

King Fahd University of Petroleum & Minerals

College of Computer Sciences and Engineering

Information and Computer Science Department

**ICS 411: Senior Project (Term 172)**

AGE AND GENDER RECOGNITION USING DEEP LEARNING

Initial Plan Document

February 8, 2018

Deepvision

KFUPM

|  |  |
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# Introduction

## Purpose of this document

This document first introduces the need of age and gender recognition system that automates the process of detecting the age and gender of a person using an image of their face. In addition, it provides an initial tentative plan for the project in the entire 15-week period including deliverables expected after every week.

## Introduction and scope of the project

### Project Overview

This project will result in a model capable of classifying age and gender of a person using deep learning algorithms. The images are acquired from a camera using OpenCV camera handling package in Python. The classification models will be trained using TensorFlow or Caffe Deep Learning libraries.

### Problem statement

Majed or Haitham Please summarize the following paragraph which I picked from the below mentioned resources,,,make sure to properly reference these source in the references section at the end of the document

Automatic age and gender classification has become relevant to an increasing amount of applications, particularly since the rise of social platforms and social media.

Age and gender play fundamental roles in social interactions. Languages reserve different salutations and grammar rules for men or women, and very often different vocabularies are used when addressing elders compared to young people. Despite the basic roles these attributes play in our day-to-day lives, the ability to automatically estimate them accurately and reliably from face images is still far from meeting the needs of commercial applications. This is particularly perplexing when considering recent claims to super-human capabilities in the related task of face recognition (e.g., [48]). Source = http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.722.9654&rep=rep1&type=pdf

Over the last decade, the rate of image uploads to the Internet has grown at a nearly exponential rate. This newfound wealth of data has empowered computer scientists to tackle problems in computer vision that were previously either irrelevant or intractable.

Applications for this technology have a broad scope and the potential to make a large impact. For example, many languages have distinct words to be used when addressing a male versus a female or an elder versus a youth. Therefore automated translation services and other forms of speech generation can factor in gender and age classification of subjects to improve their performance. Also, having an idea about the age and gender of a subject makes the task of recognizing that subject significantly easier. This could be used to aid assisted vision devices for those with deteriorating, or lost, eyesight. Social media websites like Facebook could use the information about the age and gender of the people to better infer the context of the image. For example, if a picture contains many people studying together, Facebook might be able to caption the scene with “study session.” However if it can also detect that the people are all men in their early 20s and that some are wearing shirts with the same letters, it may predict “College students in a fraternity studying.” Source = http://cs231n.stanford.edu/reports/2016/pdfs/003\_Report.pdf

Facial attribute recognition, including age, gender and emotion, [1,2,3,4,5,6,7] has been a topic of interest among computer vision researchers for over a decade. One of the key reasons is the numerous applications of this challenging problem which range from security control, to person identification, to human-computer interaction. Due to the release of large labeled datasets, as well as the advances made in the design of convolutional neural networks, error rates have dropped significantly. In many cases, these systems are able to outperform humans. Source = https://arxiv.org/pdf/1702.04280.pdf

# Planned Schedule

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Week** | **Tasks and events** | **Description** | **Deliverables** | **Date of Submission** | **Weight** |
| 2 | Research, literature survey and getting familiar with necessary tools and libraries. | Efforts to understand the scope of the problem and environment that is intended to be used in the project. | None |  |  |
| 3 | Data Collection and performing basic image processing techniques. |  | Initial Plan Document | 8/2 | 5% |
| 4 | Requirement specification Incremental development detailed plan | Detailed plan of the incremental development iterations (involves feature implementation plan) | Requirements Document Feasibility study and Detailed Plan | 15/2 | 15% |
| 5,6,7,8 | Analysis, tuning and testing of DNN model |  | Initial release  Version 0.1 | 15/3 | 20% |
| 9 | Progress report | A written report about the achieved work | Progress report | 22/3 | 10% |
| 10,11 | Deployment on Android |  | Release 0.2 | 5/4 | 10% |
| 12,13 | Finalization and Testing |  |  | 19/4 |  |
| 14-15 |  |  | First version, Version 1.0 | 3/5 | 20% |
| 14-15 | Project Report Presentation |  |  | 3/5 | 15% |
| 14-15 | Video about the projects (3-5 minutes) |  |  | 3/5 | 5% |

# References