

# B.Sc. Künstliche Intelligenz & Data Science

Degree Programme Introduction

# Short Introduction: C. Benzmüller

## Positions

- Full Professor at U Bamberg
- Associate Professor (apl.) at the FU Berlin

## Studies/Doctorate/Habilitation

- Saarland University, Germany (1990–2008)

## Stations in Akademia

- BITS Pilani Dubai, UAE
- Universität Luxembourg, LU
- Stanford University, USA
- Cambridge University, UK
- University of Edinburgh, UK
- University of Birmingham, UK
- Carnegie Mellon University, USA

## Industrial Experiences

- Aury Health UG, Berlin, Germany
- IDNI AG, Liechtenstein
- Latentine GmbH, Berlin, Germany
- Articulate Software, Napa Valley, USA

## Research Funding

- Deutsche Forschung Gemeinschaft (DFG)
- Studienstiftung des Deutschen Volkes
- Volkswagenstiftung
- European Research Council (ERC)
- EPSRC, UK
- FNR, Luxembourg
- BMBF

**Thank you very much!**

# Love



... I fell in love in 1992 in the field of AI in Prof. Siekmann's AI Lecture  
... AI & Love is itself a highly interesting, controversial topic



# AI and Love

Where love falls ...

... until recently:

... in today's online dating:

... and in systems such as Replica:



Fate


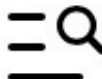
AI matchmaking

AI systems as partners



# AI and Medicine


- Enormous potential in many areas of medicine




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HEALTH AND HEALTHCARE SYSTEMS

## 6 ways AI is transforming healthcare

Mar 14, 2025

An official website of the European Union How do you know? 



Public Health

[Home](#) > [eHealth : Digital health and care](#) > [Artificial Intelligence in healthcare](#)

