

Machine Learning Model for Age and Gender Detection

Presented by: Yuvraj Singh Chowdhary, ML Engineer

Yuvraj Singh Chowdhary



Objective

Exploring Deep Learning for Facial Age and Gender Estimation

Application of Deep Learning

Delve into the utilization of deep learning in facial analysis, specifically focusing on age and gender estimation.

Age Estimation

Utilize advanced algorithms to predict the age of an individual accurately based on facial features extracted from a single image.

Gender Recognition

Employ cutting-edge techniques to determine the gender of a person from facial attributes captured in a single image.

Single Image Analysis

Analyze a single snapshot to extract valuable insights regarding both the gender and age of the individual using deep learning methodologies.

About the Project

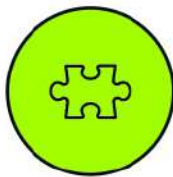
Deep Learning for Gender and Age Identification

Gender and Age Identification



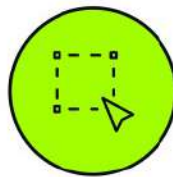
Utilize deep learning to accurately determine gender and age from a single image.

Model Training



Develop a dedicated model specifically designed for gender and age detection.

Classification Approach



Predict gender as 'male' or 'female' and age within predefined ranges to overcome challenges like makeup, lighting, and facial expressions.

Challenges Addressed



Address makeup, lighting, obstructions, and facial expressions by treating age prediction as a classification problem rather than regression.

Gender Classification Insights

Gender Detection

Utilizing CNN for Accurate Gender Prediction



Frame Gender Prediction

The gender prediction task is framed as a classification problem to identify 'male' and 'female' categories.



Output Layer Nodes

The output layer of the model consists of 2 nodes corresponding to the genders 'male' and 'female'.

Neural Network Insights

Gender and Age Classification using CNN

Utilizing CNN for Gender and Age Identification



CNN Architecture

Utilize Convolutional Neural Network (CNN) structure for effective classification.



Convolutional Layers

Implement a network with 3 convolutional layers for feature extraction.

Age Estimation Insights

Age Prediction

Challenges and Solutions in Age Estimation



Regression Problem

Age prediction is a regression problem as it requires predicting a real number output.

Age Grouping Strategy

To address estimation challenges, age classification into groups like (0-4), (4-6) is proposed.



Estimation Difficulty

Accurately estimating age through regression poses challenges due to various factors.

Time Allocation Distribution

Code Ideas Breakdown

Breakdown of Time Allocation for Each Task

| Task | Time Allocation |
|----------------|-----------------|
| Detect Face | 25% |
| Detect Gender | 25% |
| Detect Age | 25% |
| Display Output | 25% |

Model Selection

Models Used

Key Models for Age and Gender
Detection



opencv_face_detector

Facial detection model in OpenCV



age_net

Trained model for age prediction



gender_net

Trained model for gender classification



age_deploy

Age estimation model deployment file



gender_deploy

Gender prediction model deployment
file

