

CT5708701
Parallel and Distributed Computing
平行與分散式計算在工程上之應用

Time: 09:30AM – 12:20PM, Tuesday

Room: IB-505

Lecturer: Yo-Ming Hsieh (謝佑明), ymhsieh@mail.ntust.edu.tw

Course website: Blackboard system, <http://elearning.ntust.edu.tw>

Objective

To understand the concept of parallel and distributed computing, including hardware architecture and programming model, and to gain the ability to utilize parallel computers for solving engineering problems.

Prerequisite

- C/C++ programming, Engineering Mathematics (**linear algebra, vector, matrices**)
- **Passionate** about programming!

Topics

- Introduction
- C/C++ programming
- Programming in Linux environment
- MPI, OpenMP, CUDA Programming
- Parallel Algorithms
 - Matrix operations
 - Sorting
 - Solving $Ax=B$
 - Finite difference method
 - ...

Grading Policy

- 30%: Exams
- 30%: Term projects
- 30%: Assignments
- 10%: Class participation

Reference

- Parallel.And.Distributed.Programming.Using.C++, Cameron Hughes, et al., ISBN 0131013769 , Addison.Wesley
- Reinders, James (2007, July). Intel Threading Building Blocks: Outfitting C++ for Multi-core Processor Parallelism (Paperback) Sebastopol: O'Reilly Media, ISBN 978-0-596-51480-8.
- An Introduction to Parallel Computing: Design and Analysis of Algorithms, George Karypis, et al., ISBN 0201648652, Addison.Wesley
- Beowulf Cluster Computing with Linux, Second Edition (Scientific and Engineering Computation), William Gropp et al., ISBN 0262692929, MIT Press
- http://www.cs.berkeley.edu/~demmel/cs267_Spr09/Lectures/lectures.html
- <http://beowulf.lcs.mit.edu/18.337/>
- More references will be given during lectures in each topic.