## Artificial Intelligence in healthcare

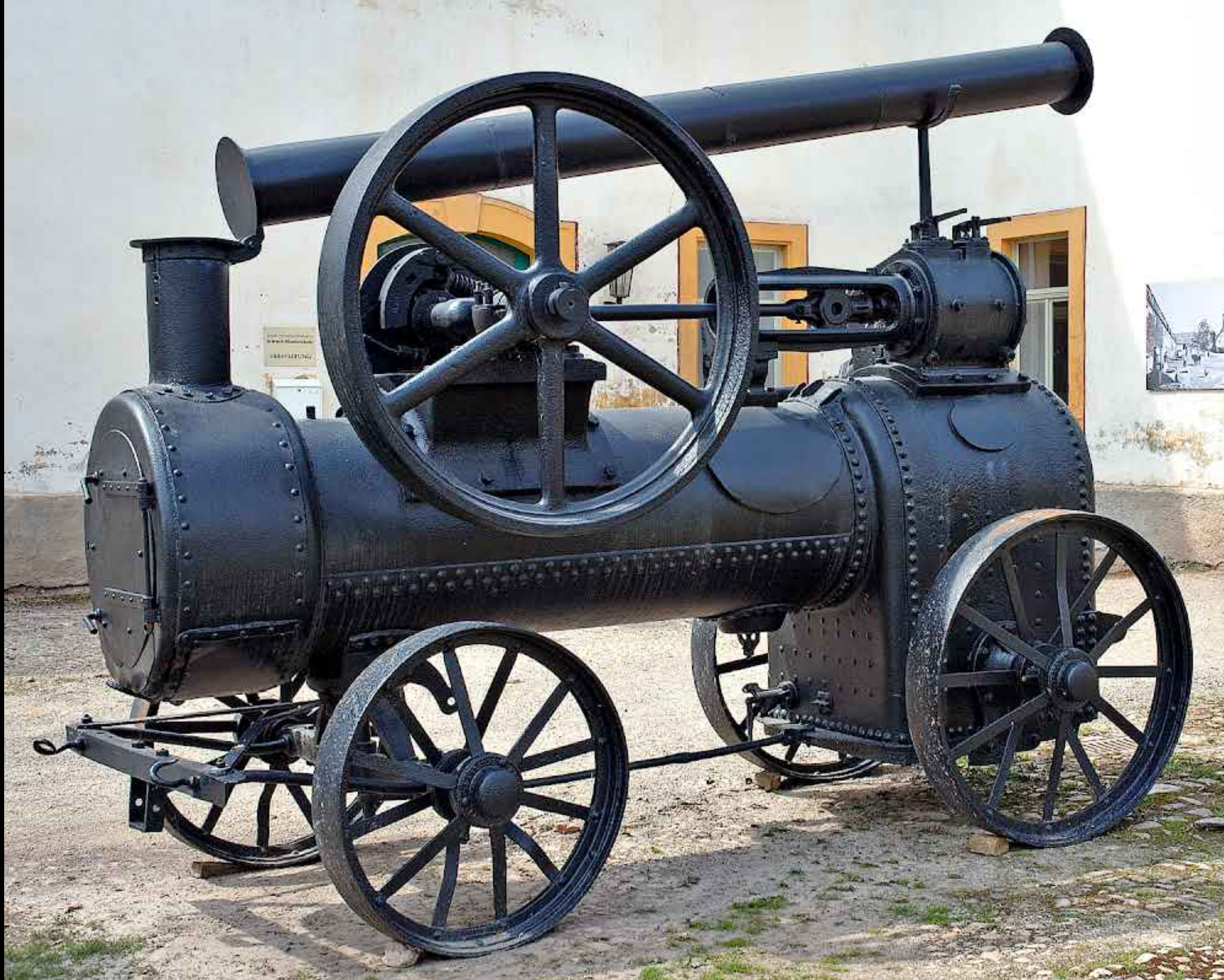
### Transforming the future of medicine

Just a few years ago, we spoke of Artificial Intelligence's (AI's) promise; today, it has become a tangible reality. In addressing the complexities of global healthcare challenges, AI is emerging not just as a tool but as a transformative force reshaping healthcare delivery.

The advancements in AI technology present unprecedented opportunities to revolutionise healthcare, making it more effective, accessible, and economically sustainable. By fostering the integration of AI through appropriate policies, we can enhance equity, improve care, and ensure that new technologies, treatments, and medicines benefit society at large:



# AI and the Economy (AI as steam engine of the 21st century)



- Who will benefit?
- And who will loose?



# AI and the Environment



CLIMATE | GLOBAL ISSUES

## Can AI save the climate?

Andreas Neuhaus  
09/04/2024

A series of climate conferences have aimed to slow down global warming – but CO2 emissions are continuing to rise. Is there an effective solution? How about deploying artificial intelligence?

### *Voices*


The Times Editorial Board

Generative AI is an energy hog and that could hurt progress fighting climate change






# AI and Fake News


 MARKETS BUSINESS INVESTING TECH POLITICS VIDEO INVESTING CLUB PRO

## Apple’s inaccurate AI news alerts shows the tech has a growing misinformation problem

PUBLISHED WED, JAN 8 2025•9:36 AM EST | UPDATED WED, JAN 8 2025•12:16 PM EST

**Ryan Browne**  
@RYAN\_BROWNE\_


WATCH LIVE


 Akademie

## Generative AI is the ultimate disinformation amplifier

March 26, 2024


Generative artificial intelligence tools allow anyone to quickly and easily create massive amounts of fake content.



 DONATE


## Russian networks flood the Internet with propaganda, aiming to corrupt AI chatbots

By Annie Newport, Nina Jankowicz | March 26, 2025

 Search

## Russian Propaganda on the Internet

14/02/2025 | Press Release

© Veronika Solopova

How AI helps expose disinformation. Interview with Dr. Veronika Solopova, who has developed a multi-language AI tool to help combat disinformation

Disinformation is one of the greatest challenges we face today. Linguist and computer scientist Dr. Veronika Solopova conducts intensive research into Russian disinformation campaigns and has developed an AI tool to identify manipulative content. In an interview, she warns: "Don't blindly believe what you read on social media."

