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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

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# Introduction

## Purpose of This Document

This document starts with an introduction about the age and gender recognition system. This system will automate the process of detecting a person’s age and gender using an image of their face. In addition, it provides a tentative plan of the project during the 15-week period, including the deliverables expected every week.

## Scope of the Project

### Project Overview

This project aims to produce a model capable of classifying age and gender using deep learning algorithms. The images are acquired from a camera, and will be manipulated using OpenCV’s camera handling package in Python. Afterwards, any classification models will be trained using either TensorFlow, or Caffe Deep Learning.

### Problem Statement

Interest in facial and age recognition grew rapidly in the last decades due to its importance in cutting-edge web and mobile applications. Every day, dozens of personal photos are stored on social media applications, and the need to analyze them will facilitate a better user experience [1]. Uses of such a technology varies from security to identification, and human-machine interactions. The significant advances in this area can produce models that are able to outperform even human abilities [2]. Since many languages have grammatical genders, these models might be capable of using proper linguistic attributes and words when interacting with humans. Such is an example of an adequate solution for a problem in this area [3].

# Planned Schedule

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Week | Tasks and events | Description | Deliverables | Date of Submission | Weight |
| 2 | Research literature    Get familiar with necessary tools and libraries | Understand the scope of the problem, and the environment that will be used in the project. | None |  |  |
| 3 | Data Collection  Performing basic image processing techniques. |  | Initial Plan Document | 8/2 | 5% |
| 4 | Requirement specification  Incremental development plan | Detailed incremental development iterations plan (involves feature implementation plan) | Requirements Document  Feasibility Study  Detailed Plan | 15/2 | 15% |
| 5-8 | 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% |
| Project Report Presentation |  |  | 3/5 | 15% |
| Project Videos (3-5 minutes) |  |  | 3/5 | 5% |

# Team Contribution

|  |  |  |
| --- | --- | --- |
| ID | Name | Tasks |
| 201351850 | Mustafa Al-Turki |  |
| 201381710 | Majed Alshaibani | Problem Statement, Review Initial Plan |
| 201379790 | Haitham Albetairi | Cover Page, Proofreading & Revision |

# References

[1] Convolutional Neural Networks for Age and Gender Classification, Ari Ekmekji, <http://cs231n.stanford.edu/reports/2016/pdfs/003_Report.pdf>

[2] DAGER: Deep Age, Gender and Emotion Recognition using Convolutional Neural Network, [arXiv:1702.04280](https://arxiv.org/abs/1702.04280)

[3] Age and Gender Classification using Convolutional Neural Networks <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.722.9654&rep=rep1&type=pdf>