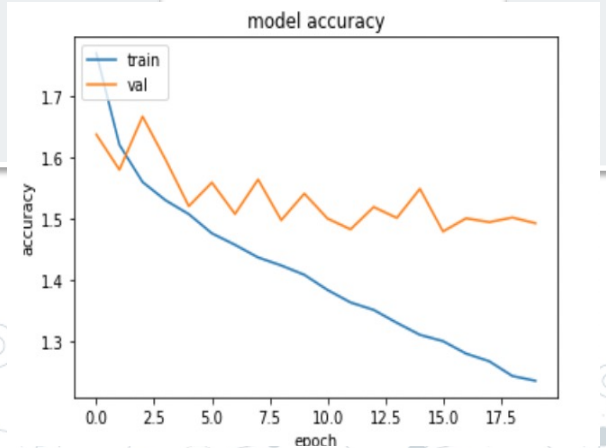
0. 4045

Transfer Learning (mobilenet_v2) for Age

Hidden Layers: 5

Units: 496

Droup out : 50%



Train accuracy:

0. 587

Validation accuracy:

0. 4355

Transfer Learning (EfficientNetB0) for Age

Hidden Layers: 4

Units: 600

Train accuracy:
0. 99657
Validation accuracy:
0. 5275

CNN for Gender Modeling

Hidden Layers: 11

Units: 576

Epochs = 30

Callbacks : **early stopping**

Droup out : 50%, 30% ,30%

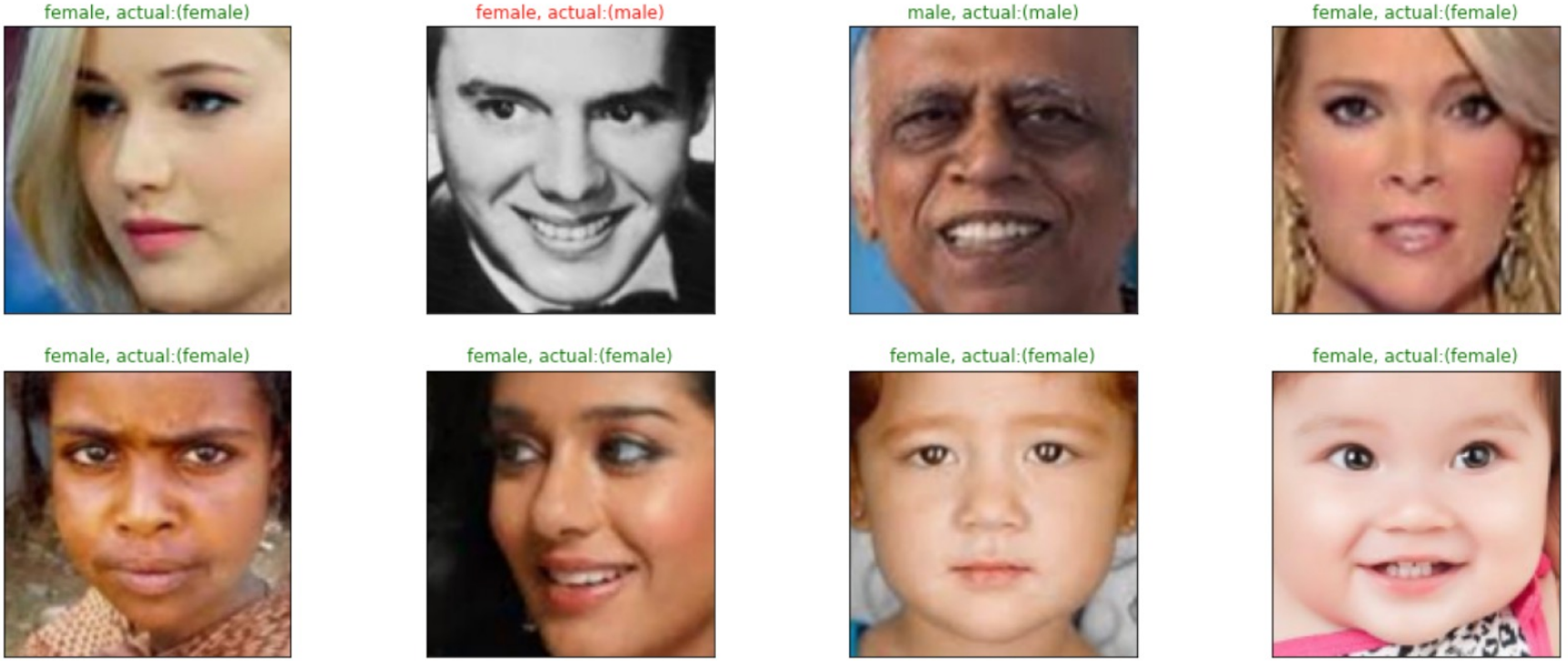
Train accuracy:

0. 913

Validation accuracy:

0. 8658

Predict Gender



Future Work

- We will work on improving this project by detect exact age.
- Also, add more features to extract more information from facial images.

Gender Age Prediction from Camera.

Thanks ..