My former PhD student Veronika Solopova

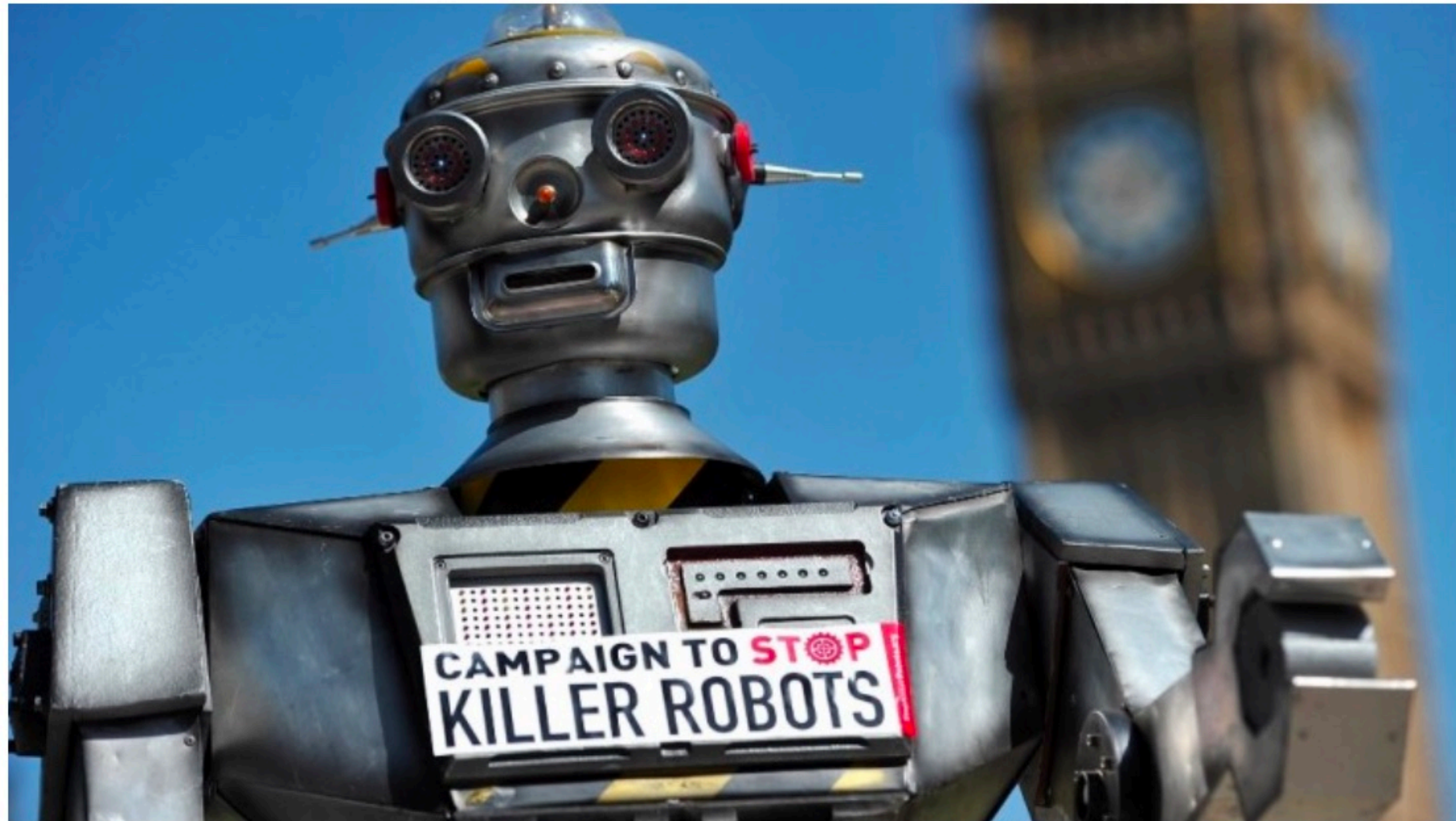


# AI and ...

- Society
- Politics & Power
- Mobility & Transport
- Science
- Education
- ...
- Conflicts & War



# AI and War



Source: Deutschlandfunk/AFP, Carl Court, 2019

AI is a  
Dual Use Technology



## Russia launches massive missile and drone attack on Ukraine

Reuters - 26 Aug 2024, 03:20 PM

Kyiv said Moscow had 11 TU-95 strategic bombers in the air during the assault.

