

Sylvia Melzer, Ralf Möller

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# GenAI in Education, Science, and Society

# Organization

## Intellectics: The Science of AI

- Compulsory module “GenAI in Education, Science, and Society”
- Type: lecture + seminar (in English)
- Credits: 8 CP
- Regular attendance at the seminars is required
- Examination information: presentation of a publication (30 minutes) + homework
- Topics and dates for the presentations will be coordinated during the seminar

# Organization

## Elective Module

- “GenAI in Education, Science, and Society”
- Type: lecture (in English)
- Credits: 3 CP
- Regular attendance at the lectures is recommended

# Organization

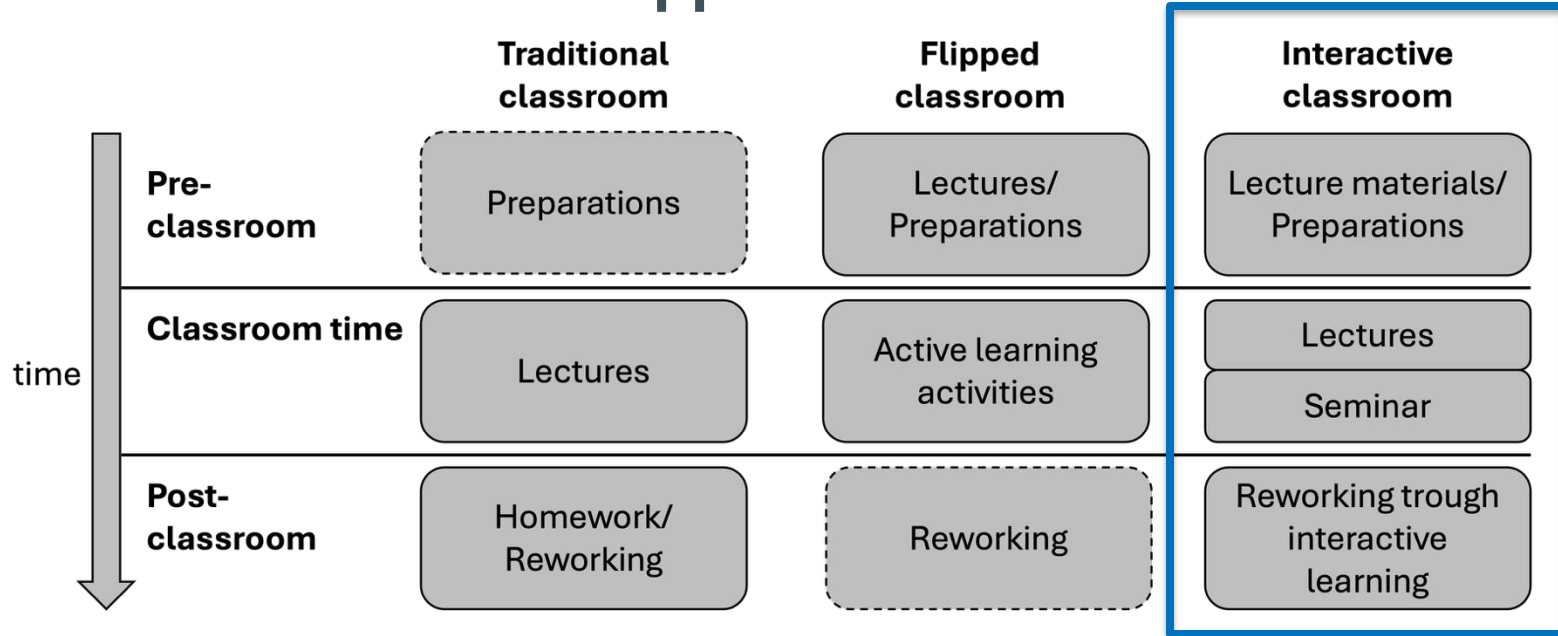
## Teaching material

- <https://lernen.min.uni-hamburg.de/course/view.php?id=5815>
- All confirmed registrations in Stine will receive access here

