

15-494/694: Cognitive Robotics

Dave Touretzky

Lecture 10: OpenCV

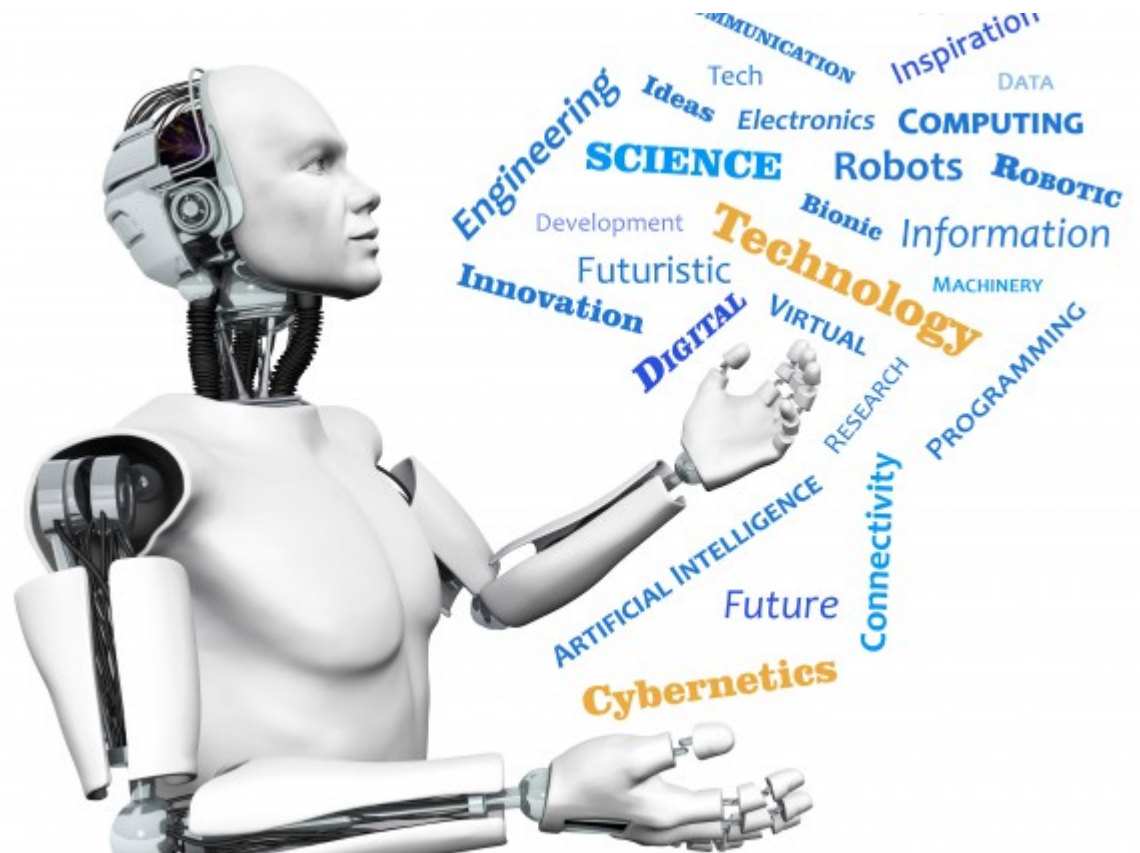
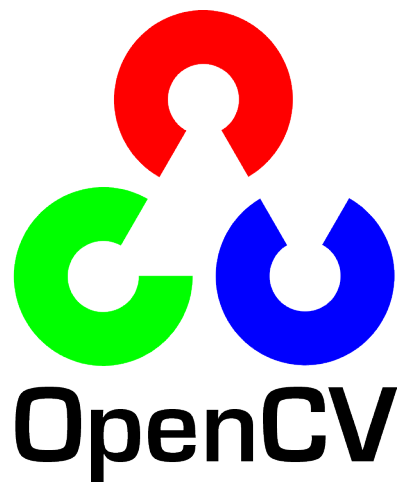


Image from <http://www.futuristgerd.com/2015/09/10>

OpenCV

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



Online Documentation

- We are using is OpenCV 4.6.0
- Documentation is at:
<https://docs.opencv.org/4.6.0>
- 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