4  
SHARES



Total Views: 427



*Ukraine has stepped up its long-range drone attacks on Russia to try and hit back at Moscow. (AP pic)*



# AI: Central role of language!

Thou shalt not  
kill, steal, ... !



Know-it-all-Parrots



# AI: Central role of language!

Thou shalt not  
kill, steal, ... !



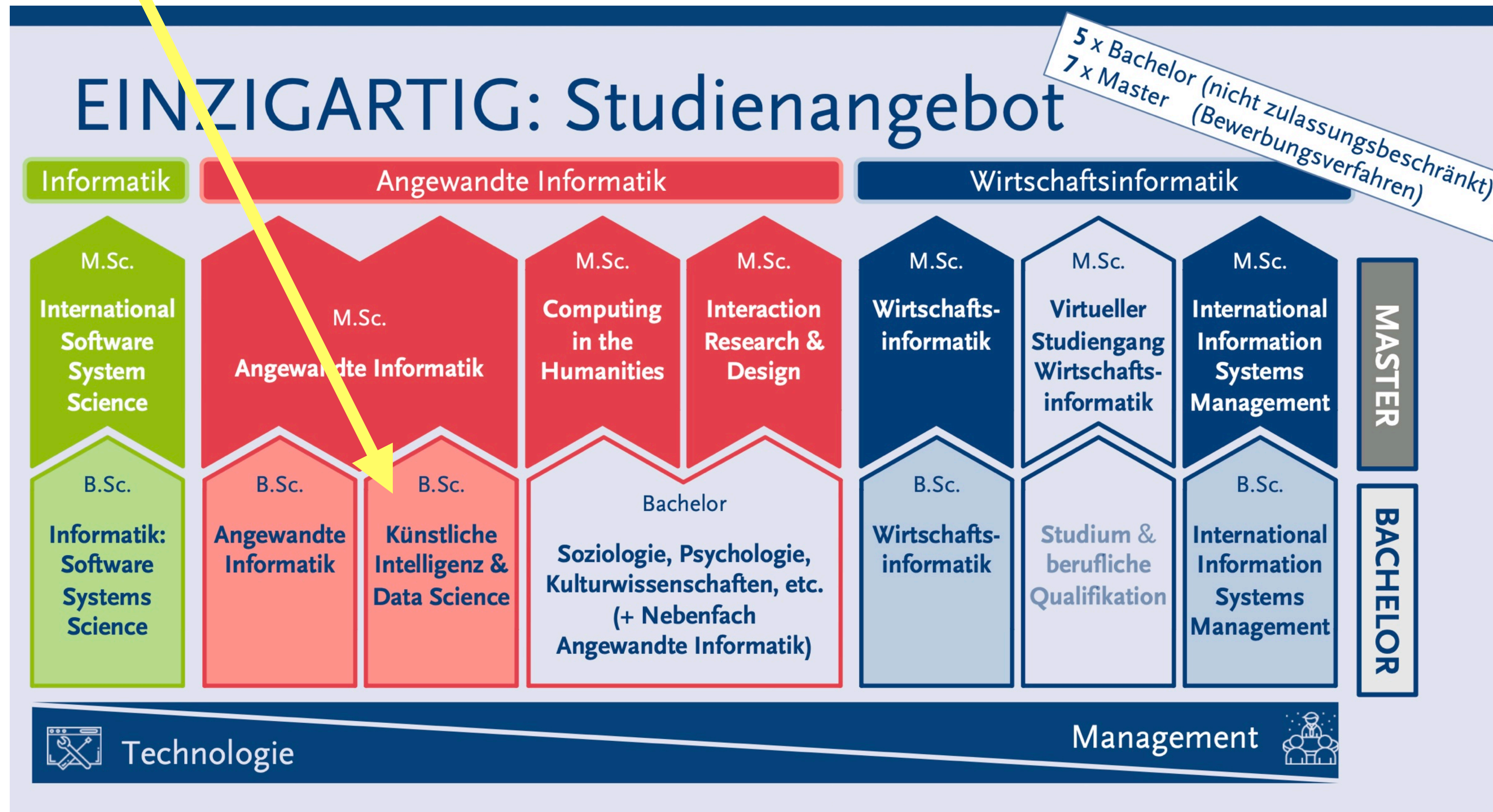
Know-it-all-Parrots under control

A simulation of language understanding is not sufficient!



