COSC 462

Parallel Programming

George Bosilca
and
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TA: Mike Tsai
Class Web Page

Instructors

- George
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  - Hours: 8-5pm
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Grading

- Exam 1 = 20%
- Exam 2 = 20%
- Exam 3 = 30% (cumulative)
- Homework = 20%
- Project = 10%
- Grading on the curve
Homeworks

- Programming projects
  - Based on lectures

- Grading
  - Correctness
    - “Smoke test”
    - Correct result
    - Stress test
      - Parallelism and/or concurrency issues
  - Performance
    - Nice but optional
    - Unless specifically requested
Schedule

- POSIX threads
- MPI
- Algorithms
- OpenMP
- OpenSHMEM
- NVIDIA CUDA
- MPI+X
- Cilk
- Intel TBB/CnC
Textbook

- Parallel Programming in C with MPI and OpenMP by Michael J. Quinn
  - Out of print
  - Does not cover all the topics
- Additional books will be announced
  - Good books available in the UT library in electronic form
Projects

- Topics (not covered in class):
  - FPGAs, NVIDIA Pascal, new CPU processors, ASICs, network equipment
  - Programming Languages (focus on parallelism and/or concurrency)
  - Execution models and their implementations (HPX, SWARM)
- Each project done by a group (2-3 students)
- Delivery
  - Private video link (YouTube, Vimeo, ...)
  - 5 minutes maximum
  - Will be made available to all class participants
- Content
  - Slides
  - Animation
  - Narration
  - Links for more info
Content

- Parallelism
- Concurrency
- Software approaches
  - Languages
  - Paradigms
- Some information about hardware
  - Processors
  - Caches
  - Memory
  - Protocols