|  |  |
| --- | --- |
| **Project Case** | A logo for a software laboratory center  Description automatically generated |
| COMP7116 | COMP7116001 | COMP7116016 | MATH6168  Computer Vision |
| **Computer Science** | **O242-COMP7116-KC02-00** |
| ***Valid on*** *Odd Semester Year 2023/2024* | **Revision 00** |

1. Kelompok tidak diperkenankan untuk:

*Members of the group are prohibited from:*

* + - Melihat sebagian atau seluruh jawaban kelompok lain,

*Seeing a part or the whole answer from other groups,*

* + - Menyadur sebagian atau seluruh jawaban dari buku, catatan, video, dan jenis referensi lainnya,

*Retell a part or the whole answer from books, notes, videos, and other references,*

* + - Menyadur sebagian atau seluruh jawaban dari internet,

*Retell a part or the whole answer from the internet,*

* + - Mengumpulkan jawaban yang tidak sesuai dengan tema soal,

*Submitting an answer with a different theme from the given case,*

* + - Melakukan tindakan yang menyebabkan jawaban dicontek oleh orang lain atau kelompok lain, baik disengaja maupun tidak disengaja,

*Doing action that could result the answer being copied by someone or other groups, intentionally or unintentionally,*

* + - Melakukan tindakan kecurangan lainnya.

*Committing other dishonest actions.*

1. Jika kelompok terbukti melakukan tindakan seperti yang dicantumkan pada butir ke-1, maka nilai mahasiswa dan/atau kelompok yang melakukan kecurangan, baik menyontek atau dicontek, akan dinolkan sesuai dengan peraturan yang berlaku.

*If it has been proven that a group has committed dishonest actions outlined in point 1 above, the whole groups related to the incident, regardless of which one copies or has their answer copied, will be issued a score of zero according to the regulation.*

1. Jawaban yang dapat diterima dan dinilai adalah jawaban yang dikumpulkan sebelum batas waktu yang telah ditentukan.

*The answer must be submitted before the designated deadline to be accepted and graded,*

1. Jawaban akan dinilai berdasarkan teknik atau metode yang diajarkan pada kelas praktikum dengan menggunakan software yang sudah ditentukan.

*The scoring will be based on the materials taught during the practicum classes using the designated software. Using different software than requested may result in your answer not being graded.*

1. Jika Anda tidak membaca peraturan ini, maka Anda dianggap sudah membaca dan menyetujuinya.

*By taking this exam, you agree to these regulations, regardless of whether you have read it or not.*

1. Persentase penilaian untuk matakuliah ini adalah sebagai berikut:

*The score will be distributed as follows:*

|  |  |  |
| --- | --- | --- |
| **Tugas Mandiri**  *Assignment* | **Proyek**  *Project* | **UAP**  *Final Exam* |
| 40% | 60% | - |

1. Perangkat lunak yang digunakan pada matakuliah ini adalah sebagai berikut:

*This course uses the following software:*

|  |
| --- |
| **Software**  *Software* |
| Library Computer Vision  Python 3.7.6  Visual Studio Code |

1. Ekstensi file yang harus dikumpulkan untuk matakuliah ini adalah sebagai berikut:

*Your answers must be in the following file extensions:*

|  |  |  |
| --- | --- | --- |
| **Tugas Mandiri**  *Assignment* | **Proyek**  *Project* | **UAP**  *Final Exam* |
| PY | PY | - |

1. File yang harus dikumpulkan adalah keseluruhan jawaban beserta dengan aset yang digunakan (gambar, audio, video, dll) dan dokumentasi proyek yang berisikan link referensi aset dan penjelasan mengenai aplikasi yang dibuat (terlampir bersama dengan soal).

*Include other files that can support your project, such as: all files in your project, other files (image, audio, video, etc.) used in your project, \*.doc file (documentation of your project) that contains all pages in your project, reference links of additional files (image, audio, video, etc.) used in your project, the description about how to use your application, etc.*

## Soal

*Case*

**Football Player Face Recognizer**

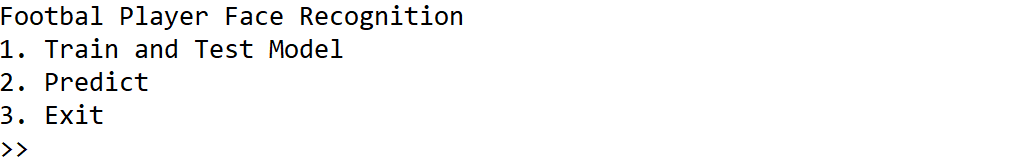
**Football Player Face Recognizer** is an AI company that focuses on computer vision. They recently hired you as an AI Engineer to make an application that can recognize the faces of famous football players using **Python** and **OpenCV.** Here are the requirements.

