Chair of IT Security
School of Computation, Information and Technology
Technical University Munich

Seminar Cyber-Resilient Systems

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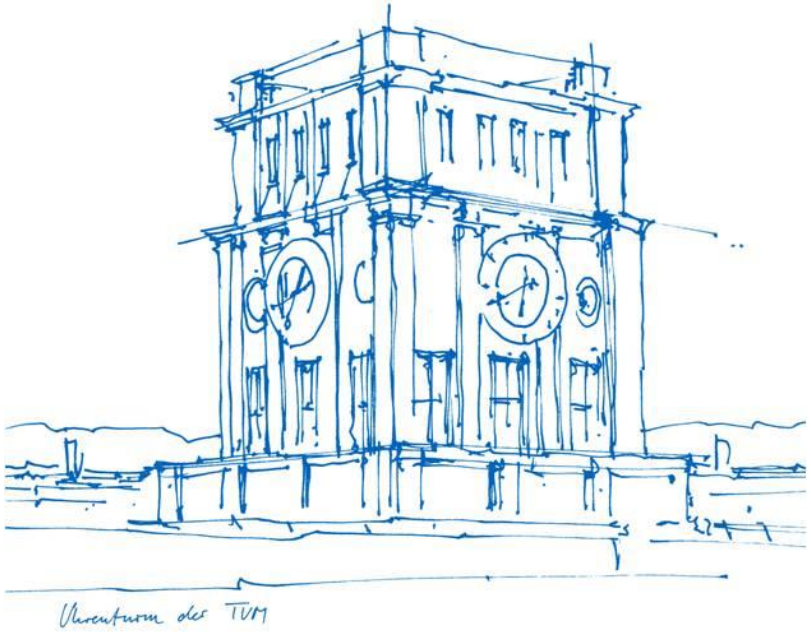
Feb 8th, 2024



Resilience

“the ability to be happy, successful, etc. again after something difficult or bad has happened”

“the ability of a substance to return to its usual shape after being bent, stretched, or pressed”

“the quality of being able to return quickly to a previous good condition after problems”

https://dictionary.cambridge.org/de/worterbuch/englisch/resilience

Cyber Resilience

The ability to **anticipate**, **withstand**, **recover** from, and **adapt** to…

…adverse conditions, stresses, attacks, or compromises…

on systems that use or are enabled by cyber resources.

https://csrc.nist.gov/glossary/term/cyber_resiliency

Research Question

The **fundamental assumption** is that **cyber resilience** (defined as on slide 4) **is a general concept or approach towards making computer systems more secure and reliable.**

Starting from that, we are asking ourselves:

„How and to what degree is the concept of cyber resilience present and being applied in academia?“

With this question in mind, we formulate your individual research topics as sub-topics of CR (next slide)

Sub-Topics of Cyber Resilience to investigate

Cyber-Resilient…

- System or Software Engineering
- System Design or Architecture
- Networking or Communication (Protocols)
- Distributed Systems (server, cloud, on-premise)
- Internet of Things (IoT, CPT)
- Virtualization (VM, container)
- Artificial Intelligence (AI)

Cyber Resilience…

- *In General* (Taxonomy, Survey, Model, Assessment Framework, Metric)
- In the public sector (states, infrastructure, (smart) city)
- In the industry (companies, (smart) factory, service providers)

Example: *„Cyber-Resilient Internet of Things“*

Objectives

The seminar aims at teaching you **how to do academic search** and **present your results** (written and spoken).