## Teaching material from previous years

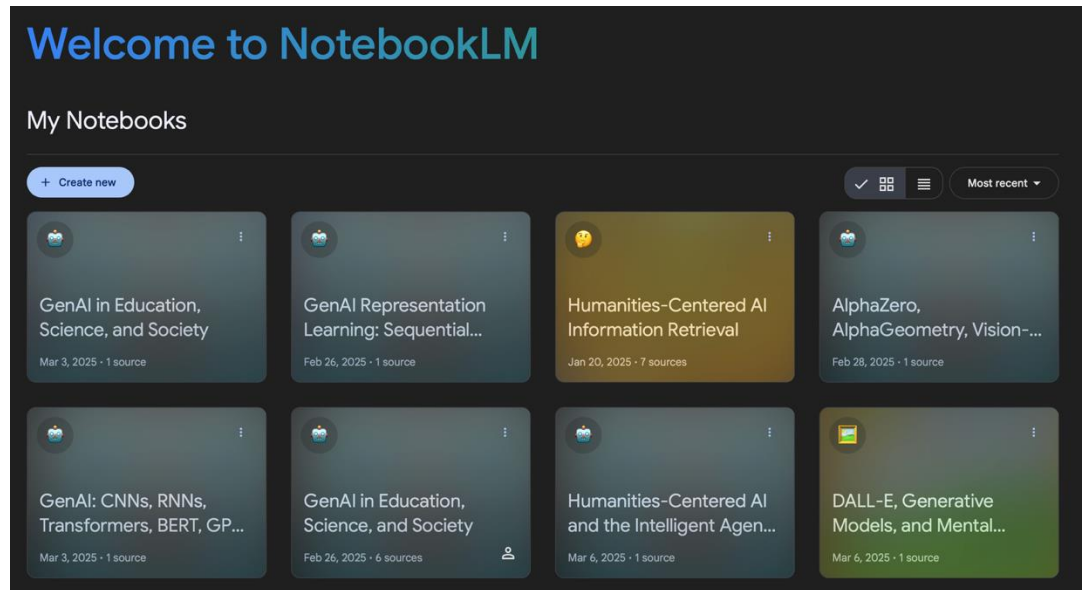
- <https://www.philosophie.uni-hamburg.de/chai/studium/lehrmaterialen.html>

# From Traditional to Flipped to Interactive Classroom



# NotebookLM

- an experimental offering from Google Labs to create interactive Podcasts
- <https://notebooklm.google.com>



Sources



+ Add source

Select all sources



01\_GenAI\_Organization+Intro.pdf

1) Uploading  
the lecture files

Chat

2) Automatically  
Generated Summarization

## GenAI in Education, Science, and Society

1 source

The provided material outlines a lecture and seminar course titled "GenAI in Education, Science, and Society," detailing its **organization**, **learning objectives**, and a **comprehensive schedule** covering topics from foundational AI concepts to specific GenAI models and applications. It introduces **key AI concepts** like agents, perception, and action planning, further exploring the **challenges of AI control** with the "off-switch problem." The text then transitions to **Generative AI**, defining its capabilities and highlighting its current and potential impact across education, science, and society, concluding with suggested **seminar topics** for deeper exploration of these areas.

Save to note



Add note

Audio Overview

Mind Map

3) Chat with NotebookLM  
about your lecture content

Start typing...

1 source



How does GenAI's functionality differentiate it from traditional AI within education, science, a &gt;

Studio

Audio Overview



GenAI in Education, Science, and Society



00:01 / 13:33

Interactive mode **BETA**

Notes

+ Add note

Study guide

Briefing doc

FAQ

Timeline

5) Be part of the podcast –  
be interactive!

