

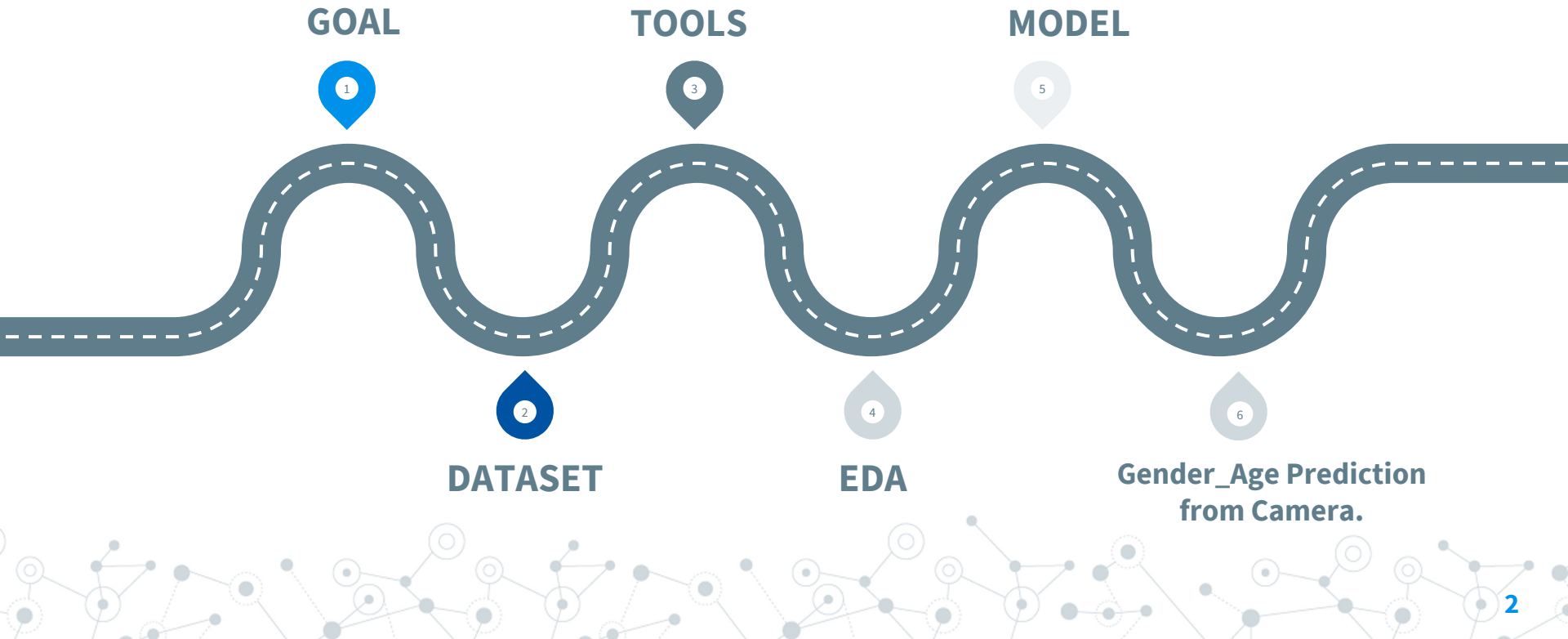
A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. Some nodes are highlighted with blue circles, and others with solid blue dots. The lines are thin and grey, creating a mesh-like structure.

Age Detection from facial images

Done by:
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A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It shows a cluster of nodes connected by lines, with several nodes highlighted by blue circles and others by solid blue dots.

Content





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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



