

Програма курсу Computer Vision & AI Educational Program

CV part (c++, Python)	
Лекція 1	• Introduction to course. Introduction to OpenCV
	• The Core Functionality ('core' module)
Практика 1	• How to build applications with OpenCV inside the MS Visual Studio • Mat - The Basic Image Container • Mask operations on matrices • Operations with images • Basic Drawing
Лекція 2	Image Processing II ('imgproc' module)
Практика 2	• Affine Transformations • Template Matching • Histogram Operations
Лекція 3	Image Processing I ('imgproc' module)
Практика 3	• Smoothing Images • Morphology Transformations • Basic Thresholding Operations • Finding contours in your image • Canny Edge Detector • Hough Line Transform
Лекція 4	Image segmentation techniques
Практика 4	• Image Segmentation with k-means • Image Segmentation with Distance Transform and Watershed Algorithm
Лекція 5	2D Features framework ('feature2d' module). Basic concepts of the homography
Практика 5	• Harris corner detector • Feature Detection • Feature Description

	• Feature Matching with FLANN • Features2D + Homography to find a known object
AI part (Python)	
Лекція 6	Regressions
Практика 6	• Linear • Logistic
Лекція 7	Machine Learning I ('ml' module)
Практика 7	Artificial Neural Networks - Multi-Layer Perceptrons
Лекція 8	Machine Learning II ('ml' module)
Практика 8	• K-Nearest Neighbors • Support Vector Machine
Лекція 9	CNN
Практика 9	• Image classification using pre-trained model • Training a model • Projects
Students' Projects	
Лекція 10	Students' Projects
Практика 10	Consultations, Project Presentation, Code Review