Parallel Programming in the Computing Curriculum

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Outline

• Butler’s Environment
  – Liberal arts school
  – 4k students
  – Few students enter as CS majors
  – Great basketball team

• Computing Facilities
  – Big Dawg
  – Lab space
CSSE Setup

• Course setup
• CS 142 taught for STEM
  – Service course for STEM
• CS 452 parallel algorithm design
Curricular Goals for CSSE

• Early parallel thinking
• Stimulate growth of scientific computing
• Rigorous capstone experience for CS and SE majors
Introductory Parallel Programming

- Embarrassingly parallel tasks
- MPI-based
- Subdivide and recombine tasks
- Process communication
- Data distribution/striping
Capstone Parallel Algorithms

- Parallel models
- Architecture and topology
- Data/task parallelism
- Sorting
- Trees
- Complex analysis
- Challenging projects
Questions