

Do computers see what we see?

Exploring artificial intelligence and its ability to aid accessibility

Northfleet Technology College
Discovery Park

Overview

The Northfleet Technology College project explored artificial Intelligence and the potential for it to aid accessibility.

The methodology incorporated the NVIDIA Jetson Nano machine learning hardware. Leveraging Python as the major programming environment, the system was trained with existing and student generated data sets: images and text.

Aims

To prove that machine learning algorithms have the ability to:

- react to colour and provide warnings eg if a sign is red that means “danger”, amber means “take care”, green means “safe”
- report feelings through analysing facial expressions after being trained on a range of emotions
- recognise known and raise awareness of unknown individuals
- translate freehand text

Background information and Methodology

The project began with the use of the Scratch programming language to develop AI confidence. This then moved to using NVIDIA Jetson Nano computers to develop machine learning and programming skills using Python. In Year 10 the focus turned to using Google’s online AI platform; Teachable Machine.



Image 1: Jetson Nano Developer Kit
developer.nvidia.com/embedded/jetson-nano-developer-kit

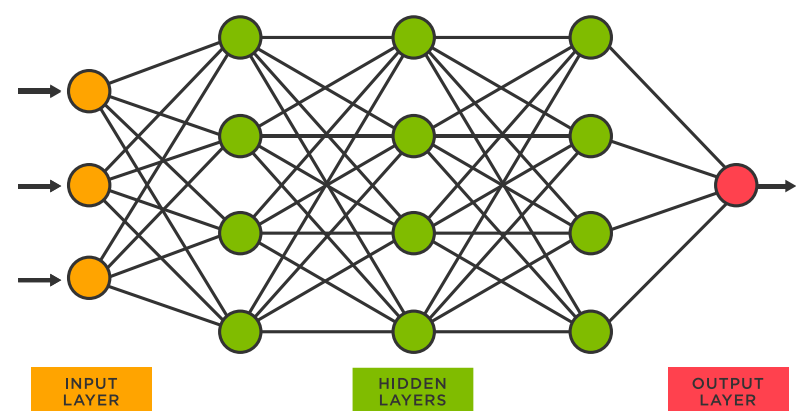


Image 2: Neural Network
tibco.com/reference-center/what-is-a-neural-network

Results and Conclusion

We found that there was a thread running through the processes of AI and Machine Learning. Computers can be trained to recognise a range of objects: dogs, emotions, male or female faces. The usability of the AI is determined by how well a result is predicted.

One of the major issues, though, is the problem of bias. Any data scientist considering working with machine learning needs to be sure of the data sets they are using and check that these are as free from error as possible.

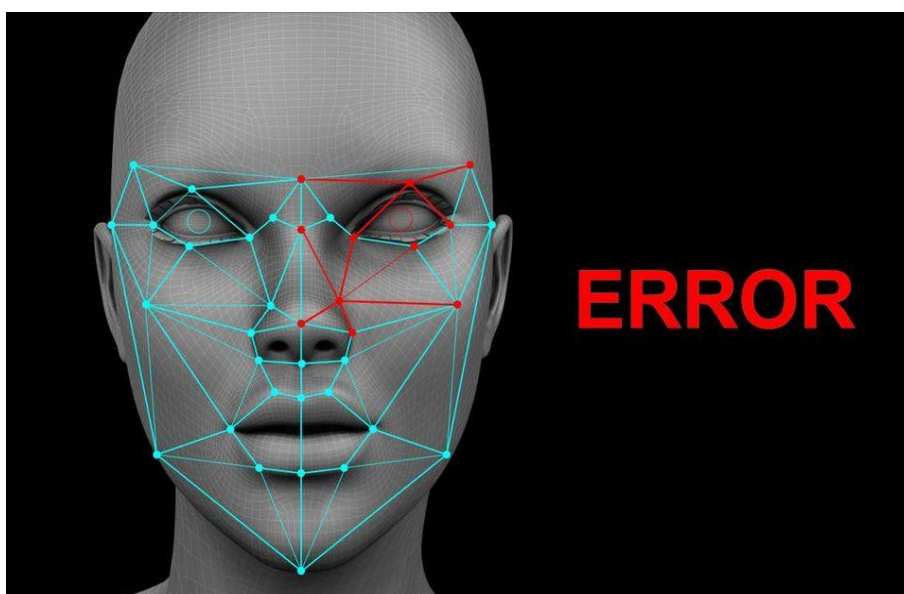


Image 3: Facial Recognition Can Go Wrong
<https://tinyurl.com/2p97esra>



Image 4: Surveillance is a fact of life
<https://listado.mercadolibre.cl/camara-falsa-solar>