Scientific Computing

CBC Workshop on CLS, Efficiency, Parallelization and Programming Techniques in Python - April 13, 2011

This half-day workshop focus on different aspects regarding Python programming; user interface, utilizing different speed up techniques and parallelization of Python code.

Total number of participants: 51
Total number of guests outside of CBC: 49
Number of different nationalities represented: 2+
Total number of speakers: 6
Total number of talks: 12

Questions to be addressed:

- Should researchers be offered the command line or expensive web portals as user interfaces?
- Should code magic be used accelerate development, or is having explicit code of higher priority?
- How can we speed up slow Python code? How can we know if Python code is really slow or not?
- How can we parallelize Python code? Are there many practical issues involved when making large programs run parallel on production clusters?
- What to prefer: fast and ugly vectorized code or clean compiled (C/Fortran) code in Python programs?

Session 1, 12.30-13.40: Programming techniques

- Hans Petter Langtangen: Efficient, auto-generated command line access to functions in a software module
- Geir Kjetil Sandve: How software developers could prefer web tools to command line execution
- Geir Kjetil Sandve: Generically caching intermediate computations in the background
- Sveinung Gundersen: Using new-method in Python as factory

Session 2, 13.50-15.00: Python overhead

- Xing Cai: Study of the computational efficiency for different usages of Pythoning
- Hans Petter Langtangen: Short introduction to Cython for speeding up Python programs
- Øyvind Øvergaard: Trying to estimate Python overhead based on profiling results
- Øyvind Øvergaard: How to combine Python and C (numpy) to handle data at coarse and fine resolution
- Hans Petter Langtangen: Vectorized versus ported scalar code to speed up Python programs

Session 3, 15.10-16.00: Parallelization

- Xing Cai: A function-centric generic framework for parallelization
- Jonathan Lillesæter: Parallelizing interactive jobs on TITAN (using queueing system)
- Jonathan Lillesæter: Parallelizing a system not designed with this in mind
- (discussion without presentation): The need to declare node count and runtime in queueing systems - estimate runtime or handle dynamically?
- (discussion without presentation): Balancing appropriately between own server and queueing system

What	▪ Workshop
When	Apr 13, 2011 from 12:30 PM to 04:00 PM
Where	Seminarrom Python @ IFI II
Contact Name	Hans Petter Langtangen
Add event to calendar	vCal iCal