

US LUA Machine Learning Discussion Breakout

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USLUA Collaboration Meeting
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Rice University

ML Discussion

- Full Discussion Notes: <https://docs.google.com/document/d/1LhhtGIUtHVGg59SL7v-mbLIAnhyobuCNVsj8wSbdzIY/edit>
- Prepared questions ahead
 - Did not get to all of them but many started lively discussion
- ~10 participants, range of seniority (from grad student to professor) and expertise in ML with applications in many aspects of LHC physics (trigger, reconstruction, analysis)

Selected Highlights

- **What can HEP uniquely add to the field of AI?**
 - L1 trigger (latency < 1 microsecond) is a very unique environment unlike industry solutions
 - Unique, complex, and critical systems
- **How can we guarantee ML performance in critical applications like the L1 trigger?**
 - Extensive “continuous integration” style testing
- **Do we need common HEP+ML tools?**
 - One Possible solution: Docker-like system of common, industry-backed software, including data translation tools
- **How should students be trained in CS/ML methods?**
 - Classes in CS departments (introduction to Python, C++, etc.)
 - Hands-on tutorials (e.g. CMS LPC DAS and HATS) and schools (IRIS-HEP training events)