Join



# Learning objectives

- By completing the course "GenAI in Education, Science, and Society", you will be able to
  - name the central ideas of GenAI in Education, Science, and Society
  - define the relevant terms, and
  - explain how the associated methods and approaches work using application examples.
- To get new job opportunities

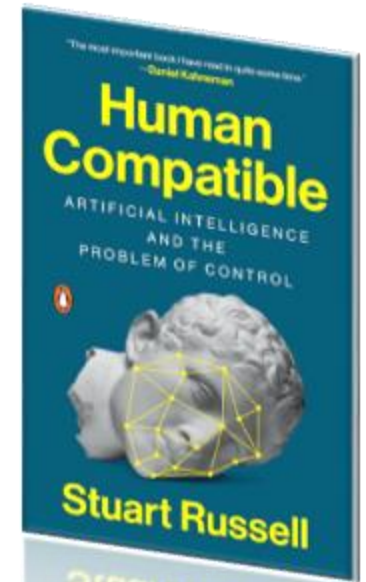
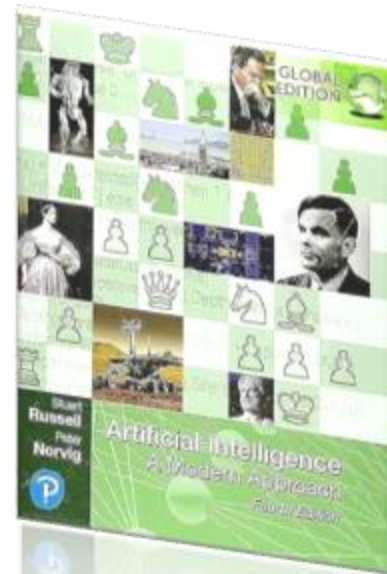
Date	Date	Topics
1	15. Okt. 2025	<ul style="list-style-type: none"> <li>▪ Organization, Introduction</li> </ul>
2	22. Okt. 2025	<ul style="list-style-type: none"> <li>▪ Agents for information retrieval, algorithmic embedding and association techniques (e.g. TF-IDF)</li> </ul>
3	29. Okt. 2025	<ul style="list-style-type: none"> <li>▪ Representation learning for sequential structures, automatic embedding: word2vec, CBOW, Skip- Gram with negative</li> </ul>
4	05. Nov. 2025	<ul style="list-style-type: none"> <li>▪ sampling</li> </ul>
5	12. Nov. 2025	<ul style="list-style-type: none"> <li>▪ Natural language processing: large language models (LLMs): recurrent computation networks (with so-called LSTMs or</li> </ul>
6	19. Nov. 2025	<ul style="list-style-type: none"> <li>▪ GRUs as base units), transformation networks (e.g. BERT, GPT), basics of training generative pretrained language models ( GPTs )</li> </ul>
7	26. Nov. 2025	<ul style="list-style-type: none"> <li>▪ GPT generation parameters: temperature and top-P sampling, retrieval-assisted generation, embedding techniques for relational data (knowledge graphs), integration of knowledge graphs into language models,</li> </ul>
8	03. Dez. 2025	<ul style="list-style-type: none"> <li>▪ generation of knowledge graphs from texts, fine-tuning of pre-trained generative models for special tasks,</li> </ul>
9	10. Dez. 2025	<ul style="list-style-type: none"> <li>▪ distilling models</li> </ul>
10	17. Dez. 2025	<ul style="list-style-type: none"> <li>▪ Prompt engineering: Verbalization of context and task descriptions (including context-related GPTs), context-related learning (zero-shot vs. few -shot prompt generation )</li> </ul>
11	07. Jan. 2026	<ul style="list-style-type: none"> <li>▪ Software development with LLMs (code generation)</li> </ul>
12	14. Jan. 2026	<ul style="list-style-type: none"> <li>▪ Image processing with convolutional networks and transformation networks: AlexNet , ResNet , transformation</li> </ul>
13	21. Jan. 2026	<ul style="list-style-type: none"> <li>▪ networks for visual data ( ViT )</li> </ul>
14	28. Jan. 2026	<ul style="list-style-type: none"> <li>▪ Vision and language: large multimodal models ( ViLBERT ), contrastive pre-training (CLIP)</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Generation of images from textual descriptions (DALL-E)</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Video analysis: Object detection with transformation network architectures (YOLO)</li> </ul>

