INTRODUCTION TO MACHINE LEARNING AND SELECTED EXAMPLE APPLICATIONS (2014)

Welcome to Introduction to Machine Learning and Selected Example Applications

Description: Content: The use of machine learning becomes increasingly important in Robotics, Computer Vision, computer graphics, computer games, linguistics, sound processing, datamining, user-interface design and many other fields. In a nutshell, machine learning techniques can be used for learning and modelling statistical dependency between sets of variables. These variables can be input variables (sound, images, documents, user input), system variables and output variables.
In this course we will review a number of well-known statistical machine learning techniques such as Hidden Markov Models (HMMs), Random Field models (MRFs, CRFs), Radial Basis Function (RBF) Networks, Support Vector Machines (SVMs) and possibly a brief introduction to graphical models and reinforcement learning. This course targets students that want to get a general overview of the field of useful and well-known machine learning techniques.

Prerequisites: The course is accessible to those new to these subjects; however, a basic knowledge of statistics and probability theory, as obtained through common engineering studies, is necessary. Basic knowledge of image processing techniques are useful, but not required.

Form: The first module of the course will provide you with an overview of a variety of state-of-art machine learning technique. For each of the techniques we will provide papers that will give further and more detailed theoretical and practical explanations. In this first part of the course you will choose the papers of the machine learning technique that you find most interesting.

In the time between the first and the second module you will have to study in depth your selected paper and re-implement the technique in your favourite programming language.

In the second module of the course includes teacher presentations, student presentations, company talks and dialogue sessions where students will receive feedback on their presentations and projects from fellow students as well as teachers.
Applicants will receive notification of acceptance by Monday, March 20, 2014.
Course fee
Participation in the course is free of charge, while any expenses toward accommodation or transportation for participating in the course must be met by the participants themselves.

Organizer: Volker Krüger, Robotics, Vision and Machine Learning Lab (RVMI), Dept. of Mechanical and Production Engineering. Email: **vok@rvmi.aau.dk**

Lecturers: Volker Krüger, Lazaros Nalpantidis, Carl Henrik Ek, KTH Stockholm, Sweden and Renaud Detry, University of Liège, Belgium

ECTS: 5

Time: The course is organized in two modules. Part 1: 17-18 March, 2014 and Part 2: 22-23 May, 2014

Place: Module 1: AAU Copenhagen, Module 2: AAU Aalborg

Zip code: 2450 and 9220

City: Copenhagen and Aalborg

Number of seats: 15

Deadline: 24 February, 2014

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