MLHEP 2015 summer school

Report of Contributions

Contribution ID: **1** Type: **not specified**

Applying Machine Learning to LHC triggers optimization

Thursday, 27 August 2015 17:20 (1h 40m)

Presenter: VESTERINEN, Mika Anton (Ruprecht-Karls-Universitaet Heidelberg (DE))

Contribution ID: **2** Type: **not specified**

Challenges of searching for physics signatures with a large amount of background

Friday, 28 August 2015 17:30 (1h 40m)

Presenter: OWEN, Patrick Haworth (Imperial College Sci., Tech. & Med. (GB))

Contribution ID: **3** Type: **not specified**

Intro: General pipeline, ML at a glance

Thursday, 27 August 2015 09:40 (1h 20m)

Session Classification: Introductory track

Contribution ID: **4** Type: **not specified**

Intro: kNN, basic overfitting, roc curve, logistic regression

Thursday, 27 August 2015 11:20 (1h 20m)

Session Classification: Introductory track

Contribution ID: **5** Type: **not specified**

Reminder about major algorithms. Advanced aspects of their use. Model evaluation.

Thursday, 27 August 2015 09:40 (1h 20m)

Session Classification: Advanced track

Contribution ID: **6** Type: **not specified**

Feature selection. Regularization.

Thursday, 27 August 2015 11:20 (1h 20m)

Session Classification: Advanced track

Contribution ID: **7** Type: **not specified**

Introduction, course technicalities

Thursday, 27 August 2015 13:45 (1h 30m)

Session Classification: Introductory track

Contribution ID: **8** Type: **not specified**

NumPy, Pandas, Matplotlib

Thursday, 27 August 2015 15:40 (1h 30m)

Session Classification: Introductory track

Contribution ID: **9** Type: **not specified**

MLHEP introduction. ML vs MLHEP: correlation and agreement restrictions

Thursday, 27 August 2015 13:45 (1h 30m)

Presenter: LIKHOMANENKO, Tatiana (National Research Centre Kurchatov Institute (RU))

Session Classification: Advanced track

Contribution ID: **10** Type: **not specified**

sPlot technique. ML on sPlot data.

Thursday, 27 August 2015 15:40 (1h 30m)

Session Classification: Advanced track

Contribution ID: **11** Type: **not specified**

neural networks

Friday, 28 August 2015 09:30 (1h 20m)

Session Classification: Introductory track

Contribution ID: **12** Type: **not specified**

decision tree, regression tree

Friday, 28 August 2015 11:10 (1h 20m)

Session Classification: Introductory track

Contribution ID: **13** Type: **not specified**

model ensembling #1

Friday, 28 August 2015 09:30 (1h 20m)

Session Classification: Advanced track

Contribution ID: **14** Type: **not specified**

model ensembling #2

Friday, 28 August 2015 11:10 (1h 20m)

Session Classification: Advanced track

Contribution ID: **15** Type: **not specified**

Overfitting, Cross-validation

Friday, 28 August 2015 13:45 (1h 30m)

Session Classification: Introductory track

Contribution ID: **16** Type: **not specified**

Sklearn: KNN, decision tree, logistic regression

Friday, 28 August 2015 15:40 (1h 30m)

Session Classification: Introductory track

Contribution ID: **17** Type: **not specified**

Brave new boosting world: flatness boosting

Friday, 28 August 2015 13:45 (1h 30m)

Session Classification: Advanced track

Contribution ID: **18** Type: **not specified**

Brave new boosting world: reweighing boosting. Iterative learning

Friday, 28 August 2015 15:40 (1h 30m)

Session Classification: Advanced track

Contribution ID: **19** Type: **not specified**

MVA vs cut-and-count techniques in the SM model processes searches and measurements

Saturday, 29 August 2015 17:30 (1h 40m)

Presenter: SHCHUTSKA, Lesya (University of Florida (US))

Contribution ID: **20** Type: **not specified**

Ensembles

Saturday, 29 August 2015 09:30 (1h 20m)

Session Classification: Introductory track

Contribution ID: **21** Type: **not specified**

Gradient boosting; boosting to uniformity.

Saturday, 29 August 2015 11:10 (1h 20m)

Session Classification: Introductory track

Contribution ID: **22** Type: **not specified**

Linear dimensionality reduction.

Saturday, 29 August 2015 09:30 (1h 20m)

Session Classification: Advanced track

Contribution ID: **23** Type: **not specified**

Non-linear dimensionality reduction. Kernel trick. Common kernels.

Saturday, 29 August 2015 11:10 (1h 20m)

Session Classification: Advanced track

Contribution ID: **24** Type: **not specified**

Ensemble algorithms: random forest, gradient boosting

Saturday, 29 August 2015 13:45 (1h 30m)

Session Classification: Introductory track

Contribution ID: **25** Type: **not specified**

Hyperparam Optimization

Saturday, 29 August 2015 15:40 (1h 30m)

Session Classification: Introductory track

Contribution ID: **26** Type: **not specified**

Meta Algorithms Applications in HEP.

Saturday, 29 August 2015 13:45 (1h 30m)

Session Classification: Advanced track

Contribution ID: **27** Type: **not specified**

Hypotheses testing.

Saturday, 29 August 2015 15:40 (1h 30m)

Session Classification: Advanced track

Contribution ID: **28** Type: **not specified**

Multivariate techniques in the Higgs search

Sunday, 30 August 2015 16:20 (1h 40m)

Presenter: BENDAVID, Josh (CERN)

Contribution ID: **29** Type: **not specified**

GBDT tuning, reweighting, testing hypotheses, gaussian processes for optimization

Sunday, 30 August 2015 09:00 (1h 20m)

Session Classification: Introductory track

Contribution ID: **30** Type: **not specified**

Unsupervised learning, Latent Dirichlet Allocation, PCA. Fast predictions and pruning

Sunday, 30 August 2015 10:40 (1h 20m)

Session Classification: Introductory track

Contribution ID: **31** Type: **not specified**

Kernelized algorithms: SVM, regression, K-NN, PCA and their properties.

Sunday, 30 August 2015 09:00 (1h 20m)

Session Classification: Advanced track

Contribution ID: **32** Type: **not specified**

Deep learning. Different kinds of learning.

Sunday, 30 August 2015 10:40 (1h 20m)

Session Classification: Advanced track

Contribution ID: **33** Type: **not specified**

PCA, RBM and alike on MNIST

Sunday, 30 August 2015 13:00 (1h 30m)

Session Classification: Introductory track

Contribution ID: **34** Type: **not specified**

Clustering

Sunday, 30 August 2015 14:45 (1h 30m)

Session Classification: Introductory track

Contribution ID: **35** Type: **not specified**

Summary: HEP ML analysis sketch, from data to discovery.

Sunday, 30 August 2015 13:00 (1h 30m)

Session Classification: Advanced track

Contribution ID: **36** Type: **not specified**

My own first NN using theano.

Sunday, 30 August 2015 14:45 (1h 30m)

Session Classification: Advanced track

Contribution ID: **37** Type: **not specified**

Welcome to MLHEP

Thursday, 27 August 2015 09:00 (20 minutes)

Session Classification: Welcome

Contribution ID: **38** Type: **not specified**

MLHEP Kaggle competition

Thursday, 27 August 2015 09:20 (15 minutes)

Presenter: KAZEEV, Nikita (Yandex School of Data Analysis (RU))

Session Classification: Welcome