

Team number: SJCHS171

School Name: San Juan College High School

Area of Science: Artificial Neural Networks

Project Title: The Accuracy of Facial Recognition

#### Problem Definition:

Facial recognition, which is relied on by the world today, has its drawbacks. (Watman, 2017) These drawbacks affect the accuracy of facial recognition when detecting the model of the picture. It is said that facial recognition is about 15% inaccurate and most likely to misidentify black people instead of white people. (Solon, 2017) Some affecting factors include the location of facial features, lighting of the setting or enhancement of the face, blocking of facial features, and quality of the picture. (Watman, 2017) These factors result in complications during dilemmas. One example is finding the criminal of a case, the results of facial recognition technology bring innocent people to the surface during these cases. (Sydell, 2016) What if an innocent person had the same features as a criminal? The affecting factors can cause the technology to identify the face as the wrong person. It is said that only 8% of photos shown in FBI's databases are genuine criminals and 80% of photos are non-criminals. (Waddell, 2016) With so many drawbacks affecting the accuracy of this technology, is facial recognition reliable?

#### Problem Solution:

The context in which this experiment will be conducted, is using an artificial neural network. An artificial neural network is a system of connected units called artificial neurons that help each other process information. The goal is to build an artificial neural network which will make a connection between the picture of the model and the model. These pictures will purposefully have factors that affect it, such as lighting, blocking of facial features, and the quality of the picture. The artificial network will then be tested of its accuracy in detecting the face of the picture compared to the actual face used. This test will run again with a different model, different facial features. This will conclude if facial recognition is accurate and can be relied on based on specific situations.

#### Progress to Date:

Presently, awaiting responses from mentors that could possibly help with the code and facial meshes. As well as making simple artificial neural networks to practice for the larger one that is to be created. Working alongside teachers to figure out what program to use. Working up to larger coding, still planning, discussing, and learning.

#### Expected Results:

After the programming and testing the artificial neural network, the final results will conclude the accuracy of facial recognition technology. This will show if this technology can actually be relied on and if their needs to be enhancements. If the results of this technology conclude that facial recognition is not accurate enough, there will need to be changes in relating to this technology. Whether it be a whole new database or a whole new method in solving crimes. If the results of this technology conclude that facial recognition is accurate and

reliable, more details should be added to eliminate all complications in the future. This experiment will hopefully result in more accurate and reliable technology for the future.

Team Members: Samantha Smith and Robyn Curtis

Sponsoring Teacher: Dena Burgert and Geiza Dejka