**Prediction of Age and Gender using Deep Learning**

Objective

To predict gender and an age range for a face image

My input is an image of a person’s face

Output will be the gender and age range predicted by my model

Requirements

1. Dataset

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dataset | Summary | Quantity | Label | Source |
| CK+ (2010) | Most extensively used laboratory-controlled facial expression database available | 593 video sequences from 123 subjects, with variety of age, genders and heritage | Separate folders with 7 expression classes: anger, contempt, disgust, fear, happiness, sadness, surprise | https://paperswithcode.c om/dataset/ck |
| UTK Faces (2017) | Dataset contains cropped faces, labelled by age, gender, and ethnicity | 23,708 RGB images of faces in JPG format of size 200x200 pixels each | Image labels are embedded in the file names, formatted like: [age] [gender] [race] [date&time].jpg | https://susanqq.github.io/ UTKFace/ |
| IMDB-WIKI (2015) | Largest public dataset for age prediction to date | 500k+ face images taken from IMDb and Wikipedia | Age and gender labels of celebrities/public figures | https://data.vision.ee.ethz .ch/cvl/rrothe/imdb-wiki/ |
| Labeled Faces in the Wild (2018) | Benchmark for face verification. and pair matching | Size is 173MB, consisting of over 13,000 images in 250x250 jpg format | Each face labeled with name of the person pictured. 1680 of the people pictured have two or more distinct photos in the dataset. | http://vis-www.cs.umass. edu/lfw/ |
| Facial Age (2018) | Structure of this dataset is very simple and easy to use | 9,778 RGB images of faces in PNG format of size 200x200 pixels each | Images are separated into folders and the folder names correspond to the age labels of images inside those folders | https://www.kaggle.com/f rabbisw/facial-age |

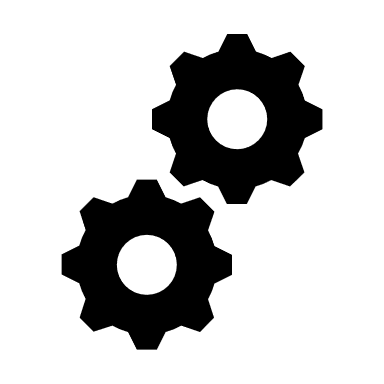
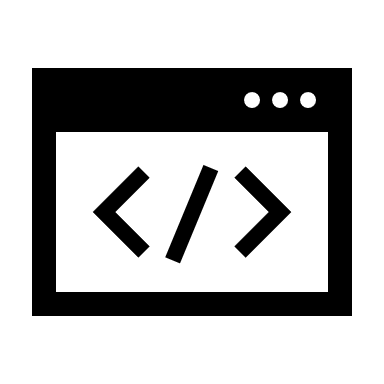
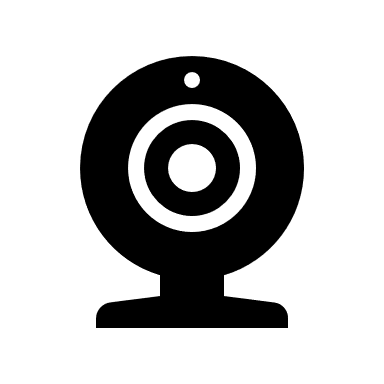
All these datasets provide us images that have already been cleaned and labelled, allowing to skip the tedious data cleaning step of this workflow

I have used UTK Face Dataset for Gender Prediction and UTK Faces and Facial Age combined for Age prediction

2. pretrained CNN model for Age detection and Gender Classification

3. OpenCV-python module

Process



**Machine Learning Model for Age and Gender Prediction**

**Image goes as input to model**

**Model Prediction**

**Age**

**Gender**

stored for analysis

Prediction data

**Store Database**

**Capturing Image**

What is CNN?

In Deep Learning a Convolutional Neural Network (or CNN) is a class of artificial neural network, most commonly applied to analyze visual images. Convolutional Neural Networks are inspired by biological processes that happen in our human brain. So, as children start recognizing objects in their surroundings as they grow up CNNs, also learn to make accurate detections, given they get enough labelled data for training.

**UTK Faces** has **23,708** Images

**Testing dataset** has **5,927** images

**Training dataset** has **17,781** images

75%

25%

Training and Testing Datasets