**CS5131 Project Report**

**Title: Facial Recognition Model using One-shot Learning as an alternative to boarding fingerprint scanners**  
  
**By: Choy Aik Lok & Dominic Cheong**

**Objective**This project intends to provide an alternative to the fingerprint scanners at our boarding school using facial recognition. The project only intends to cover the backend, and there will be no prototype. The hardware used for demonstration will be laptop webcam.

**Development Processes and Tools Use**

In order to run the notebook, just download the given libraries at the first cell and run the whole notebook.

**Application of concepts and techniques**

This project has made use of the concepts of CNN, transfer learning, metrics to compare models (accuracy and precision), as well as python libraries such as opencv.

**Results and Findings**

**Screenshots and Diagrams**

**Limitations**

**Conclusion and Recommendations**

**Individual Reflections**

**References**

[1] <https://www.youtube.com/watch?v=lH01BgsIPuE>

[2] <https://www.kaggle.com/code/amankumarmallik/one-shot-learning-for-face-verification>

**Work Distribution Matrix**

|  |  |  |
| --- | --- | --- |
| **Work Description** | **Aik Lok** | **Dominic** |
| Ideation & Proposal | ✔ | ✔ |
| Data Collection & Method | ✔ |  |
| Model Type 1: MobileNet Transfer Learning CNN | ✔ |  |
| Model Type 2: Advanced CNN Model utilising Triplet Loss Function | ✔ | ✔ |
| Model Type 2: Data Generation for Triplet Loss Function |  | ✔ |
| Evaluation of Models | ✔ |  |
| Video | ✔ |  |
| Report | ✔ | ✔ |
| Finding References | ✔ | ✔ |