technische universität dortmund

Computational Intelligence

Winter Term 2021/22

Prof. Dr. Günter Rudolph

Lehrstuhl für Algorithm Engineering (LS 11)

Fakultät für Informatik

TU Dortmund

- **Organization (Lectures / Tutorials)**
- **Disambiguation: *Computational Intelligence***

Who are you?

either

studying "***Automation and Robotics***" (Master of Science)

or

studying "***Informatics***" (Bachelor of Science)

or

studying "***Data Science***" (Master of Science)

or

… let me know!

Who am I ?

Günter Rudolph
Fakultät für Informatik, LS 11

Guenter.Rudolph@tu-dortmund.de ← best way to contact me
OH-14, Room 2.32 ← if you want to see me (after pandemic)

office hours:
Tuesday, 10:30–11:30am
and by appointment

Hybrid setting due to current state of Corona pandemic

Lecture:
- in lecture hall
  - with medical mask,
  - 3G-rule: admission only if vaccinated, recovered or tested
- remote / online
  - via Zoom,
  - streaming from lecture hall

slides of lecture published on web page weekly

Tutorial:
- in classroom (→ registration required)
  - with medical mask,
  - 3G-rule: admission only if vaccinated, recovered or tested
- remote / online
  - via Zoom (purely digital: no streaming from classroom)

Lectures	Wednesday from 13-Oct-2021	10:15-11:45	OH 14 / E23,	weekly
Tutorials	either Wednesday	12:15-13:45	OH 12 / 3.031	≈ bi-weekly
	or Friday	12:15-13:45	OH 12 / 3.031	≈ bi-weekly
	or Thursday from 20-Oct-2021	12:15-13:45	online (Zoom)	≈bi-weekly
Tutor	Marius Bommert, MSc, LS 11 Florian Wellner, LS11			

Information (web pages & moodle)
`http://ls11-www.cs.tu-dortmund.de/people/rudolph/teaching/lectures/CI/WS2021-22/lecture.jsp`

Slides see moodle
Literature see web page

Exams

Effective since winter term 2014/15: written exam (not oral)

- Informatik, Bachelor: Module → written exam (90 min)
- Automation & Robotics, Master: Module → written exam (90 min)
- Data Science / Statistics, Master: Module → written exam (90 min)
- whoever else … → written exam (90 min)

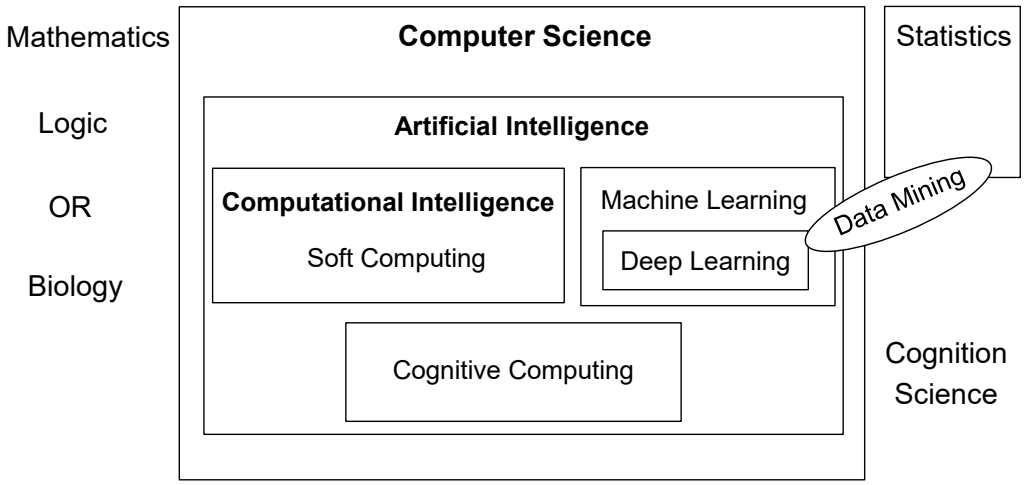
mandatory for registration to written exam: **must pass tutorial!**