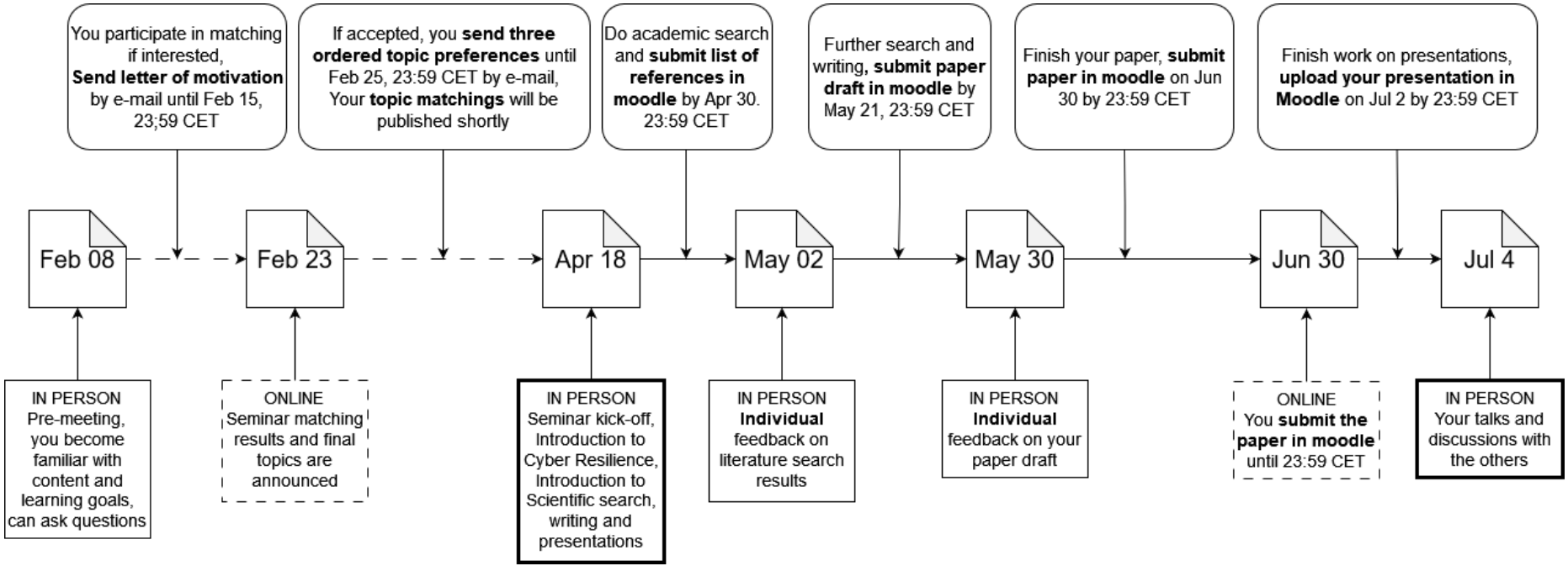
In more detail, we utilize the topic **cyber resilience** to practise

1. **doing literature search** on pre-selected sub-topics and **summarizing the results** by,
2. **writing a short paper** in a systemization of knowledge (**SoK**) style (10 pages),
3. **and giving a talk** of 30 minutes with 10-15 minutes of discussion.

To give you something to start with, the seminar includes

1. a brief **introduction to cyber resilience**,
2. as well as general **hints about literature research, scientific writing and presentations.**

Tentative Timeline



Further Organizational Matter (tentative)

Time: (tentative) Thursdays 10:00 a.m. ~ 12:00 a.m. (final presentations: 45 min x number of presenters)

Room: 01.08.033

Capacity: Seven students

Language: English

Target Group: Master‘s and bachelor‘s students welcome; important is that you are interested in the topic and doing SoK research

Your presence at in-person meetings is mandatory.

Deliverable Requirements

Intermediate

- Draft 1: Results of literature search, ideally as table, describe your findings
- Draft 2: 80% ready paper draft with list of references for feedback, optionally also your presentation draft
- Optional, individual feedback sessions in person

Presentation

- 30 min talk and 10 to 15 min discussion
- Please use the TUM 16:9 template (PowerPoint, LaTeX)

Report

- (Exactly) ten pages, two-column style (excluding references and appendix)
- Please use the IEEE template (https://www.ieee.org/conferences/publishing/templates.html)
- You are encouraged to use LaTeX

Requirements for Passing and Grading

Please take a look at what the terms of your degree program state about written assignments and oral presentations. („Prüfungsordnung“)

Grading will be:
50% Paper (e.g. structure, writing style, literature research results, grammar and spelling mistakes)
40% Presentation (e.g. presentation quality, usage of media, explanation)
10% Discussion (e.g. reaction to questions and comments of the audience)

So, you would like to participate?

For matching prioritization, send me a letter of motivation (500 words max.) where you state why you would like to participate and what interests you in cyber resilience to gehrke@sec.in.tum.de. If you have your own topic suggestion, feel free to include it.

Please also briefly state your prior experience with IT security.

Set as **subject: „Seminar CRS Matching“**. Deadline: **February 15th, 2024 by 23:59 CET**

Thank you for attending!

Are there any questions?

More info: https://www.sec.in.tum.de/i20/teaching/ss-2024/cyber-resilient-systems