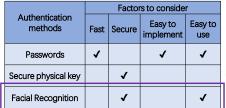
# **Facial Recognition System**

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## Background and Objective





Passwords are security risk! 123456 12345 haseball and the superman password to the superman pass

MIA A faster and secure web login algorithm





Back End





#### **Facial Recognition** (a better method?)

current algorithms: accurate

- slow
- · hard to implement
- trade-off between speed and accuracy



Improve the algorithm using a hybrid method so that it is both fast and secure

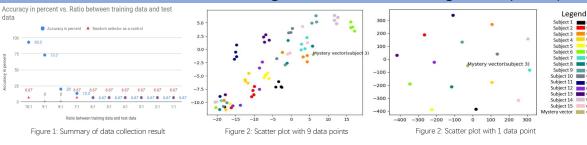
## Methodology

- (1) Design classification algorithm
- (2) Test image classification accuracy with Yale Face A dataset

Scale algorithm to use in web login

#### Results and Discussion

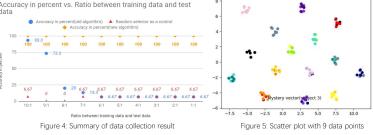
### Classification Algorithm - Nearest Neighbour (k-NN)



Accuracy is reduced with less training data

Figure 1,2 and 3 showing the results of the simple classification algorithm as well as the visualised data. We can see that as the number of images used gets lower, there are lesser data points for comparison of the new data that will have to be tested

#### Hybrid Algorithm



-200 -400 Figure 6: Scatter plot with 1 data point

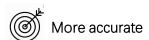
Significant improvement in accuracy even with reduced training data 93.3%

Figure 4,5 and 6 showing the results of the new classification algorithm tested on the same dataset with significant improvement in the accuracy at 93.3%

## Conclusion and Further research

### Hybrid algorithm

Faster



### **Future Work**

Improve low light performance of the algorithm

#### References

Most common passwords used as web logins https://edition.cnn.com/2019/04/22/uk/most-common-passwords-scli-gbr-

Belhumeur, P., Hespanha, J., & Kriegman, D. (1997). Eigenfaces vs Fisherfaces: Recognition Using Class Specific Linear Projection. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 711-720.