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# Introduction

# Literature

- Stuart Russell and Peter Norvig. 2020. Artificial Intelligence: A Modern Approach (4th. ed.). Prentice Hall Press, USA.
- Stuart Russell. 2020. Human Compatible: Artificial Intelligence and the Problem of Control. Penguin Publishing Group; Reprint Edition.

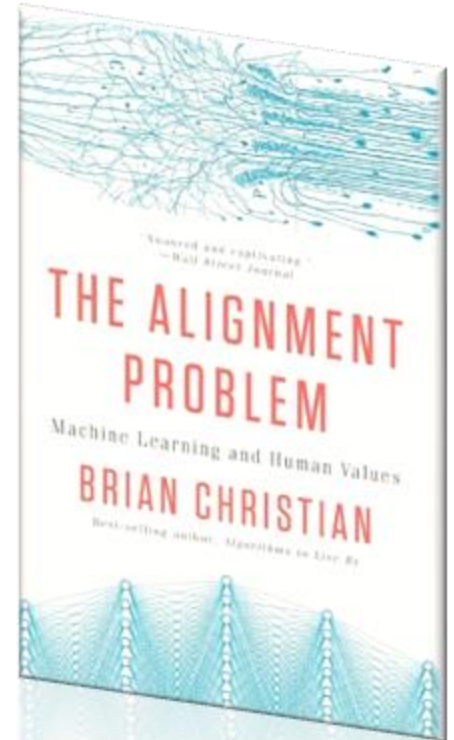
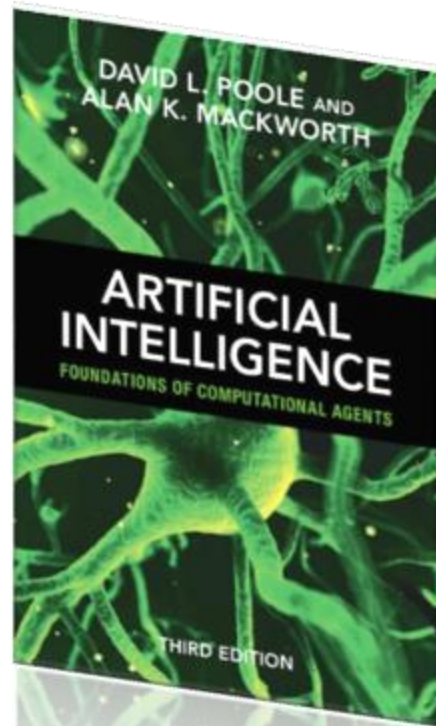


<https://www.amazon.de/Artificial-Intelligence-Modern-Approach-Global/dp/1292401133/>  
<https://www.amazon.de/Human-Compatible-Artificial-Intelligence-Problem/dp/0525558632/>

## Literature

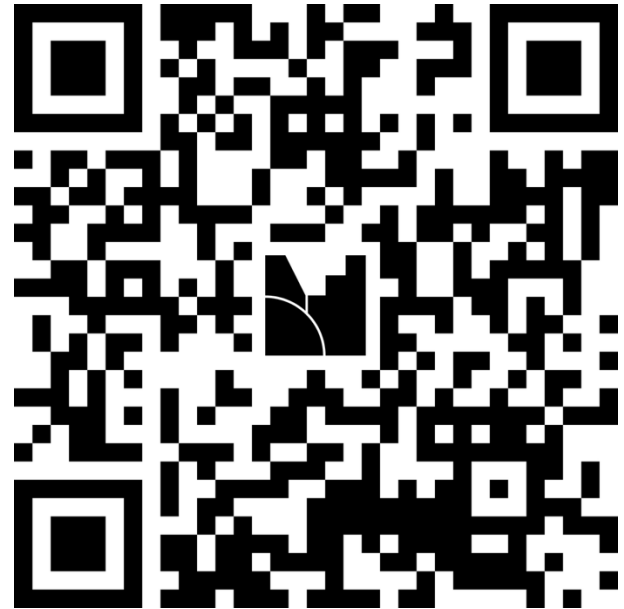
- David L. Poole and Alan K. Mackworth, 2023. Artificial Intelligence 3E: Foundations of Computational Agents (3rd ed.). Cambridge University Press
- Brian Christian, 2020. The Alignment Problem: Machine Learning and Human Values. WW Norton

