Announcement: Advanced Parallel Programming Training Class, March 14-16, 2017, Denver, CO

From Natalya Rapstine:

Advanced Parallel Programming Training Class - March 14-16, 2017 in Denver, CO

Course Information

The CSAS&L Applied Research Computing team and our partners at the University of Colorado’s Research Computing group will be holding a 3 day Advanced Parallel Programming class. You will learn advanced parallel programming paradigms including OpenMP, MPI, and OpenACC directives (with hands-on labs in C/C++ or Fortran), and how to optimize your code with parallel debugging and profiling tools.

Pre-Requisites

You should be comfortable programming in Fortran or C/C++. If you are new to High Performance Computing or just want a refresher on HPC and USGS supercomputer Yeti basics, check our High Performance Computing 101 Course. You will need to bring your own laptop with instructor requested software installed prior to start of class.

Logistics

When: March 14-16, 2017
Where: USGS National Training Center, Denver Federal Center, Bldg 53, Earth Room
Who can attend: USGS Only
Cost: Free (travel costs are up to you)

How to Register: search for "Advanced Parallel Programming" in DOI Learn or email us at gs-css_csas_hpc_help@usgs.gov to reserve your spot

The class is limited to 25 participants, so please register ASAP.

Advanced Parallel Programming Agenda

Day 1

08:45 - 09:00 Logistics, Welcome, Introductions
09:00 - 09:45 Introduction to Parallel Programming - Yeti architecture
09:45 - 10:30 Lab: Compilation for performance and performance measurement
10:30 - 10:45 Break
10:45 - 11:30 Introduction to OpenMP
11:30 - 12:00 Lab: Scheduling OpenMP programs on Yeti
12:00 - 01:00 Lunch
01:00 - 01:45 Advanced OpenMP
01:45 - 03:00 Lab: Parallelization using OpenMP
03:00 - 03:30 Break
03:30 - 04:30 Consulting Time
Day 2
09:00 - 09:45 Introduction to MPI
09:45 - 10:30 Lab: Simple MPI example and scheduling MPI programs
10:30 - 10:45 Break
10:45 - 11:30 MPI - point to point communication
11:30 - 12:00 Lab: debugging MPI programs
12:00 - 01:00 Lunch
01:00 - 01:45 Advanced MPI
01:45 - 03:00 Lab: Profiling MPI programs
03:00 - 03:30 Break
03:30 - 04:30 Consulting Time

Day 3
09:00 - 09:45 HPC Filesystems architecture / Yeti specifics
09:45 - 10:30 Parallel I/O strategies
10:30 - 10:45 Break
10:45 - 11:30 Lab: Implement parallel I/O strategies on Yeti
11:30 - 12:00 Introduction to GPU programming
12:00 - 01:00 Lunch
01:00 - 01:45 OpenACC for GPU programming
01:45 - 03:00 Lab: Running and benchmarking GPU code on Yeti
03:00 - 03:30 Break
03:30 - 04:30 Consulting Time