

Debugging Profiling Parallel Computing

Practical Introduction to Programming for
Scientists – Lecture 14

The Last Lecture

Debugging

- print statements ?
- traceback module: `print_exc()`

Debuggers

- <http://wiki.python.org/moin/PythonDebuggers>
- Built in IDLE (broken on Mac 10.6 system python)
- <http://www-pcmdi.llnl.gov/svn/repository/cdat/trunk/Packages/pydebug/Lib/pydebug.py>

Profiling

- 3 built-in profilers
 - profile, cProfile, hotshot
 - `python -m cProfile script.py`
- 'C' level profilers
 - valgrind/cachegrind (linux)
 - dtrace (mac)

Parallel Processing

- <http://wiki.python.org/moin/ParallelProcessing>
- Shared Memory (SMP)
 - Threads
 - OpenMP (in C)
- Distributed Processing (clusters)
 - MPI

More on Threads

- `import threading`
- `thr=threading.Thread(target=fn,args=(...))`
- `thr.start()`
- `thr.join()`
- Python threads share global namespace
- Beware the global interpreter lock