Object classification with machine learning (CNN) with a focus on understanding transfer learning techniques.

Company:

High Performance Consulting

Supervisor:

Jimmy Pettersson

Area:

The students will be looking at different machine learning techniques for object classification. Specifically neural networks models for applications in image processing. The study will target techniques to use existing pre-trained models to "re-train" these to classify similar objects but with a far smaller dataset.

Project:

The students should begin by studying existing theory regarding transfer learning techniques as well as existing tools and frameworks with the aim of finding suitable methods and tools to use in the further project.

The students should then implement some of these methods to re-train a model on a different, but related problem with a far more limited data-set.

Deliverables:

- A CNN/transfer-learning case study focusing on vehicles
  - re-training for novel vehicle types with smaller data-sets
  - datasets can be either artificially generated or provided
- A report:
  - theory CNN
  - theory transfer learning
  - existing tools/frameworks
  - experimental results: model accuracy etc