Training for Machine Learning

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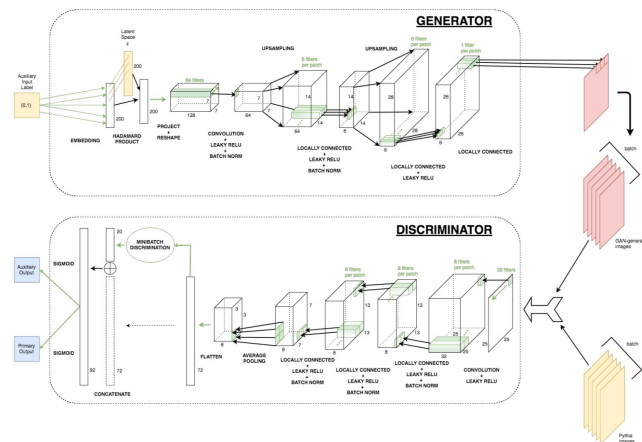
Chicagoland Mini-Workshop on LHC Run II Analysis with Machine Learning at the University of Chicago
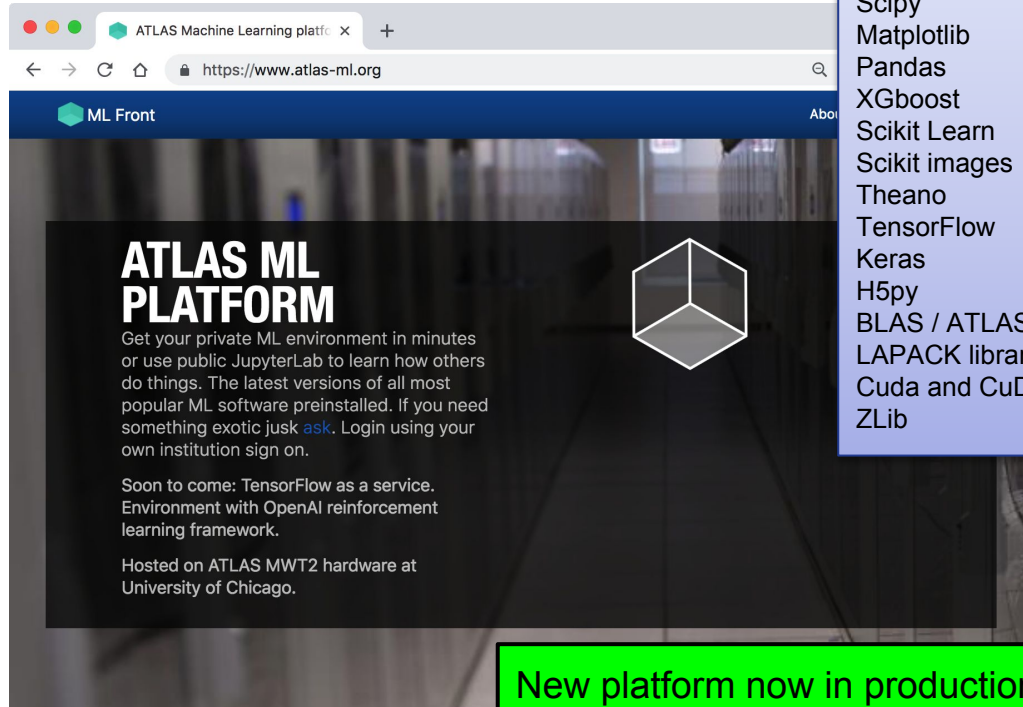
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training people

(e.g. http://codas-hep.org/
Princeton July 2018)

training models

(e.g. hyperparameter training of GANS
CaloGAN, https://arxiv.org/abs/1705.02355)

Training models

- In ATLAS we are beginning to see demand for machine learning capacity beyond the teaching platform
- New Grid-GPU queues and continuous integration environments for scheduling user containers are being setup in the UK, Brookhaven, some Tier2s
- Efforts to schedule heterogenous processors (e.g. at HPC) for "full scale" training

ATLAS ML training platform

Work on-going at UC, BNL, CERN to bring ML gpu resources to users for training

ATLAS Machine Learning platfo ×   +

https://www.atlas-ml.org

ML Front   About

ATLAS ML PLATFORM

Get your private ML environment in minutes or use public JupyterLab to learn how others do things. The latest versions of all most popular ML software preinstalled. If you need something exotic jusk ask. Login using your own institution sign on.

Soon to come: TensorFlow as a service. Environment with OpenAI reinforcement learning framework.

Hosted on ATLAS MWT2 hardware at University of Chicago.

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New platform now in production:
https://www.atlas-ml.org/

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Training & teaching

- ## Workshops
  - e.g. codas-hep.org

- ## Courses
  - D. Miller @ UC
    - https://github.com/UChicagoPhysics/PHYS250
  - M. Neubauer @ UIUC
    - https://illinois-mla.github.io/syllabus/

Questions

1. What **resources** are needed for ML at "full scale", and when?
    a. ATLAS computing is looking for realistic workloads to drive requirements (near and long term)
2. ... for development & innovation
    a. c.f. http://iris-hep.org/ and many other projects
3. ... for local analysis
    a. replacing the old LHC Tier3 model? (& don't forget the datasets)
4. ... for education and training in context of LHC physics