

PERFORMANCE METRICS:

Gesture detection:

- In the initial stage, we found that Viola-Jones face detection algorithm has some limitation and misdetection especially on the lighting issue.
- We tried a few ways to solve this problem and fortunately we managed to overcome this problem by adding in auto brightness adjustment based on HSV colour model (Baradin, et al., 2007).
- By adding the additional features, our Gesture detection rate has increased from 75% to 95% which is shown in Table

Table 1. Gesture detection frequency under different environments

Brightness Adjustment Environment	Before (%)	After (%)	Increment (%)
Indoor (Day)	85	100	15
Indoor (Night)	70	95	15
Outdoor (Day)	85	95	10
Outdoor (Night)	60	90	30
Overall Gesture Detection Frequency	75	95	20

Recognition Accuracy:

- Upon completion of our model, we conducted a mini testing on our model's expression recognition accuracy.
- We invited 5 normal people to participate in this mini test and have achieved satisfactory outcome when tested on some common gestures.

Table 2. First mini test matching result of gesture recognition with 200 train frames and 20 frames stored per expression.

Gestures	User 1	User 2	User 3	User 4	User 5	Total(%)
Hi	Match	Match	Match	Match	Match	100
Hello	Match	Match	Match	Match	Match	100
Aa	Match	Match	Match	Match	Match	100
Bb	Match	Match	Match	Match	Match	100
Facebook	Not-Match	Match	Not-Match	Match	Match	60
Twitter	Match	Not-Match	Match	Not-Match	Match	60
Total(%)	85.7	85.7	85.7	85.7	100	88.32