

Програма курсу

1. Introduction to OpenCV
 - a. Installation in Windows
 - b. How to build applications with OpenCV inside the MS Visual Studio
2. The Core Functionality (core module)
 - a. Mat - The Basic Image Container
 - b. Mask operations on matrices
 - c. Operations with images
 - d. Basic Drawing
 - e. How to use the OpenCV `parallel_for_` to parallelize your code
3. Image Processing I (imgproc module)
 - a. Smoothing Images
 - b. Morphology Transformations
 - c. Basic Thresholding Operations
 - d. Canny Edge Detector
 - e. Hough Line Transform
4. Image Processing II (imgproc module)
 - a. Affine Transformations
 - b. Remapping
 - c. Histogram Operations
 - d. Finding contours in your image
 - e. Image Segmentation with Distance Transform and Watershed Algorithm
5. High Level GUI and Media (highgui module). Video Input and Output (videoio modules)
 - a. How to use the built-in graphical user interface of the library
 - b. Video Input with OpenCV
 - c. Creating a video with OpenCV
6. 2D Features framework (feature2d module)
 - a. Harris corner detector
 - b. Feature Detection
 - c. Feature Description
 - d. Feature Matching with FLANN
 - e. Features2D + Homography to find a known object
7. Video analysis (video module) and Object Detection (objdetect module)
 - a. How to Use Background Subtraction Methods
 - b. Cascade Classifier
8. Machine Learning I (ml module)
 - a. Artificial Neural Networks - Multi-Layer Perceptrons
 - b. Bayes classifier for normally distributed data
9. Machine Learning II (ml module)
 - a. K-Nearest Neighbors
 - b. Support Vector Machines
10. Students' Projects