



Welcome to the *Pittsburgh Supercomputing Center* MPI Programming Workshop

John Urbanic

Parallel Computing Scientist
Pittsburgh Supercomputing Center

Distinguished Service Professor
Carnegie Mellon University

Who are we?



- If you find this a useful resource, you are welcome to apply for time to continue as a member of our research community.
- It is free.
- It is easy.

Who am I?

John Urbanic



Distinguished Service Professor
Carnegie Mellon University

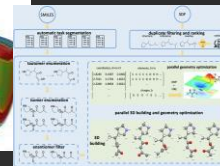
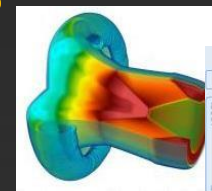
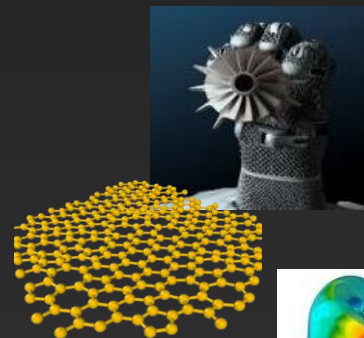


Undergrad Advanced Computational Physics
Graduate Large Scale Computing
Data Science Capstone Projects



Parallel Computing Scientist
Pittsburgh Supercomputing Center

Code, code, code, on
Parallel platforms: MPI, OpenMP, OpenACC, ...
Big Data platforms: Spark, ...
Machine Learning: Spark, TensorFlow, PyTorch, ...



PSC HPC Monthly Workshop Schedule

- October 15-16 *HPC Monthly Workshop: Big Data & Machine Learning*
- November 13 *HPC Monthly Workshop: GPU*
- December 10-11 *HPC Monthly Workshop: MPI*
- January 7-8 *HPC Monthly Workshop: Big Data & Machine Learning*
- **February 19** ***HPC Monthly Workshop: OpenMP***
- March 4-5 *HPC Monthly Workshop: MPI*
- April 9 *HPC Monthly Workshop: GPU*
- May 13-14 *HPC Monthly Workshop: Big Data & Machine Learning*

- **More to come!**

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.
- Learning is a social process
 - This is not a MOOC
 - This is the **Wide Area Classroom**
so raise your expectations!

Agenda

Tuesday, February 4th

- 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

Wednesday, February 5th

- 11:00 Advanced MPI
- 1:00 Lunch break
- 2:00 Laplace Review
- 2:30 Outro To Parallel Computing
- 3:15 Parallel Debugging and Profiling Tools
- 3:30 Exercises
- 4:30 Adjourn

Resources

Your local TAs

Questions from the audience

On-line talks

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 old XSEDE YouTube Channel

These are the last WAC versions of these events and have much of this content. Find them on the XSEDE Monthly Workshop Training Channel:

XSEDETraining

They will be incrementally appearing in the coming months on a new channel. Subscribe and give us feedback.