Prof. Dr. Felix Wolf

LARGE-SCALE PARALLEL COMPUTING

Large-Scale Parallel Computing

Prof. Dr. Felix Wolf

ORGANIZATION

Team

Lecturer

Prof. Dr.
Felix Wolf

Organization

Sebastian
Rinke

Exercises

Aamer
Shah

Email: <last name>@cs.tu-darmstadt.de

General information

Please register for this class via TUCaN

- Makes it easier for us to notify you of changes

- Gives you access to the course material in Moodle

Schedule

- Lecture - Thursday, 9:50h - 11:30h

- Exercise - Tuesday, 13:30h - 15:20h (biweekly, starting Oct 27)

Questions regarding organization

- Sebastian Rinke (rinke@cs.tu-darmstadt.de)

General information (2)

Slides will be available in PDF in Moodle

- Only for the purpose of this class

- Redistribution not permitted

Requirements

- Knowledge of C

Exercises

- Task sheets available in Moodle

- Solutions will be presented during the exercise

- No grading of exercises

- Students are encouraged to collaborate

- Contact for questions provided on exercise sheet

- First exercise sheet already available

- Exercise platform: Lichtenberg cluster

  - More details soon

Contents of this course

Parallel programming for distributed memory architectures

- Distributed-memory architectures

- Foundations of message passing

- Collective operations

- Data types

- Remote memory access

- Hybrid programming

- Parallel I/O

- Partitioned global address space

Coverage as far as we get…

C refresher exercise

Dates

- Tuesday, October 27

Learning objectives

Understand, design, implement, and optimize parallel programs for distributed-memory architectures

Philosophy

- Interactive style – physical presence strongly recommended but not monitored

- No full coverage of programming standards – rather in-depth study of key concepts

- Sound track not always mirrored on slides – please take notes or rely on books for reference
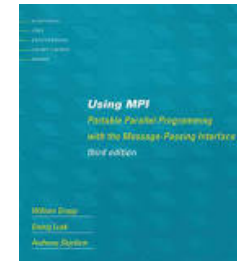
Exam

Written or oral test

- Depending on number of registrations

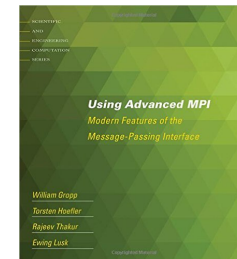Q & A session during last week of lecture

Literature

Using MPI

- William Gropp, Ewing Lusk, Anthony Skjellum, 3rd edition, MIT Press, 2014

Using Advanced MPI

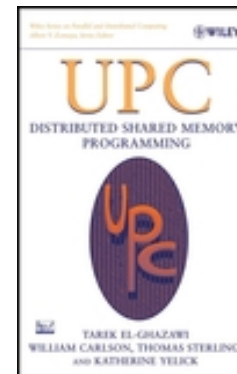- William Gropp, Torsten Hoefler, Rajeev Thakur, MIT Press, 2014

MPI standard

- http://www.mpi-forum.org

UPC: Distributed Shared Memory Programming

- Tarek El-Ghazawi, William Carlson, Thomas Sterling, Katherine Yelick, Wiley, 2005

Appointments

Upon request <wolf@cs.tu-darmstadt.de>