*L00 Exploring Real-World Applications of Computer Vision*

**Facial Recognition**

**Facial Recognition** is one of the most common everyday uses of Computer Vision. We use it countless times a day when we turn on our smart phones.

Facial Recognition works by using a high-resolution camera to capture the image of a face (sometimes 3D cameras are used for depth perception.) Next will be to analyze the geometry of someone's face and compare it to a database of known faces. Once your face matches the facial recognition test you will gain access to what may have been locked before. For example, unlocking a phone, getting past a security gate in a residential area or a building, etc. The main use of Facial Recognition is to stop unwanted visitors from accessing something private.

**Technology Behind It –** Facial Recognition would not be a thing if the technology behind it was not invented. One of the most important parts of Facial Recognition is its use of Artificial Intelligence. AI is prominent in almost all types of Computer Vision and is a main reason that so much of this technology is able to work. Facial Recognition uses AI with its machine learning algorithms. These algorithms are the reason Facial Recognition can compare faces to the data it has stored. The algorithms also work together with ‘Feature Extraction,’ which helps identify specific features on a person that can help differentiate faces stored in its database.

**Challenges –** Facial Recognition faces numerous challenges which are mostly composed of society's opinion on whether Facial Recognition is a good thing or not. Many people claim that it is a huge privacy issue and that allowing Facial Recognition to save so many people’s faces in their database is not right. Citizens are frightened that the government could be using their data against them, taking away their rights.

**Reflection -** Looking ahead, facial recognition technology is poised for further advancements, becoming more accurate, efficient, and pervasive. These improvements could revolutionize security and convenience, making authentication processes smoother and more secure in various sectors. However, the increasing use of this technology also presents significant societal challenges. While it can enhance safety and reduce reliance on traditional security measures, it also raises critical concerns about privacy and the ethical implications of constant surveillance. As facial recognition becomes more ingrained in our lives, society must carefully weigh its benefits against the potential risks, ensuring that technological progress does not come at the expense of personal freedoms and privacy.