Second Machine Learning in High Energy Physics Summer School 2016

Monday 20 June 2016 - Sunday 26 June 2016

Lund University

Scientific Programme

The main MLHEP program will cover the following topics

Classification / Regression models

Algorithm composition, boosting

Feature selection / Dimensionality reduction

Model quality criteria selection and model evaluation

Neural Networks introduction

Model overfitting detection and mitigation

Hyper-parameter optimization for predictive models

Decorrelation of variables and predictions

Deep learning approach

Each lecture will be accompanied by a seminar, which will allow for students to gain practical experience and participate in group discussions. Students will have to use their own laptops to participate in the seminars.

For those participants who feel rather comfortable with the basics concepts of Machine Learning we provide advanced track, that will take place in parallel to the main track during Monday-Wednesday in Andromeda room (same building). The timeslots for lectures/seminars of the advanced track will coincide with the timeslots of the main track. The topics of the advanced track cover:

1) Trigger system overview, machine learning in the LHCb topological

trigger; speeding-up predictions for boosted decision trees and neural

networks. (Monday)

2) Tools and practices for reproducible research design and conduction (Tuesday)

3) Tracking approaches overview, methods and tools (Wednesday)

In addition to the Machine Learning lectures and seminars, a variety of talks by HEP-practitioners who used Machine Learning methods for solving particular problems in High Energy Physics.

During the MLHEP school our participants will have opportunity to join and compete in data challenge specially organized for this event.