

# Laboratory tasks description

## Part 3<sup>rd</sup>

### Vision

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1.11.2020

## 1 Document goal

Goal of this document is to define tasks to be done during the Artificial Intelligence and Computer Vision laboratory classes.

## 2 Scope of document

Scope of this document is limited only to tasks to be realized on Python using OpenCV framework.

## 3 Realization, documentation and rules

Task should be done in such way to meet all following requirements:

1. During implementation put some meaningful comments.
2. During implementation use meaningful names for structures, variables etc.
3. Prepare task solution documentation in the form of report, which will consist of crucial source code parts, examples, description of implementation, algorithms and assumptions. Such documentation should be free from grammar and language errors.

## 4 Tasks

1. Perform an image histogram **stretching** for quantized images:
  - (a) take low and high frequency, perform quantization with numbers of levels of intensities 128, 64 and 32,
  - (b) perform histogram equalization for high frequency and low frequency images,

- (c) describe your conclusions regarding histogram equalization for low and high frequency images.
2. Perform an image histogram **equalization** for quantized images:
    - (a) take low and high frequency, perform quantization with numbers of levels of intensities 128, 64 and 32,
    - (b) perform histogram equalization for high frequency and low frequency images,
    - (c) describe your conclusions regarding histogram equalization for low and high frequency images.
  3. Perform:
    - image thresholding (binary and normal) with chosen value,
    - finding image negative.

for Lena image. Generate histograms, explain the form of histogram.
  4. Perform following steps:
    - (a) create Lena's DFT,
    - (b) using DFT result generate inversed DFT image,
    - (c) compare original Lena and Lena after Fourier Transformations. Note differences if any.

## 5 Deadline

Deadline for this part of laboratory tasks is set to 17.11.2020. <sup>1</sup>

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<sup>1</sup>version 0.1