

# Computational Intelligence

Winter Term 2024/25

Prof. Dr. Günter Rudolph  
Computational Intelligence  
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, Computational Intelligence

Gunter.Rudolph@tu-dortmund.de  
OH-14, Room 2.32

← best way to contact me  
← if you want to see me

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

**Lectures** Wednesday 10:15-11:45 OH 14 / E23 weekly  
from 08-Oct-2024

**Tutorials** either Thursday 08:15-09:45 OH 12 / 1.054 bi-weekly  
or Thursday 14:15-15:45 OH 12 / 1.054 bi-weekly  
or TBA TBA TBA bi-weekly  
from 17-Oct-2024 (groups 1+2) / 24-Oct-2024 (groups 3+4) / TBA (groups 5+6)

**Tutors** Marco Pleines, Dr.-Ing.  
Jonas Kramer, B.Sc.

### Information (web pages & moodle)

<http://ls11-www.cs.tu-dortmund.de/people/rudolph/teaching/lectures/CI/WS2024-25/lecture.jsp>

### Tutorial info

see [moodle](#)

### Slides

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!**

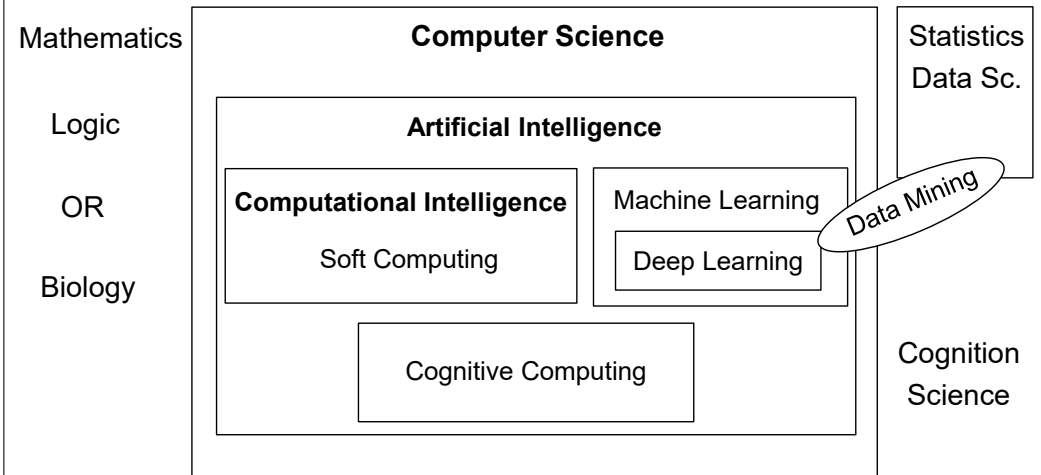
### Basic knowledge about

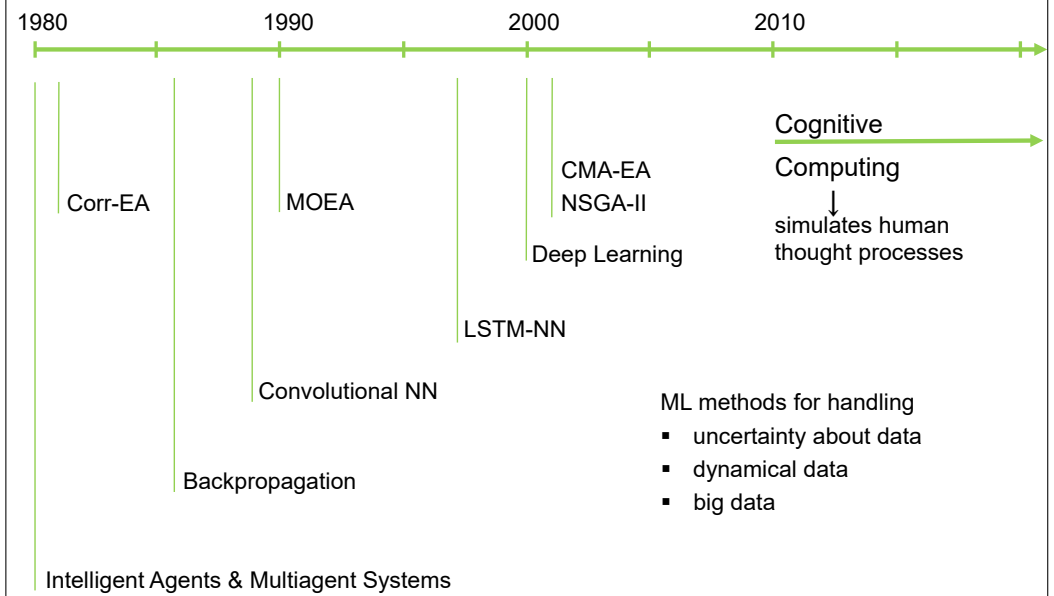
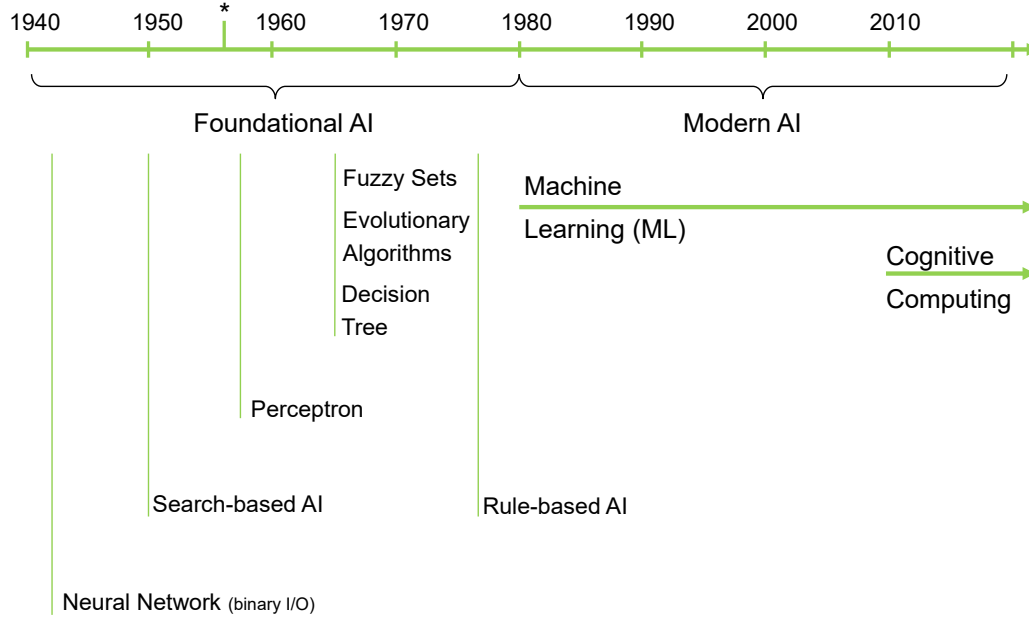
- mathematics,
  - programming,
  - logic
- is helpful.

### 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

- artificial neural networks
  - evolutionary algorithms
  - fuzzy systems
  - swarm intelligence
  - artificial immune systems
  - growth processes in trees
  - ...
- historical backbone
- newer developments

- term „computational intelligence“ made popular by John Bezdek (FL, USA)
- originally intended as a demarcation line
  - ⇒ establish border between artificial and computational intelligence
- nowadays: blurring border → 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!