Computer Vision

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1 author:

Himanshu Lawaniya

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A Gentle Introduction to Computer Vision

Computer Vision, often abbreviated as CV, is defind as a field of study that seeks to develop techniques to help computers "see" and understand the content of digital image and video. It is nothing but a scientific field that allows computers to capture, interpret, understand, and process the objects that are visually perceivable. With the help of Artificial Intelligence and deep learning models, computer vision systems are able to understand the captured digital images and react suitably.

It is a multidisplinary field that could be called a sub field of artificial intelligence[AI] and machine learning [ML], it uses some specialized methods and make use of algorithms. The goal of computer vision is to understand the content of digital images. Typically this invovles developing methods that attempt to reproduce the capability of human.

There are some challenges in computer vision, the core problem is Object Recognition. Now, only hard object in a proper scale can be well recognized, e.g., Face. But in other cases, object recognition is still an open problem. There are many challenges like deformation, appearance variation, scale variation, blurness etc. Beyond object detection there is an unsolvable problem involving pattern recognition. Computer vision is very helpfull in day to day life, we can use this technology in finding more information about any rigid digital image and video. We can also pratically implement this object detection by using python language and some modules and libraries. Some usefull library like, Tensorflow, open cv module (to caputre images and video in real time), YOLO.

If you want to perform object detection pratically, you can find stuff here

https://github.com/himanshu6670/iot-object-detection-

There is also some benefit and limitations of computer vision. It provide faster and simpler process(systems can carry out monotonus, repetitive tasks at a faster rate, making the entire process simpler), gives accurate outcome(Computer vision systems with image-processing capabilities will commit zero mistakes, unlike humans) and cost reduction(With machines taking up responsibilities of performing taks, errors will be minimized, leaving no room for faulty products or services.). But there is lack of specialists in computer vision(It involves the use of ML and AI. To train a computer vision system powered by ML and AI, it need to have a team of professionals with technical expertise) and it also need for regular monitoring(what if computer vision system breaks down or has a technical glitch? To ensure that doesn't happen, companies have to get a dedicated team onboard for regular monitoring and evaluation). However, we have barely just scratched the surface of computer vision capabilities. The future is yet to be seen.