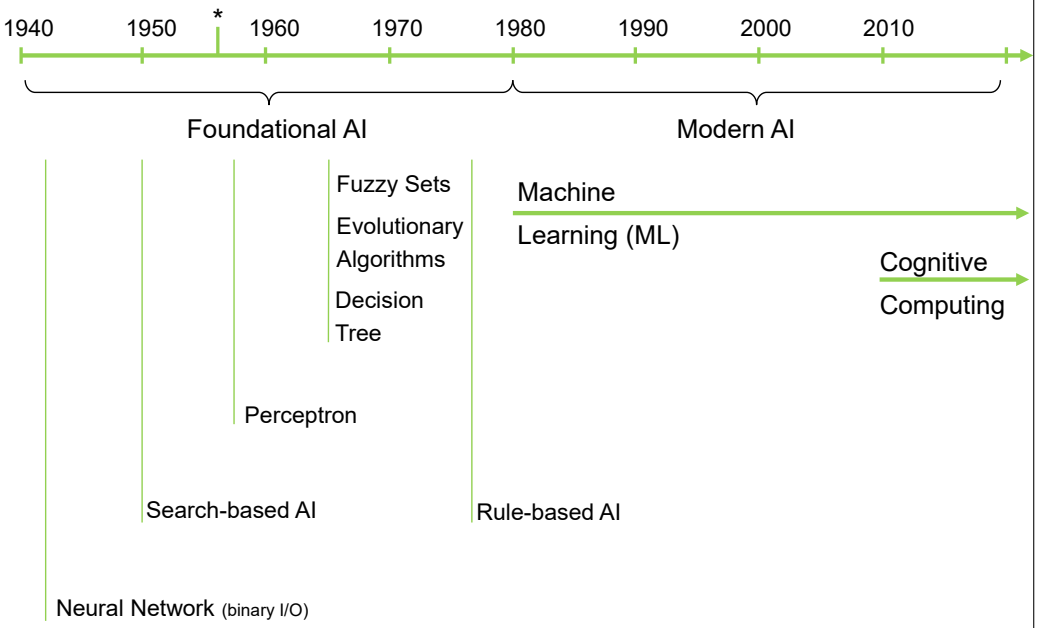
Knowledge about
- mathematics,
- programming,
- logic

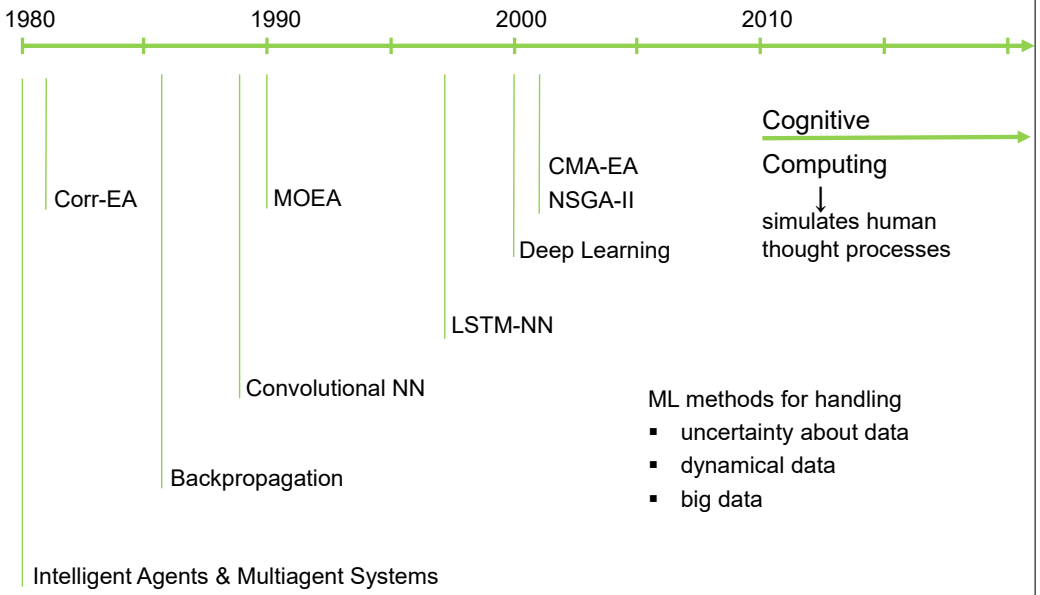
is helpful.

But what if something is unknown to me?
- covered in the lecture
- pointers to literature

... and don‘t hesitate to ask!







What is CI ?

⇒ umbrella term for computational methods inspired by nature

- artifical neural networks
- evolutionary algorithms
- fuzzy systems

} historical backbone

- swarm intelligence
- artificial immune systems
- growth processes in trees

} newer developments

- ...

- term „computational intelligence“ made popular by John Bezdek (FL, USA)
- originally intended as a demarcation line
  $\Rightarrow$ establish border between artificial and computational intelligence
- nowadays: blurring border $\rightarrow$ current widespread perception: CI $\subset$ AI

our goals:

1. know what CI methods are good for!
2. know when refrain from CI methods!
3. know why they work at all!
4. know how to apply and adjust CI methods to your problem!