15-494/694: Cognitive Robotics

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Lecture 10: OpenCV

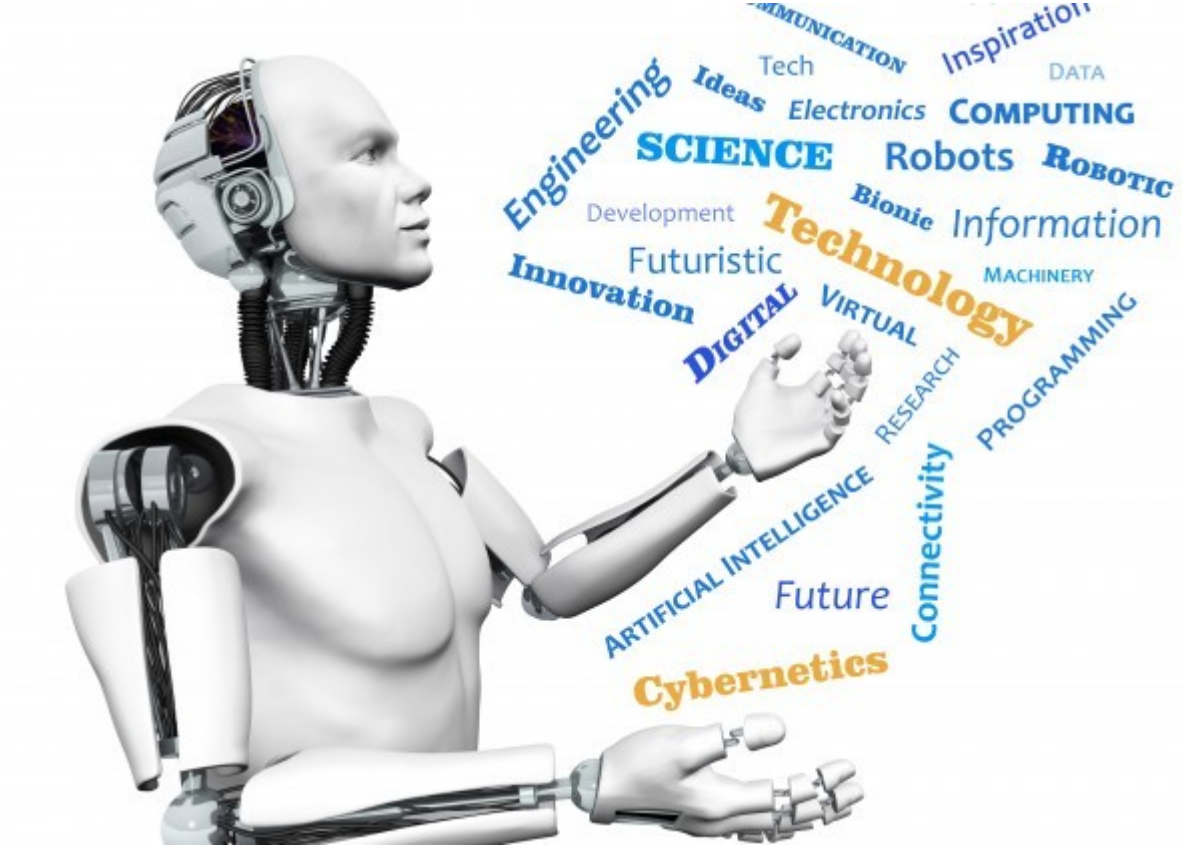
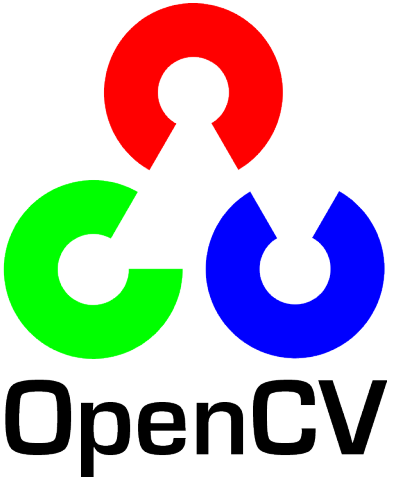


Image from http://www.futuristgerd.com/2015/09/10

OpenCV

- Open source real-time computer vision library.
- Originally developed by Intel.
- Written in C++ and C.
- Includes support for GPU processing.



Online Documentation

- Current version is OpenCV 4.1.0
- Documentation is at:
  https://docs.opencv.org/4.1.0
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  –
- OpenCV-Python tutorials linked from OpenCV.org.
- Note: OpenCV images use BGR byte order instead of the conventional RGB

OpenCV in Python

- Python bindings allow you to call OpenCV library routines.
- Data is passed as numpy arrays.
- The OpenCV module is called “cv2”.
- cozmo-tools uses OpenCV to detect ArUco markers.

CircleWatcher demo

- Built on StateMachineProgram.
- user_image method processes each camera frame.
- user_annotate method displays results in the camera viewer.

Demos in cozmo-tools/examples

- CV_Canny – Canny edge detector
- CV_Contour – Find intensity contours
- CV_GoodFeatures – Find interest points
- CV_OpticalFlow – Track interest points
- CV_Hough – Find lines