



Machine Learning Session

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Machine Learning at HSF



- Machine Learning is adjusting the parameters of a model to some data
 - Supervised learning is the most wide-spread
 - Unsupervised learning is mostly clustering
- Machine learning is present in HEP since years, even with large models
- Decision trees are fashionable for their accuracy and being cheap to train
- Deep learning has become very successful in industry, and succeed to train very large models to various tasks. Thanks to increase of computation power with GPU and that NN training is highly parallelizable
- Many problems (pattern recognition, object detection, reduction, ...) seem to have direct analogy to some of HEP problems
- ✓ Several highly supported packages exist in industry (scikit-learn, R, ...)
- ✓ Software for deep learning based on powerful platform (theano, tensorflow, ...)
- How does the community organize itself for ML and DL solutions in HEP

Agenda



Now

- Introduction and context with industry
- Software roadmap and platform
- Data and simulation playground availability
- Status of IML with HSF

This afternoon

- Introduction to hackathon platforms
- Anomaly detection on RAMP

Hackathon on Anomaly Detection



- Please register to a separate indico
 - <https://indico.cern.ch/event/525452/>
- Please register to the RAMP server
 - <http://www.ramp.studio/>
- Go through the README of the session
 - <https://indico.cern.ch/event/496146/timetable/>
- Install anaconda software package
 - Bundle of python libraries for machine learning
- Come to salle bleue at 14:00 today
 - To check out how does a RAMP hackathon go
 - To work together and solve the problem