Part I

Organizational Matters

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- Modul: IN2003

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- Name: “Efficient Algorithms and Data Structures”
  “Effiziente Algorithmen und Datenstrukturen”

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  - 4 SWS
    Mon 10:00–12:00 (Room Interim2)
    Fri 10:00–12:00 (Room Interim2)

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- Webpage:
  `https://www.moodle.tum.de/course/view.php?id=80009`

- Required knowledge:

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  - IN0001, IN0003
    “Introduction to Informatics 1/2”
    “Einführung in die Informatik 1/2”

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  - IN0015
    “Discrete Structures”
    “Diskrete Strukturen” (DS)
  - IN0018
    “Discrete Probability Theory”
    “Diskrete Wahrscheinlichkeitstheorie” (DWT)

The Lecturer

- Harald Räcke
- Email: raecke@in.tum.de
- Room: 03.09.044
- Office hours: (by appointment)

Tutorials

- Omar AbdelWanis
- omar.abdelwanis@in.tum.de
- Room: 03.09.042
- Office hours: (by appointment)

Tutorials

One centralized tutorial session.

Wednesday, 14:00-16:00

https://tum-conf.zoom.us/j/63875503821

Meeting ID: 638 7550 3821

Passcode: 719434

1 Contents

1 Contents

- Foundations
  - Machine models
  - Efficiency measures
  - Asymptotic notation
  - Recursion
- Higher Data Structures
  - Search trees
  - Hashing
  - Priority queues
  - Union/Find data structures

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- Cuts/Flows
- Matchings

2 Literatur


Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman:
The design and analysis of computer algorithms,
Addison-Wesley Publishing Company: Reading (MA), 1974


Thomas H. Cormen, Charles E. Leiserson, Ron L. Rivest, Clifford Stein:
Introduction to algorithms,
McGraw-Hill, 1990


Michael T. Goodrich, Roberto Tamassia:
Algorithm design: Foundations, analysis, and internet examples,
John Wiley & Sons, 2002

2 Literatur


Ronald L. Graham, Donald E. Knuth, Oren Patashnik:
Concrete Mathematics,
2. Auflage, Addison-Wesley, 1994


Volker Heun:
Grundlegende Algorithmen: Einführung in den Entwurf und die Analyse effizienter Algorithmen,
2. Auflage, Vieweg, 2003


Jon Kleinberg, Eva Tardos:
Algorithm Design,
Addison-Wesley, 2005


Donald E. Knuth:
The art of computer programming. Vol. 1: Fundamental Algorithms,
3. Auflage, Addison-Wesley, 1997

2 Literatur


Donald E. Knuth:
The art of computer programming. Vol. 3: Sorting and Searching,
3. Auflage, Addison-Wesley, 1997


Christos H. Papadimitriou, Kenneth Steiglitz:
Combinatorial Optimization: Algorithms and Complexity,
Prentice Hall, 1982


Uwe Schöning:
Algorithmik,
Spektrum Akademischer Verlag, 2001


Steven S. Skiena:
The Algorithm Design Manual,
Springer, 1998