* **Dataset Description**

The given dataset contains **images of** **each football players** that have already been uploaded from the applications. You need to **split**the dataset into**training data**and**testing data**. The test data takes the sum of**25% randomly chosen images**from**each football player**. For example, if there are 20 images for each voice actor/actress, then the total training data is 15 random images and the total testing data is 5 random images.

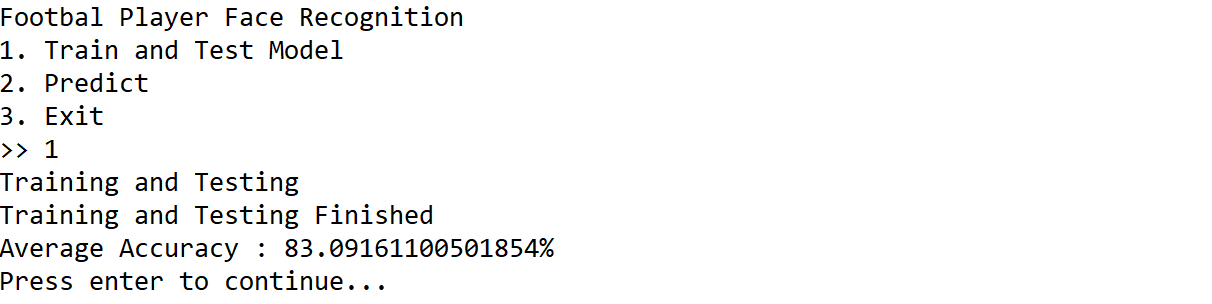
* **Main Program**

The programwill consist of **3 options**, which are **train and test model**, **predict**, and **exit**.The menu will **loop** until the user chooses to exit.



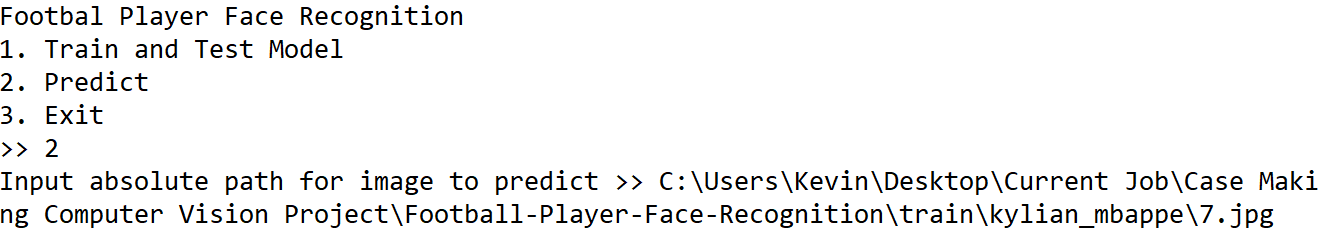
**Figure 1. Menu**

* When the user selects **menu 1** (**Train and test model**), then the program will:
* **Detect faces** inside the train data and test data. **Store the result** into lists and make sure the stored result has **only one face detected**.
* **Train** the stored train data result using **face recognizer**.
* **Predict** the stored test data result based on the trained recognizer to produce the prediction result. **Print** the **average accuracy** of the prediction.
* **Save** the trained result into a **model** that can be used in the predict menu.

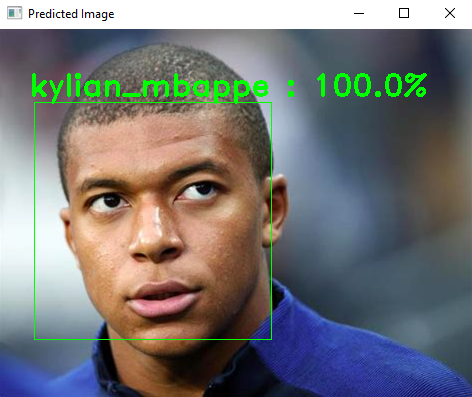


**Figure 2. Train and Test Model**

* When the user selects **menu 2** (**Predict**), then the program will:
* **Load** the saved model. If themodel is **not found**, then print an **error message** and **redirect** back to the menu.
* Ask to **input the image’s absolute path** to be predicted.
* **Predict** the input image based on the saved recognizer to produce the prediction result. The **prediction results** consist of the **predicted names**, **detected** **face location** of the person, and **accuracy** which will be **drawn** to the input image.
* **Show** the **prediction result**.



**Figure 3. Predict Input**



**Figure 4. Predict Result**

* When the user selects **menu 3** (**Exit**), then the program will be **terminated**.