INTRODUCTION TO IMAGE PROCESSING AND COMPUTER VISION

LABORATORY PROJECT 2 (LABORATORIES 3 & 4)

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REALIZATION

- algorithms elaborated with OpenCV library
  - OpenCV (C++)
  - SimleCV/OpenCV (Python)
  - EmugCV (C#)
- usage of other libraries (for texture characterization) is also allowed
- solution for the laboratory task should contain:
  - source code with description (GUI is not obligatory)
  - documentation (description of solution, testing procedure, results and comments)
- solution should be send up to 21.01.2020

PLANT SPECIES RECOGNITION

- input: samples of different plant species (6 classes, from 38 up to 97 samples per class)

Acer Circinatum

Vine Maple

Acer Glabrum

Douglasii

Acer Macrophyllum

Big Leaf Maple

Acer Negundo

Boxelder

Quercus Garryana

Oregon White Oak

Quercus Kelloggii

California Black Oak

SPECIES CHARACTERIZATION

- aim: elaboration of discriminative feature vector (for classification purpose)
- try to use different features (shape features, texture features, local features descriptors, etc.)
- output: classification accuracy (in report, results per class and mean for all classes)
- for the purpose of classification use any classifier (usage of different environments is allowed e.g. R, Python, Matlab etc.; try to use quite simply classifier)
- try to prepare analysis for:
  - different groups of features (initially independently)
  - combining different groups of features
- for learning and classification evaluation use:
  - one big set of data with cross-validation (e.g. 10-fold cross-validation)
  - divide into training and testing set (80% training / 20% testing)
  - initial simple segmentation might be needed
- usage of CNN (as a magic black box) is NOT ALLOWED !!!