Welcome to the 2021 XSEDE Summer Boot Camp

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Who are we?

Your hosts:
Pittsburgh Supercomputing Center

XSEDE
Extreme Science and Engineering
Discovery Environment

PITTSBURGH
SUPERCOMPUTING
CENTER

Who am I?

John Urbanic
Parallel Computing Scientist
Pittsburgh Supercomputing Center

Parallelize codes with

- MPI
- OpenMP
- OpenACC
- Hybrid
- Big Data and Machine Learning

Mostly for XSEDE platforms. Mostly to extreme scalability.

XSEDE HPC Monthly Workshop Schedule

- September 3-4   *HPC Monthly Workshop*: MPI
- October 1-2   *HPC Monthly Workshop*: Big Data
- November 5   *HPC Monthly Workshop*: OpenMP
- December 3-4   *HPC Monthly Workshop*: Big Data
- January 21   *HPC Monthly Workshop*: OpenMP
- February 19-20   *HPC Monthly Workshop*: Big Data
- March 3   *HPC Monthly Workshop*: OpenACC
- April 7-8   *HPC Monthly Workshop*: Big Data
- May 5-6   *HPC Monthly Workshop*: MPI
- **June 2-5**   **Summer Boot Camp**
- August 10-11   *HPC Monthly Workshop*: Big Data
- September 14-15   *HPC Monthly Workshop*: MPI
- October 5-6   *HPC Monthly Workshop*: Big Data
- November 3   *HPC Monthly Workshop*: OpenMP
- December 7-8   *HPC Monthly Workshop*: Big Data

HPC Monthly Workshop Philosophy

o Workshops as long as they _should_ be.

o You have real lives…
   in different time zones…
      that don't come to a halt.

o Learning is a social process
   o This is not a MOOC
   o But this is also not the Wide Area Classroom
      ...so bear with us.

Agenda

Tuesday, June 8

11:00	Welcome
11:15	Computing Environment
11:45	Intro To Parallel Computing
12:30	Intro To OpenMP
1:30	Lunch Break
2:30	Exercise 1
3:15	More OpenMP
4:40	Exercise 2
5:00	Adjourn

Wednesday, June 9

11:00	Intro To OpenACC
12:00	Exercise 1
12:30	Intro To OpenACC (cont.)
1:00	Lunch Break
2:00	Exercise 2
2:45	Introduction to OpenACC (cont.)
3:00	Using OpenACC with CUDA Libraries
3:30	Advanced OpenACC
4:00	OpenMP and GPUs
5:00	Adjourn

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Agenda

Thursday, June 10
11:00 Introduction to MPI
1:00 Lunch break
2:00 Intro Exercises
3:10 Intro Exercises Review
3:15 Laplace Exercise
5:00 Adjourn

Friday, June 11
11:00 Laplace Exercises
12:30 Laplace Review
1:00 Lunch break
2:00 Advanced MPI
3:00 Outro to Parallel Computing
4:00 Parallel Tools
4:20 Hybrid Computing
5:00 Adjourn   ← You'll know this by the time we get there

Resources

Our TAs

Questions from the audience

On-line talks

bit.ly/XSEDEWorkshop

Copying code from PDFs is very error prone. Subtle things like substituting "-" for "-" are maddening. I have provided online copies of the codes in a directory that we shall shortly visit. I strongly suggest you copy from there if you are in a cut/paste mood.

The YouTube Channel Has Arrived!

Due to overwhelming demand, and a lot of editing, we have begun to post workshop videos on the XSEDE Monthly Workshop Training Channel:

XSEDETraining

They will be incrementally appearing in the coming months. Subscribe and give us feedback.

Code of Conduct

XSEDE has an external code of conduct which represents our commitment to providing an inclusive and harassment-free environment in all interactions regardless of race, age, ethnicity, national origin, language, gender, gender identity, sexual orientation, disability, physical appearance, political views, military service, health status, or religion. The code of conduct extends to all XSEDE-sponsored events, services, and interactions.

Code of Conduct: https://www.xsede.org/codeofconduct

Contact:

- Event organizer: Tom Maiden (tmaiden@psc.edu)
- XSEDE ombudspersons:
  - Linda Akli, Southeastern Universities Research Association (akli@sura.org)
  - Lizanne Destefano, Georgia Tech (lizanne.destefano@ceismc.gatech.edu)
  - Ken Hackworth, Pittsburgh Supercomputing Center (hackworth@psc.edu)
  - Bryan Snead, Texas Advanced Computing Center (jbsnead@tacc.utexas.edu)
- Anonymous reporting form available at https://www.xsede.org/codeofconduct.

Terminology Statement

In line with XSEDE's Code of Conduct, XSEDE is committed to providing training events that foster inclusion and show respect for all. This commitment applies not only to how we interact during the event, it also applies to the training materials and presentation. It is not XSEDE's position to use, condone, or promote offensive terminology.

XSEDE instructors strive to keep inclusive language at the forefront. In the event that we have included inappropriate materials, verbal or written, please let us know at terminology@xsede.org

While XSEDE has no control over external third-party documentation, we are taking steps to effect change by contacting the relevant organizations; we hope this will be addressed by all third-parties soon.

If you see any terminology concerns in the following presentation or slides, we want to know!
Please contact the Terminology Task Force: terminology@xsede.org

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Check your email later for the post-event survey.

Surveys are conducted by an external evaluation team. XSEDE staff will not know who said what. If you have questions regarding the evaluation please contact: Lizanne DeStefano, ldestefano6@gatech.edu