The most impressive machine learning application from my point of view is the Face Recognition system. This technology is so practical and widespread that nowadays everyone are receiving benefits from it.

Face perceptions are very complex as the recognition of facial expressions involves extensive and diverse areas in the brain. Brain imaging studies typically show a great deal of activity in an area of the temporal lobe known as the fusiform gyrus, an area also known to cause prosopagnosia when damaged (particularly when damage occurs on both sides). People learn to recognize faces from birth and nearly at the age of four months can clearly distinguish one person from another.

The main thing that a person pays attention to is the eyes, cheekbones, nose, mouth, and eyebrows, as well as the texture and color of the skin. At the same time, our brain processes the face as a whole and is able to identify a person even by half of the face. The brain compares the resulting picture with the internal averaged pattern and finds characteristic differences.

the face recognition system needs to find a face in the image and highlight this area. For this, the software can use a variety of algorithms: for example, determining the similarity of proportions and skin color, the selection of contours in the image and their comparison with the contours of faces, the selection of symmetries using neural networks. The most effective is the Viola-Jones method, which can be used in real time. With it, the system recognizes faces even when rotated 30 degrees.

This mind blowing technology is currently being used to instantly identify when known shoplifters, organized retail criminals or people with a history of fraud enter retail establishments. Photographs of individuals can be matched against large databases of criminals so that loss prevention and retail security professionals can be instantly notified when a shopper enters a store that prevents a threat. Face recognition systems are already radically reducing retail crime. According to many statistics, face recognition reduces external shrink by 34% and, more importantly, reduces violent incidents in retail stores by up to 91%.

Face recognition can be used to find missing children and victims of human trafficking.

To summaries, I would say that this machine learning technology is very effective at present days and It also has the potential to be much more fruitful in near future.