ASSESMENT 2

FACE RECOGNITION

COMP09041 – AI PROGRAMMING FOR GAMES

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# QUESTION A:

## The **FACERECOGNIZER::PREDICT** method returns a label indicating a match has been found. Is it possible to obtain a measure of the system’s *confidence* in that match?

**ANSWER:**

Yes. Confidence in this context refers to the distance between the input and the match fed to the program during training. There are two ways to obtain a measure of the system’s confidence in any given match.

We can print the confidence value by adding the following lines of code:

std::cout << "\nPredicted class = " << predictedLabel << '\n';  
std::cout << "Confidence      = " << confidence << '\n';

We can also expand the method and change the line 123 of our code to obtain a measure of the confidence and store it:

int predictedLabel;  
double confidence;  
model->predict(small\_roi, predictedLabel, confidence);

# QUESTION B:

## Does the program compensate if you are far from the camera? Might a cascading classifier help?

**ANSWER:**

No. Currently our program does not have any functions or methods to compensate for distance.

Regarding cascading classifiers, according to studies and research classifiers such as HOG (Histogram of Oriented Gradients) and LBP (Local Binary Patterns) in combination with cascade structures such as Haar (Haar-like Features) will increase the accuracy when identifying faces at different distances, angles and illumination.

**Sources:**

* Huachun Yang and Xu An Wang; **Cascade classifier for face detection.**Journal of Algorithms & Computational Technology, 2016 (<https://journals.sagepub.com/doi/10.1177/1748301816649073>)
* Anirudha B Shetty; **Facial recognition using Haar cascade and LBP classifiers**. Global Transitions Proceedings, 2021 (<https://www.sciencedirect.com/science/article/pii/S2666285X21000728>)