

CS 7455- Homework 3

Make an android app that recognizes facial images based on HW2. Estimate gender and age of the facial image detected by OpenCV cascade algorithm. Encourage you to improve the app. For face recognition, you can use linear models or Naïve Bayes classifier.

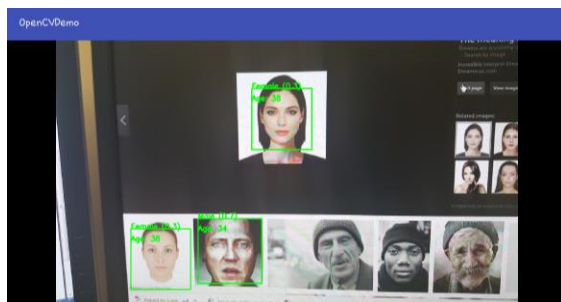
- If you use linear models:

Consider two linear models for gender and age estimation. For gender classification, encode the labels as $\{-1, 1\}$. Train the model with Wikipedia or iMDB dataset in Matlab. Then, use the optimal parameters of the models by importing the data into Android Studio. For age estimation, age is a response variable, which is y in the linear model: $y = Xb$.

- If you use Naïve Bayes classifier:

for gender classification, you should compute two posterior probabilities, which are $p(\text{male}|X)$ and $p(\text{female}|X)$. For age estimation, consider 8 groups, which are teenage, twenties, thirties, forties, fifties, sixties, seventies, and eighties. So, consider the images between 10 and 19 as one label of teenage, images between 20 and 29 as all twenties, and so on. So, the problem becomes a classification problem rather than a regression problem. Then, compute the 8 posterior probabilities of the groups given face X . Also, train the models with Wikipedia or iMDB dataset in Matlab, import the model parameters into Android project.

This is the example of the app:



Submission:

You have to submit the followings to D2L:

1. MS word file
 - Describe what you did for this homework
 - Captured android screen of the app that estimates gender and age.
2. JAVA source file
 - Attach the java source of MainActivity.
 - Attach other java source files if you wrote code in other files (only JAVA source files)

Deadline:

You have to submit HW3 by **Sunday, March 26, 2017**. Late assignments will be accepted up to 24 hours after the due date for 50% credit. Assignments submitted more than 24 hours late will not be accepted for credit.