COMPUTER NETWORKS

About

Prof. Dr. Oliver Hahm

2024-10-21

AGENDA

- About me and this lecture
- Organizational
- Computer Networks

ABOUT ME AND THIS LECTURE

INTERACTION IN THIS LECTURE

- Participate lively

- Ask questions!

- A key attribute for science is scepticism

"Education is a dialogue not a one way monologue"

RULES FOR THIS COURSE

- Be respectful

- There are no stupid questions or comments

- You can interrupt me at any point

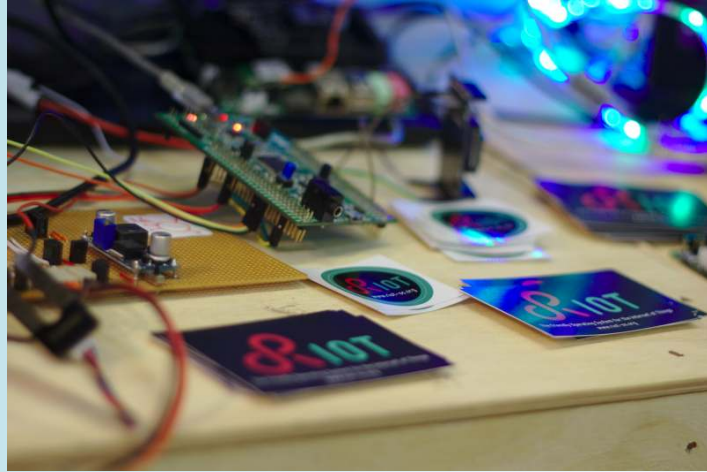Do not ask! Everything is relevant for the exam.

ABOUT ME

- Study of Computer Science at Freie Universität Berlin

- Software Developer for ScatterWeb and Zühlke Engineering

- Research on IoT and Operating Systems

Contact

E-mail: oliver.hahm@fb2.fra-uas.de
Appointments: via e-mail, room 1-212

JOIN THE RIOT!

RIOT is the friendly operating system for the IoT!

You're interested in ...

- ...programming the IoT?
- ...collaborate with hundreds of people from all over the world?
- ...contribute to a big FLOSS project?

Get in touch and do some hacking at the *All RIOT* event at the university! Usually every second Wednesday at 2pm in room 1-237.
First meeting: November 06, 2024.
All information on https://allriot.dahahm.de

ABOUT MY SETUP

- **Operating System:** Linux (Arch Linux)
- **Graphical Environment:** sway (Wayland compositor)
- Working mostly with the shell (and vim as an editor)
- Using multiple workspaces

ABOUT YOU

What about you? Please go to the survey at
https://fra-uas.particifyapp.net/p/36002022

- Which part of your studies do you find most interesting?
- What is your favorite network application?

ORGANIZATIONAL

ORGANIZATIONAL

- **Lecture**: Thursday 11:45 – 13:15, room 1-131
- **Exercises** (starting from next week)
  - Wednesday 10:00 – 11:30, room 1-237
  - Wednesday 11:45 – 13:15, room 1-237
- Written **exam**

campUAS Enrolment Key:
HahmCompNet

Please note!

- There is no registration for the exercises, but the room size is limited!
- First come, first serve!

FURTHER INFORMATION

All material regarding this course can be found at
https://teaching.dahahm.de.

This includes

- Announcements

- Slides
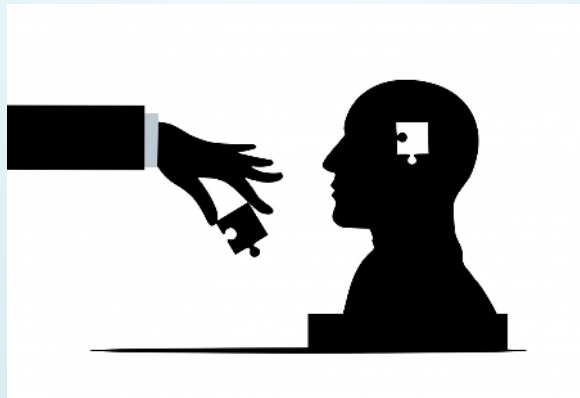
- Exercises

SLIDES

- The creation of the slide sets is work in progress

- They cover all topics of the lecture

- **BUT** they are no book and, hence, do not comprise
  - all details
  - all derivations
  - all thoughts and discussions which are part
    of the lecture and exercises

- participate

- ask questions

- take notes

- do your own research (e.g., use the books)

EXERCISES

The exercises are no legal precondition for participating in the exam, **BUT** they...

- ...are very important to recap the content.

- ...are a good opportunity to check your understanding.