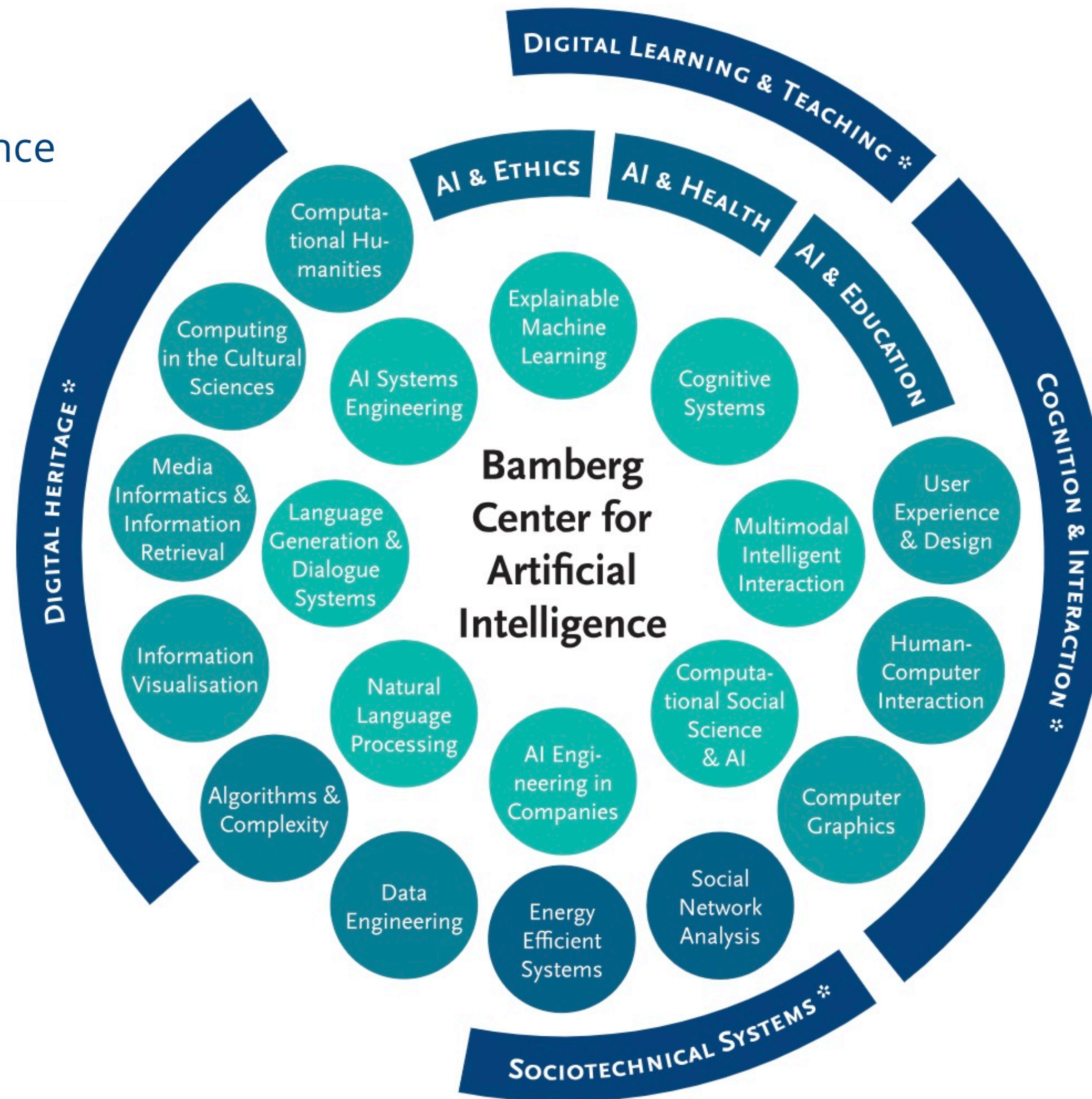
# BA KI&DS

Universität Bamberg





Bamberg Center for Artificial Intelligence





- New study programme at U Bamberg since **winter 2024/25**.
- Leads to a **Bachelor of Science (B.Sc.) degree in AI & Data Science** after a standard period of study of **6 semesters** with 180 ECTS credits.
- Possibility to study **part-time**: The duration of the degree programme is extended from 6 to 12 semesters for part-time students. It is possible at any time during the programme to change from full-time to part-time. Part-time students must pay the complete student fees.



