2D Image Processing

Exercise session 1

Getting started with OpenCV and Python

Date: 11.05.2018
Room: 48-211-PC
Time: 15:15 - 16:45

1 Installing OpenCV

1.1 General instructions

Follow carefully the installation instructions in the link below. Use the options in cmake given in the next section.

Installation instructions

https://docs.opencv.org/3.4.1/d7/d9f/tutorial_linux_install.html

General steps for building and installing from source for any library:

- Install the dependencies
- Download the code (OpenCV)
- Configure and Compile the code
- Install

1.2 Detailed instructions

1 Download and install **cmake** or **cmake-gui**

2 Install EIGEN -
Either - download Eigen from http://eigen.tuxfamily.org and extract somewhere (preferably to /usr/include/eigen3)
Or - Install the library libeigen3-dev

3 Install Python env - `python-dev python-numpy`

4 Configure CMake with options:

- BUILD_EXAMPLES=ON

- **Do not** enable opencv_world

- WITH_EIGEN=ON

- Set EIGEN_INCLUDE_PATH to the folder Eigen unzipped folder (the folder that contains a folder named "Eigen")

- BUILD_opencv_python2=ON

5 Configure, generate, compile and install Opencv (Slide- 16)

6 Refer to the OpenCV tutorials at if stuck
http://docs.opencv.org/master/d9/df8/tutorial_root.html

2. First program - Webcam (C++)

- Create a simple C++ program that opens up the webcam and show it in the a window.
- Hint - grab frames in a loop with cv::*waitKey*() in it, and use *imshow* to show the frame in a *namedWindow*.
- Follow any tutorials which works with webcam.

3. Second Program - Webcam (Python)

- Create a simple python program that opens up the webcam and show it in the a window.

4. Third program: Canny edge detector **(language of your choice)**

- Create a program that runs the Canny edge detector
- Create two trackbars for controlling the high and low thresholds
- Create an interactive program where the trackbars change the output of the Canny detector
- Hint - use the tutorial
https://docs.opencv.org/master/da/d6a/tutorial_trackbar.html
with canny edge detector functionality.