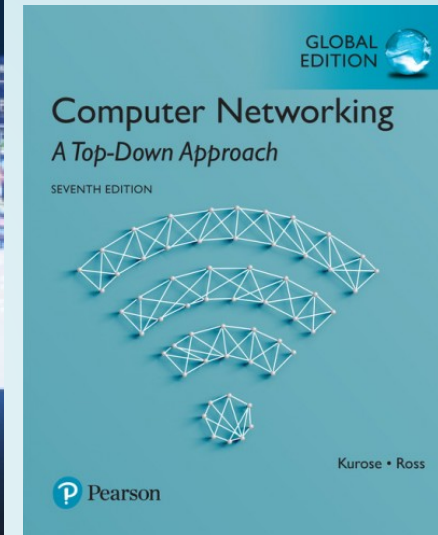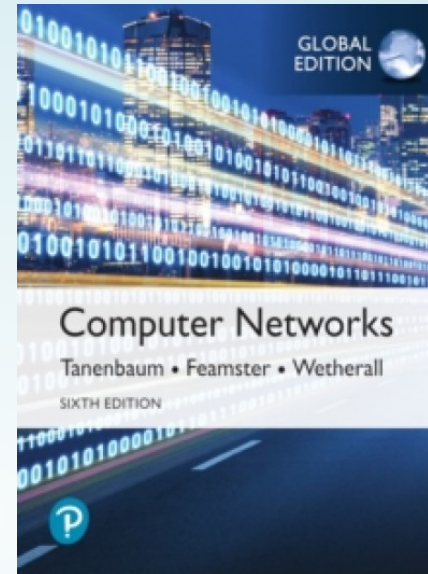- ...provide the chance to ask me all your questions.

EXAM

What is necessary to pass the exam?

You should be able to ...

- explain main concepts and ideas with your own words,

- select a suitable solution for a given problem,

- analyze a given solution and detect (potential) problems, and

- explain your answers.

LITERATURE

- Andrew Tanenbaum, David Wetherall:
  "Computer Networks", 6th Ed.,
  Pearson, 2021.

- James F. Kurose, Keith Ross:
  "Computer Networking", 7th Ed.,
  Pearson, 2016.

You can borrow both of these books from the library or access them online for free (see links above).

MORE LITERATURE

- Parts of the slide sets are closely related to the books.

- The two-column layout (English/German) of the bilingual book is quite useful for this course

Digital versions of these books can also be found at the library to be downloaded online for free.

COMPUTER NETWORKS

- Video streaming
- Online gaming
- Instance messengers
- Video conferences ($\rightarrow$ home office)
- Mobile communication
- Smart home ($\rightarrow$ IoT)
- Car infotainment

The most popular network?

The Internet

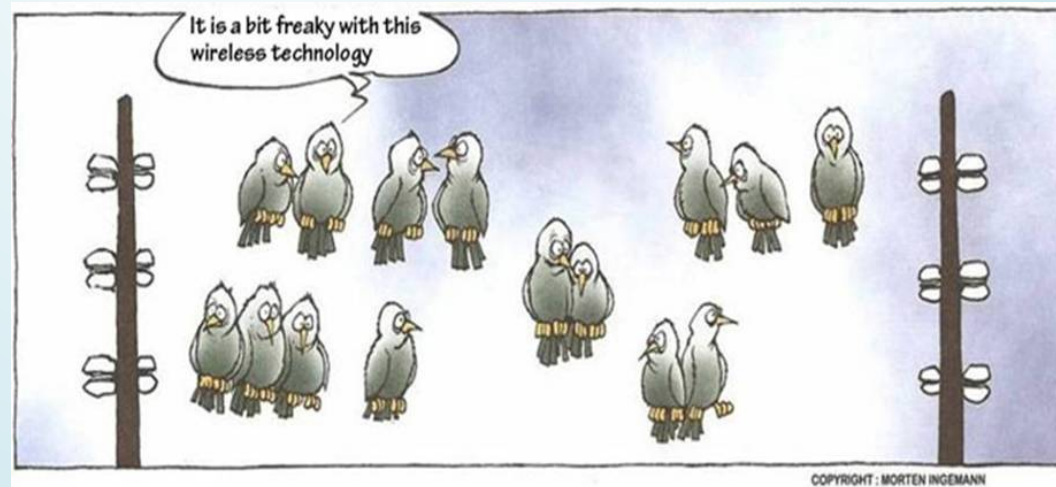# RELATED QUESTIONS

- How do you access videos on YouTube?

- What's the deal with a *lag* in online gaming?

- Who can read my mails?

- How can we transmit data through the air (aka wireless networking)?

Photo by Florian Olivo on Unsplash

It is a bit freaky with this wireless technology

COPYRIGHT : MORTEN INGEMANN

OBJECTIVE

At the end of this course, you should …

- understand what the term *"online"* means,

- be able to explain what the *Internet* is,

- know how computers communicate,

- know what protocols are,

- be familiar with the layers of a network stack,

- understand how the data finds its way, and

- be conscious of security and privacy concerns of computer networks.

MOTIVATION

- Your motivation
  - Good case: curiosity and willingness to learn
  - Best case: already interested in Computer Networks
  - Pass the exam

- My motivation
  - Like to teach
  - Computer Networks are of utter importance (and super interesting)
  - Prepare you for your job

SUMMARY

- At the end of each chapter the last slide summarizes the most important take-away messages

- Now is a good moment to recapitulate whether there are any open questions

- When preparing for the exam these summaries can help you