

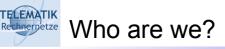
Network Algorithms

Chapter 0 Preamble

| 🛛 Who | are we? |
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- The topics of "Algorithmic Aspects of Communication Networks"
- Resources

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- □ Fachgebiet "Telematik/Rechnernetze"
 - Prof. Dr.-Ing. Günter Schäfer guenter.schaefer@tu-ilmenau.de
 - □ Web page: http://www.tu-ilmenau.de/fakia/telematik.html

□ Fachabteilung Diskrete Mathematik und Algebra

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- Web page: http://www.tu-ilmenau.de/fakmn/Diskrete-Mathematik.dma.0.html



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TELEMATIK Rechnernetze Main Research Topics (of Günter Schäfer)

In general: architectures and protocols of communication systems □ Structure, design, performance evaluation, implementation, ... □ For all types of communication: computer networks, voice communication, data & multimedia content, technical communication (control devices) Special focus on security issues □ More specifically: Security requirements of communication services Authenticity, integrity, confidentiality of peer entities and exchanged data Security aspects of protocol mechanisms ■ What side "security relevant" side-effects are introduced by specific mechanisms? How to protect communication infrastructures Main issue: How to ensure availability of systems and offered services? 3

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TELEMATIK Topics of "Network Algorithms" Rechnernetze

- Special course on algorithmic aspects in communications
- Prior attendance of courses Telematics 1 and 2 (Bachelor Informatik) highly recommended:
 - Basics of getting information through a network (with focus on the Internet)
 - Protocol layers 1 to 4
 - Internet application layer
 - Advanced topics like multimedia communications, QoS, performance, etc.
- Network Algorithms will cover the following topics:
 - □ Main question: How to organize data transport so that the network can handle the offered (legitimate) load?
 - Basics of packet oriented communication networks
 - Forwarding and routing
 - Network design
 - Monitoring and handling load
 - Failure resistance





- □ Slides are/will be available on the web site
- □ Main text for this course
 - Michal Pioro, Deepankar Medhi. Routing, Flow, and Capacity Design in Communication and Computer Networks. The Morgan Kaufmann Series in Networking, Elsevier, 2004.
- There will be no dedicated script
 Secondary literature is sometimes beneficial (and will be cited)
- One additional source:

□ Thomas Erlebach. Algorithmen für Kommunikationsnetze. Script

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