

Parallel Processing & Distributed Systems

MT2004 – BK01

Ho Chi Minh City University of Technology

References

1. *Scalable Parallel Computing: Technology, Architecture, Programming*, Kai Hwang & Zhiwei Xu, McGRAW-HILL, 1997.(*)
2. *Parallel Computing – theory and practice*, Michael J. Quinn, McGRAW-HILL, 1994.(*)
3. *Parallel Programming: Techniques and Applications Using Networked Workstations and Parallel Computers*, Barry Wilkinson and Michael Allen, Second Edition, Prentice Hall, 2005.
4. *Distributed Systems: Concepts and Design*, George Coulouris, Jean Dillimore, Tim Kindberg, Addison-Wesley, 2005.(*)
5. *Distributed Algorithms*, Nancy Lynch, Morgan Kaufmann, 1997.
6. *Distributed Operating Systems*, Andrew S. Tanenbaum, Prentice Hall, 1990.
7. *MPI*: <http://www.mpi-forum.org/docs/docs.html>
8. *PVM*: http://www.csm.ornl.gov/pvm/pvm_home.html
9. *The GRID2: Blueprint for a New Computing Infrastructure*, Ian Foster and Carl Kesselman, Morgan Kaufmann 2004.
10. *Grid Computing: Making the Global Infrastructure a Reality*, Fran Berman, Geoffrey Fox and Tony Hey.

Lectures

Lectures (90 min)	Date	Topics	References	Notes
1	W1-1	Introduction	[1]	
2	W1-2	MPI – Message Passing Interface Standart	[3]	
3	W2-1	Abstract machine models – PRAM, BSP, and parallel phase	[1][2]	
4	W2-2	Parallel machine architectures: – Flynn classifications – Pipeline, Processor array, Mutiprocessor, Data flow computer	[1] [2]	
5	W3-1	Cond't	[1][2]	
6	W3-2	Speedup: – Amdahl – Gustafson – Sun and Ni's law	[1][2]	
		<i>Pipeline</i>	[1][2]	Ref
7	W4-1	Processor organizations & mapping	[1]	
8	W4-2	Scheduling	[1]	
9	W5-1	Parallel paradigms and programming models	[2][3]	
10	W5-2	Seminar: Shared memory programming - Multi-threads	[3]	Ref
11	W6-1	Lab: Multithread	[3]	
12	W6-2	Lab: MPI – Point-to-point communication	[3] [7]	
13	W7-1	Algorithms (1)	[1]	
14	W7-2	Algorithms (2)	[1]	
Midterm: W8				
15	W9-1	Distributed systems: Introduction	[4]	
16	W9-2	Communication	[4]	
17	W10-1	Lab: MPI – Collective communication		
18	W10-2	Seminar: Name service	[4]	Ref
19	W11-1	Lab: Master/slave model		
20	W11-2	Seminar: Distributed File Systems	[4]	Ref
21	W12-1	Lab: Master/slave model		
22	W12-2	Seminar: Parallel & distributed computing techniques	[3]	Ref
23	W13-1	Lab: Programming tools		
24	W13-2	Seminar: Time and Global States	[4]	Ref
25	W14-1	Lab: Programming tools		
25	W14-2	Seminar: Web service	[4]	Ref

27	W15-1	Seminar: Peer-to-peer systems	[4]	<i>Ref</i>
28	W15-2	Review		
		<i>Distributed algorithms (1)</i>	[5]	<i>Ref</i>
		<i>Distributed algorithms (2)</i>	[5]	<i>Ref</i>

Evaluation

- Midterm exam: 20%
- Final exam: 60%
- Exercises + seminar: 20%