Hands-on Machine Learning Training

Session 3 – Image Features

Theoretical Preparation

This session focusses on extracting useful features from images. It is important to transform raw (intensity) data to something that represents the image's content better.

In order to successfully participate in the lab session, you should read and understand several concepts regarding image features.

- Texture Analysis
  - "Statistical Texture Analysis" [1] – a paper about several ways to describe texture.
  - You should understand the basic concepts of the presented image descriptors.
- Histogram of Oriented Gradients
  - Wiki [2]
  - SK-Image Example [3]
  - You should understand how HoG (as a popular feature descriptor) works and familiarise yourself with the syntax and parameters of the SK-Image implementation
- Local Binary Pattern
  - Wiki [4]
  - SK-Image Example [5]
  - You should understand the LBP descriptor in detail and have an overview of possible extensions

[1] https://pdfs.semanticscholar.org/6563/afbb8c50452a70d0c002e9feb0fa5e1274d4.pdf

[2] https://en.wikipedia.org/wiki/Histogram_of_oriented_gradients

[3] http://scikit-image.org/docs/dev/auto_examples/features_detection/plot_hog.html

[4] https://en.wikipedia.org/wiki/Local_binary_patterns

[5] http://scikit-image.org/docs/dev/auto_examples/features_detection/plot_local_binary_pattern.html#sphx-glr-auto-examples-features-detection-plot-local-binary-pattern-py