NSF Program (either CC or CICI): CC

Program Area: CC* Compute **Award Number:** 1925645

PI: Kevin Lannon
co-PIs: Paul Brenner, Jun Li, Geoffrey Siwo, Olaf Wiest
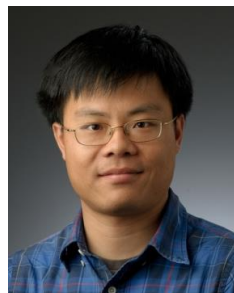
Project Title: CAML - Accelerating Machine Learning via Campus and Grid

Kevin Lannon
Associate Professor
Dept. of Physics
University of Notre Dame
klannon@nd.edu

Paul Brenner
Senior Associate Director
Center for Research Computing
University of Notre Dame
pbrenne1@nd.edu

Jun Li
Associate Professor
Applied and Computational
Mathematics and Statistics
University of Notre Dame
Jun.li@nd.edu

Geoffrey Siwo
Research Assistant Professor
Center for Research
Computing
University of Notre Dame
gsiwo@nd.edu

Olaf Wiest
Professor
Dept. of Chemistry and
Biochemistry
University of Notre Dame
owiest@nd.edu

Quad Chart for: CAML - Accelerating Machine Learning via Campus and Grid at University of Notre Dame

Challenge: To to accelerate machine learning across the displines at all stages from exploratory to large scale

- Machine learning (ML) exploration requires interactive access and possibly experimental hardware
- Large scale ML requires batch resources
- Balancing these competing needs across a campus requires a flexible resource
- Focus on ML but also benefit other applications accelerated by GPUs

Solutions:

- Supply a GPU cluster with hardware optimized for ML
- Configure the batch system of the cluster to serve both interactive and batch jobs
- Integrate cloud resources to provide access to bleeding edge experimental accelerators or burst capacity for coursework or workshops.
- Configure the resource for efficient sharing via OSG, integrating OSG technologies (i.e. software and data sharing services) into design from outset.
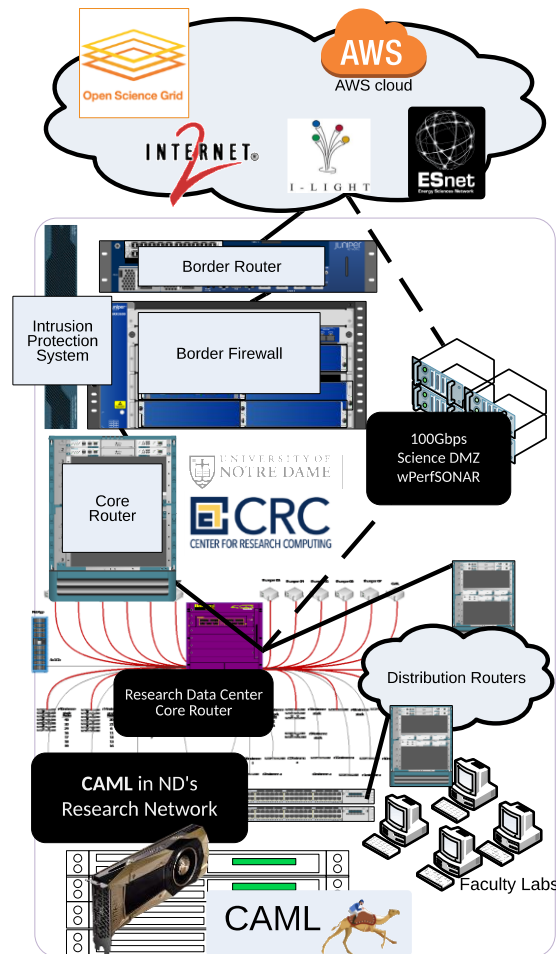
Scientific Impact:

- Accelerate exploratory ML by providing interactive resources for parallel investigations by group members
- Accelerate mature ML efforts by providing capacity to scale
- Impacts felt across ND campus and nationally through OSG access

Metadata tag:

- *Status: Reviewing quotes for hardware acquisition*
- *Collaboration with OSG on access, especially interactive access via OSG*
- *Interested in collaboration with other clusters that provide GPU resources over OSG*
- *Example research enabled:* https://ccas.nd.edu/
- *CRC:* https://crc.nd.edu/