**OpenCV**

OpenCV いわゆる「Open source Computer vision library」はis an open source library that provides a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products. OpenCV algorithms can detect faces, identify objects, classify human actions, track moving objects etc.

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OpenCV is the huge open-source library for the computer vision, machine learning, and image processing and now it plays a major role in real-time operation which is very important in today’s systems.

It’s use in factories have ranged from monitoring equipment, helping robots navigate and pick up objects, inspecting labels on products in factories around the world, face detection etc. It has C++, Python, Java and MATLAB interfaces and supports Windows, Linux, Android and Mac OS.

How does it usually work for image processing?

1. Read an image
2. extracting the RGB values of a pixel
3. extracting region of interest (ROI)
4. resizing the image
5. rotating the image
6. drawing a rectangle
7. displaying text
8. メリットとデメリット

メリット：

1. Cost and memory: free as open source, low RAM usage (approx. 60-70 mb)
2. Speed and versatility: OpenCV is written in C++ so it is very fast and runs on almost all OS using a multitude of programming languages.
3. 技術の更新により、GANモデルに基づいて、CGANとDCGANなどのモデルも存在しています。GANモデルの考え方は新しい画像生成アルゴリズムに良い考え方を提供していました。

　　デメリット：

1. Sensitivity: The facial recognition system is highly sensitive to pose variations. Occlusion is high. (EXPLAIN) The movement of head or different camera positions can cause changes of facial texture and it will generate the wrong result.
2. How can it be used in factories? Is it easy to implement?

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