**DeepAge: Deep Learning of face-based age estimation**

**Introduction:**

Recently, many applications from biometrics, security control to entertainment use the information extracted from face images that contain information about age, gender, ethnic background, and emotional state. Automatic age estimation from facial images is one of the popular and challenging tasks that have different fields of applications such as controlling the content of the watched media depending on the customer's age . Automatic estimation of the age is a challenging process since the aging process among humans is non-uniform. In addition, extracting an effective feature set from a 2D image for age estimation is another challenge to overcome. CNNs showed significant success in face recognition, image classification, and object recognition. It consists of different convolutional layers where each layer processes the output of the previous layer in order to produce a robust and compact output. CNNs can be described as deep networks if the number of layers inside the network is relatively a large number. If a CNN is characterized as a deep network, hence a large database is needed to optimize the parameters during the training process.

**About abstract: .**

Automatic age estimation from real-world and unconstrained face images is rapidly gaining importance. In our proposed work, a deep CNN model that was trained on a database for face recognition task is used to estimate the age information on the MorPh-II and FGNet database. This paper has three significant contributions in this field. This work proves that a CNN model, which was trained for face recognition task, can be utilized for age estimation to improve performance;Not only the number of training images and the number subjects in a training database effect the performance of the age estimation model.

**Existing Methods:**

Existing methods uses SVM , GMM and RNN model models for predicting the age. And did not consider the effect of facial expression and gender on the age estimation system.

**Proposed Method:** we propose to apply Transfer Learning, where the CNN is initially trained for face recognition and then refined to derive an age regression Network (ARN) that is used for representation learning. Face recognition networks are typically trained for face classification [1, 26] using a set of face images, where one of the Fully Connected (FC) layers is used as a face descriptor

**Advantages:**

1. The age-adaptive Metric Learning allows to better separate the samples in the features face with respect to their age.
2. Performance of model

**Dataset:**

LocationMORPH11 dataset

The Labeled Faces in the Wild (LFW) dataset contains faces of 5749 individuals (4263 male, 1486 female) collected from the web using a Viola-Jones face detector. Of these there are 1680 people for which more than one image is available. This results in 10256 male images and 2977 female images. These color images have an resolution of 250x250.

**Project Development Modules:**

1. Data Collection: Download the dataset from the source
2. Data Preprocessing:Image resized to 224\*224 and augmented techniques like rotation,zoom, horizontal and vetical techniques
3. Data Split: Split the data into train 70 % and Test 30%
4. Model: CNN with Transfer learning model on train data and save the model
5. Model Evalutation: Evaluate the test data on the trainded model
6. Predict the age using model

**Input of project:**Image of person

**Final output of project:** Age of the person

**Extension or improvements in project:** We can extend this to gender of person also

**Conclusion of project:**

In this paper, we are going to build model CNN with transfer learning for perdicting age of person using MORPH dataset.