

# Welcome to the XSEDE MPI Workshop

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# Who are we?

*Your hosts:*

Pittsburgh Supercomputing Center

*Our satellite sites:*

Yale University

Purdue University

University of Michigan

Stony Brook University

University of Delaware

Georgia State University

Michigan State University

University of Notre Dame

University of Texas at El Paso

University of California Berkeley

NASA Langley Research Center

San Diego Supercomputer Center

University of Houston - Clear Lake

North Carolina A&T State University

University of Puerto Rico at Mayaguez

National Center for Supercomputing Applications

# XSEDE

Extreme Science and Engineering  
Discovery Environment



# Who am I?

John Urbanic  
Parallel Computing Scientist  
Pittsburgh Supercomputing Center

Parallelize codes with

- MPI
- OpenMP
- OpenACC
- Hybrid and Big Data/Machine Learning mixes of these

Mostly for XSEDE platforms. Mostly to extreme scalability.

**XSEDE**

Extreme Science and Engineering  
Discovery Environment



# XSEDE HPC Monthly Workshop Schedule

- September 3,4 *HPC Monthly Workshop: MPI*
- October 6 *HPC Monthly Workshop: OpenMP*
- November 3 *HPC Monthly Workshop: Big Data*
- December 3 *HPC Monthly Workshop: OpenACC*
- January 20 *HPC Monthly Workshop: OpenMP*
- February 9,10 *HPC Monthly Workshop: MPI*
- March 8 *HPC Monthly Workshop: OpenACC*
- April 5 *HPC Monthly Workshop: Big Data*
- May 10 *HPC Monthly Workshop: OpenMP*
- June 14-17 *HPC Monthly Workshop: HPC Summer Boot Camp*
- August 9 *HPC Monthly Workshop: Big Data*
- **September 7,8** ***HPC Monthly Workshop: MPI***
- October 4 *HPC Monthly Workshop: OpenMP*
- November 1 *HPC Monthly Workshop: Big Data*
- December 6 *HPC Monthly Workshop: OpenACC*

# HPC Monthly Workshop Philosophy

- Workshops as long as they should be.
- You have real lives...
  - in different time zones...
  - that don't come to a halt.
- General Agenda
  - Lightweight first morning to get all the logistical nonsense out of the way so we can focus on...
  - Intense afternoon
  - Second day is advanced and optional topics (to allow you to continue with exercises at your pace)
- Learning is a social process
  - This is not a MOOC

# Agenda

Wednesday, September 10

- 11:00 Welcome
- 11:15 Computing Environment
- 12:00 Intro To Parallel Computing
- 1:00 Lunch Break
- 2:00 Introduction To MPI
- 3:30 Intro Exercises
- 4:10 Intro Exercises Review
- 4:30 Scalable Programming: Laplace Exercise
- 5:00 Adjourn / Laplace Exercises

Thursday, September 11

- 11:00 Advanced MPI
- 12:30 Lunch break
- 1:30 Laplace Solution
- 2:00 Outro To Parallel Computing
- 2:45 Parallel Debugging and Profiling Tools
- 3:00 Exercises
- 4:30 Adjourn

# *Resources*

Your local TAs

Questions from the audience

On-line talks

[bit.ly/XSEDE-Workshop](http://bit.ly/XSEDE-Workshop)

# *Getting Time on XSEDE*

# XSEDE

Extreme Science and Engineering  
Discovery Environment

<https://portal.xsede.org/web/guest/allocations>





## Check your email now 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:  
Lorna Rivera, [lirivera@Illinois.edu](mailto:lirivera@Illinois.edu), or Lizanne DeStefano, [ldestefano6@gatech.edu](mailto:ldestefano6@gatech.edu)