# BA KI&DS

Universität Bamberg

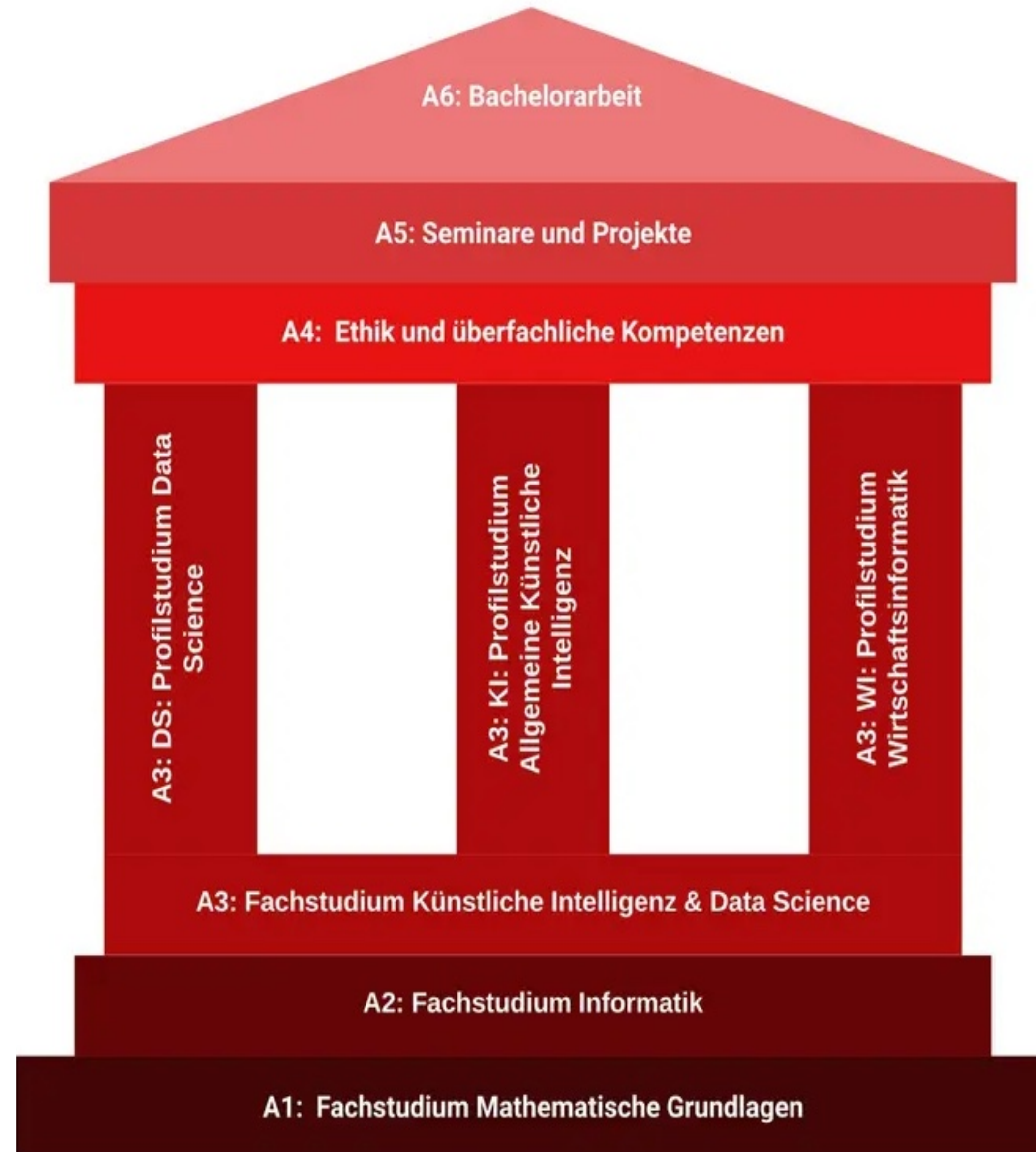


Three-pillar degree  
programme model

Particular emphasis also  
Responsibility and Trust

Cooperation between  
WIAI and SOWI

Built on  
Solid Foundations





- **Data Science:** Focus on mathematical & statistical techniques, enables seamless transition to the existing Master's degree programme in Survey Statistics
- **General AI:** Specialization in techniques for constructing hybrid intelligent agents, optimal preparation for a transition to the Master's degree programme in Applied Computer Science with a specialization in AI
- **Information Systems:** Concentration on practice-orientated training and application-related tasks and questions of AI practice in companies, preparation for a further Master's programme in Information Systems



### Beispielhafter Studienverlaufsplan für den Bachelorstudiengang Künstliche Intelligenz und Data Science (mit Studienstart zum Sommersemester 2025)

ECTS	3	6	9	12	15	18	21	24	27	30	33
1. Semester	Stat-B-01 Methoden der Statistik I Fachstudium Mathematische Grundlagen		WiMa-B-002 Wirtschaftsmathematik: Analysis Fachstudium Mathematische Grundlagen		MOBI-DBS-B Datenbanksysteme Fachstudium Informatik		VIS-GIV-B Grundlagen der Informationsvisualisierung Fachstudium KI & Data Science		Inf-Ment-B Studien- eingangs- mentoring	Schlüssel- kompe- tenzen	
