NVIDIA RAPIDS Python Workshop at NERSC for Future Perlmutter Users:

Welcome Talk

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DAS, NERSC
Tuesday 2020-04-13
Before We Begin

Thank you for Zooming in.

Please be sure to stay muted.

This is being recorded, should show up on NERSC website soon.

Slides are on the NERSC website.

You can use the Jupyter notebooks, GPU access through April 20.

For questions/comments, please use the chat window.

Stay relaxed, remain socially distanced, and wash your hands.
Perlmutter is coming soon, > 3x computational power of Cori. Heterogeneous CPU-node + GPU-node architecture. New Cray Slingshot interconnect for data-centric computing. All-flash platform integrated storage.

**GPU nodes:**
- 4 NVIDIA GPUs each with Tensor Cores, NVLink-3, HBM
- 1 AMD CPU
- Unified Virtual Memory
GPUs, Python, and You

What do you need to know to make use of the GPUs?
Training events, workshops, hackathons. This one is about data analytics on GPUs in Python with RAPIDS. Why Python? Well,

>1000 unique non-staff Python users at NERSC
¼ of all projects that run jobs at NERSC use Python
¼ of all jobs that run at NERSC use Python somehow
Many EOD use cases leverage Python for productivity

Want to help you make use of Perlmutter GPUs on day one.
NERSC + NVIDIA/RAPIDS Partnership to Prepare NERSC’s Python Data Analytics Users for Perlmutter
Format + Agenda

9:00-9:15  Welcome (right now)
9:15-9:30  Introduction to GPU Computing
9:30-10:15 Intro to RAPIDS, focused on cuDF and cuML
10:15-11:00 Introduction to cuDF  
   flipped classroom, notebooks sent in advance
11:00-11:15 Break
11:15-12:00 Introduction to cuML  
   flipped classroom, notebooks sent in advance
12:00-1:00 Break
1:00-1:30  Introduction to Dask  
   flipped classroom, notebooks sent in advance
1:30-2:00  Introduction to Dask + GPUs
2:00-2:15  Evaluating CPU Workflows for the GPU  
   Thinking columnar, rather than row-wise
2:15-3:15  Demo: Accelerate a Real Workflow
3:15-3:30  Break
3:30-4:00  Open Q&A, closing remarks, attendee survey

(Did you do the homework?)
Today’s Presenters from NVIDIA:

Ayush Dattagupta  RAPIDS Engineering
Vibhu Jawa       RAPIDS Engineering
Zahra Ronaghi    NVIDIA Solutions Architecture
Nick Becker      RAPIDS Engineering
Presenters from NVIDIA

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Nick Becker  RAPIDS Engineering

❤️  THANK YOU SO MUCH  ❤️
Further Thanks

Thanks also:

Laurie Stephey  
NERSC

Seleste Rodriguez  
NERSC

NERSC Users Like You  
Socially Distanced

❤️ THANK YOU SO MUCH ❤️
Important links

https://www.nersc.gov/users/training/events/rapids-hackathon/

https://github.com/beckernick/nersc-rapids-workshop

https://rapids.ai/

https://docs-dev.nersc.gov/cgpu/software/#python

https://docs.nersc.gov/programming/high-level-environments/python/