

Part I

Organizational Matters

Part I

Organizational Matters

- ▶ Modul: IN2011
- ▶ Name: “Parallel Algorithms”
“Parallele Algorithmen”
- ▶ ECTS: 8 Credit points
- ▶ Lectures:
 - ▶ 4 SWS
 - Mon 14:00–16:00 (Room 00.08.038)
 - Fri 8:30–10:00 (Room 00.08.038)
- ▶ Webpage: <http://www14.in.tum.de/lehre/2014WS/pa/>

- ▶ Required knowledge:
 - ▶ IN0001, IN0003
“Introduction to Informatics 1/2”
“Einführung in die Informatik 1/2”
 - ▶ IN0007
“Fundamentals of Algorithms and Data Structures”
“Grundlagen: Algorithmen und Datenstrukturen” (GAD)
 - ▶ IN0011
“Basic Theoretic Informatics”
“Einführung in die Theoretische Informatik” (THEO)
 - ▶ IN0015
“Discrete Structures”
“Diskrete Strukturen” (DS)
 - ▶ IN0018
“Discrete Probability Theory”
“Diskrete Wahrscheinlichkeitstheorie” (DWT)
 - ▶ IN2003
“Efficient Algorithms and Data Structures”
“Effiziente Algorithmen und Datenstrukturen”

The Lecturer

- ▶ Harald Räche
- ▶ Email: raecke@in.tum.de
- ▶ Room: 03.09.044
- ▶ Office hours: (per appointment)

- ▶ Tutors:
 - ▶ Chris Pinkau
 - ▶ pinkau@in.tum.de
 - ▶ Room: 03.09.037
 - ▶ Office hours: Tue 13:00–14:00
- ▶ Room: 03.11.018
- ▶ Time: Tue 14:00–16:00

Assignment sheets

- ▶ In order to pass the module you need to pass a 3 hour exam

- ▶ Assignment Sheets:
 - ▶ An assignment sheet is usually made available on Monday on the module webpage.
 - ▶ Solutions have to be handed in in the following week before the lecture on Monday.
 - ▶ You can hand in your solutions by putting them in the right folder in front of room 03.09.019A.
 - ▶ Solutions will be discussed in the subsequent tutorial on Tuesday.

1 Contents

- ▶ PRAM algorithms
 - ▶ Parallel Models
 - ▶ PRAM Model
 - ▶ Basic PRAM Algorithms
 - ▶ Sorting
 - ▶ Lower Bounds
- ▶ Networks of Workstations
 - ▶ Offline Permutation Routing on the Mesh
 - ▶ Oblivious Routing in the Butterfly
 - ▶ Greedy Routing
 - ▶ Sorting on the Mesh
 - ▶ ASCEND/DESCEND Programs
 - ▶ Embeddings between Networks

2 Literatur



Tom Leighton:

*Introduction to Parallel Algorithms and Architecture:
Arrays, Trees, Hypercubes,*

Morgan Kaufmann: San Mateo, CA, 1992



Joseph Jaja:

An Introduction to Parallel Algorithms,

Addison-Wesley: Reading, MA, 1997



Jeffrey D. Ullman:

Computational Aspects of VLSI,

Computer Science Press: Rockville, USA, 1984



Selim G. Akl.:

The Design and Analysis of Parallel Algorithms,

Prentice Hall: Englewood Cliffs, NJ, 1989