2. Semester	Stat-B-02 Methoden der Statistik II Fachstudium Mathematische Grundlagen		Inf-Einf-B Einführung in die Informatik Fachstudium Informatik			Inf-DM-B Diskrete Modellierung Fachstudium Mathematische Grundlagen			GdI-MTL-B Modal and Temporal Logic Fachstudium Informatik		
3. Semester	KogSys-KI-B Einführung in die Künstliche Intelligenz Fachstudium KI & Data Science		Inf-LBR-B Logik und Berechenbarkeit Fachstudium Mathematische Grundlagen			AI-AuD-B Algorithmen und Datenstrukturen Fachstudium Informatik		AISE-DO-B Einführung in DevOps für KI-Systeme Fachstudium KI & Data Science		MOBI-DE-B Data Engineering Fachstudium KI & Data Science	
4. Semester	KogSys-ML-B Einführung in Maschinelles Lernen Fachstudium KI & Data Science		PSI-IntroSP-B Introduction to Security and Privacy Ethik und überfachliche Kompetenzen		AISE-LKR-B Logische Wissensrepräsentation und Schließen Fachstudium KI & Data Science		PSI-EDS-B Ethics for the Digital Society	Seminar Bereich Seminar & Projekt	Projekt Bereich Seminar & Projekt		
5. Semester	MI-WAIAI-B Einführung in wissenschaftliches Arbeiten	Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Seminar Bereich Seminar & Projekt	Projekt Bereich Seminar & Projekt		
6. Semester	Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Bachelorarbeit				
Pflichtmodule			Wahlpflichtmodule					Seminar/Projekt/Abschlussarbeit			