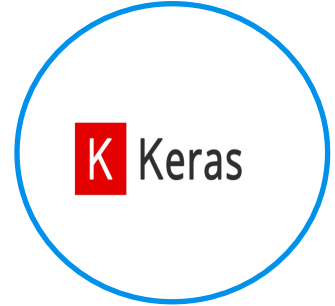
Tensorflow



Seaborn



Pandas



Keras



Plotly



Matplotlib

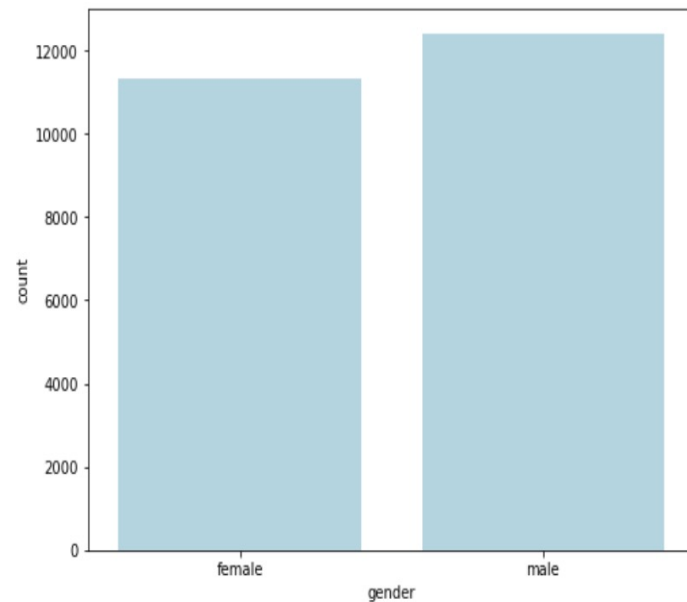
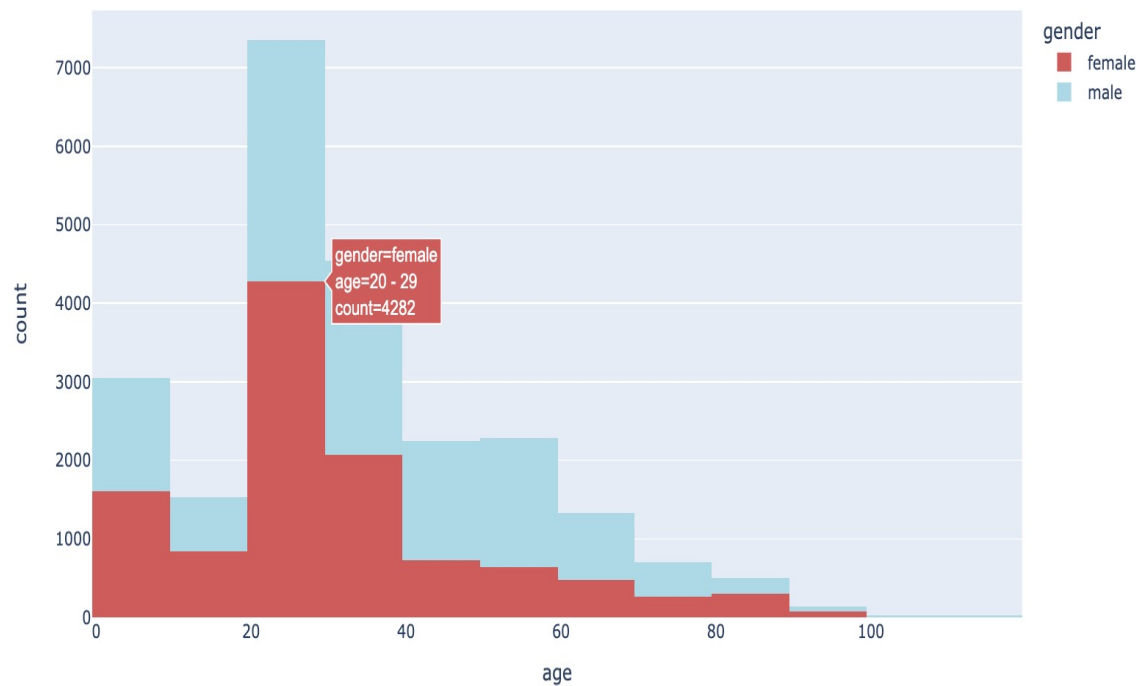


Scikit-Learn



Numpy

2. EDA



5. Model



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%

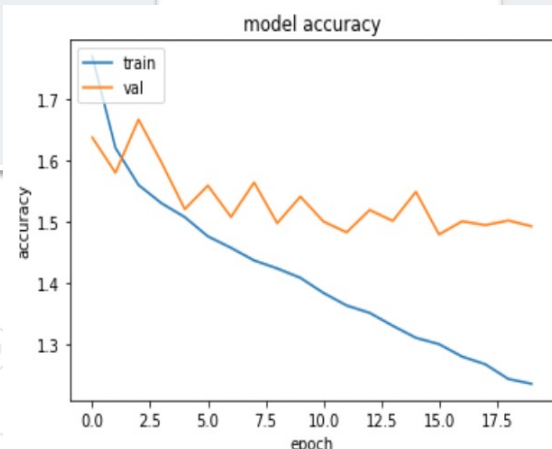


Train accuracy:

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:

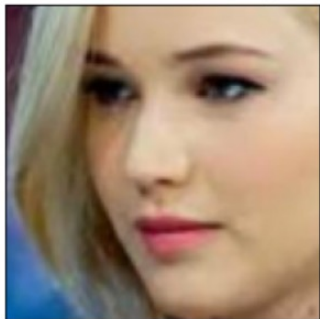
0. 913

Validation accuracy:

0. 8658

Predict Gender

female, actual:(female)



female, actual:(male)



male, actual:(male)



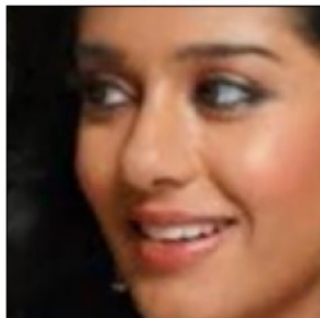
female, actual:(female)



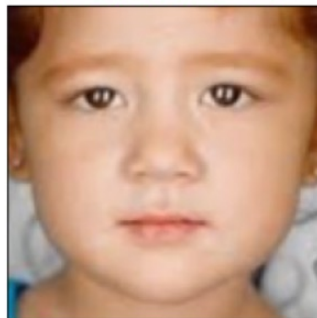
female, actual:(female)



female, actual:(female)



female, actual:(female)



female, actual:(female)



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.

The background of the slide is a light blue-grey color with a repeating pattern of interconnected nodes and lines, resembling a network or molecular structure. The nodes are represented by small circles, some of which are outlined in a darker shade, and they are connected by thin, light grey lines. The overall effect is a subtle, textured background.

Thanks ..