Beispielhafter Studienverlaufsplan für den Bachelorstudiengang Künstliche Intelligenz und Data Science (mit Studienstart zum Wintersemester 2024/25)

ECTS	3	6	9	12	15	18	21	24	27	30	33	
1. Semester	Stat-B-01 Methoden der Statistik I Fachstudium Mathematische Grundlagen		MOBI-DBS-B Datenbanksysteme Fachstudium Informatik		Inf-Einf-B Einführung in die Informatik Fachstudium Informatik			Inf-DM-B Diskrete Modellierung Fachstudium Mathematische Grundlagen			Inf-Ment-B Studien- eingangs- mentoring	
2. Semester	AI-AuD-B Algorithmen und Datenstrukturen Fachstudium Informatik		Stat-B-02 Methoden der Statistik II Fachstudium Mathematische Grundlagen		WiMa-B-002 Wirtschaftsmathematik: Analysis Fachstudium Mathematische Grundlagen		MI-WAIAI-B Einführung in wissenschaftliches Arbeiten	Inf-LBR-B Logik und Berechenbarkeit Fachstudium Mathematische Grundlagen				
3. Semester	PSI-IntroSP-B Introduction to Security and Privacy Ethik und überfachliche Kompetenzen		MOBI-DE-B Data Engineering Fachstudium KI & Data Science		GdI-MTL-B Modal and Temporal Logic Fachstudium Informatik		KogSys-ML-B Einführung in Maschinelles Lernen Fachstudium KI & Data Science		AISE-LKR-B Logische Wissensrepräsentation und Schließen Fachstudium KI & Data Science			
4. Semester	KogSys-KI-B Einführung in die Künstliche Intelligenz Fachstudium KI & Data Science		VIS-GIV-B Grundlagen der Informationsvisualisierung Fachstudium KI & Data Science		Seminar Bereich Seminar & Projekt	Projekt Bereich Seminar & Projekt		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Schlüssel- kompe- tenzen		
5. Semester	AISE-DO-B Einführung in DevOps für KI-Systeme Fachstudium KI & Data Science		PSI-EDS-B Ethics for the Digital Society	Seminar Bereich Seminar & Projekt	Projekt Bereich Seminar & Projekt		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik			
6. Semester	Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Fachmodul Wahlpflichtbereich Profilstudium/Informatik/Mathematik		Bachelorarbeit					
Pflichtmodule			Wahlpflichtmodule					Seminar/Projekt/Abschlussarbeit				



- Diverse opportunities for graduates, both in research and in companies
- Possible roles include but are not limited to:
  - Data Analyst
  - Data Scientist
  - AI Engineer
  - Machine Learning Engineer
  - Business Intelligence Analyst
  - Statistician
  - Consultant in AI and Data Science
  - ...
  - Scientist in AI (and related fields)





**Prof. Dr. Christoph Benz Müller**

Room WE5/05.090

An der Weberei 5

96047 Bamberg

Phone: +49 951 863-2942

Degree Programme  
Representative



**Ines Häuser**

Room: WE5/01.079

An der Weberei 5

96047 Bamberg

Phone: +49 951/ 863 2515

Email: [pa.inf-ai@uni-bamberg.de](mailto:pa.inf-ai@uni-bamberg.de)

Examination Board



- Information page for new students: <https://www.uni-bamberg.de/en/studies/currently-enrolled/new-students/orientation-events/eet/>
- Degree programme info page: <https://www.uni-bamberg.de/en/ba-ki/profile/>
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