<https://artint.info/3e/html/ArtInt3e.html>

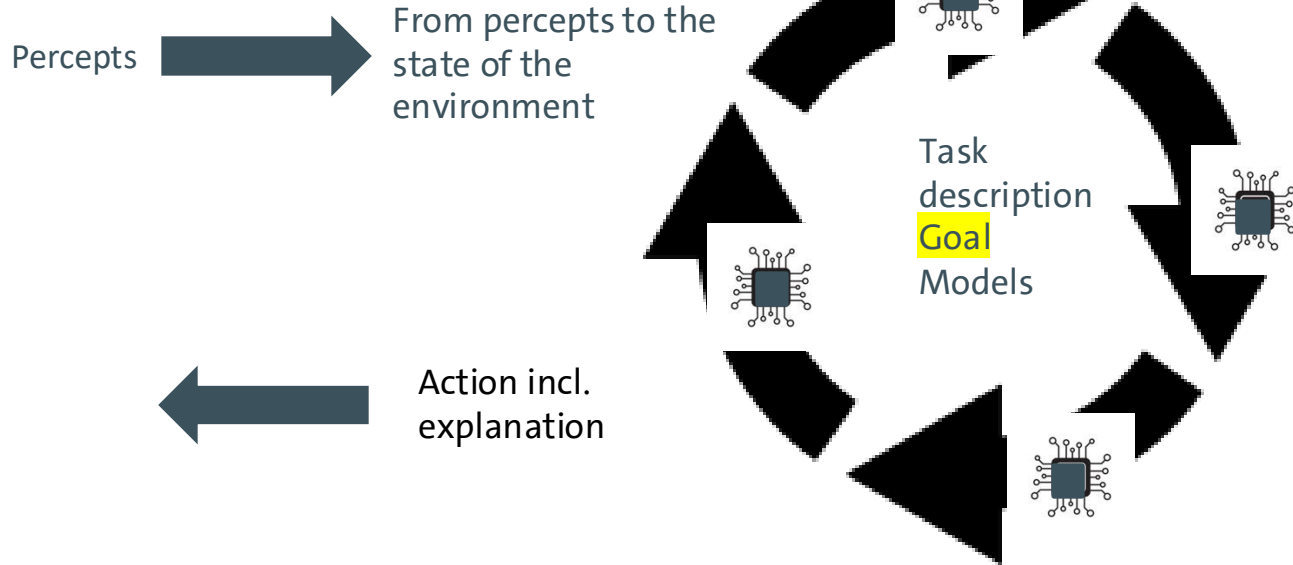


# What terms do you associate with AI?

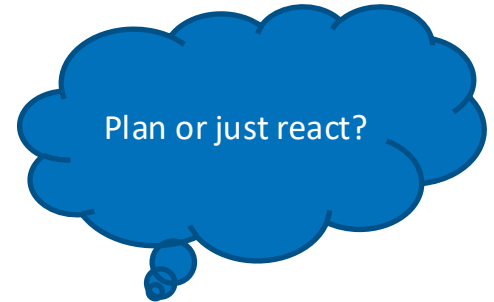
<https://www.mentimeter.com/app/presentation/al1m7uws8jxh44qyznhxi42g5dza6xeb/edit?source=share-modal>



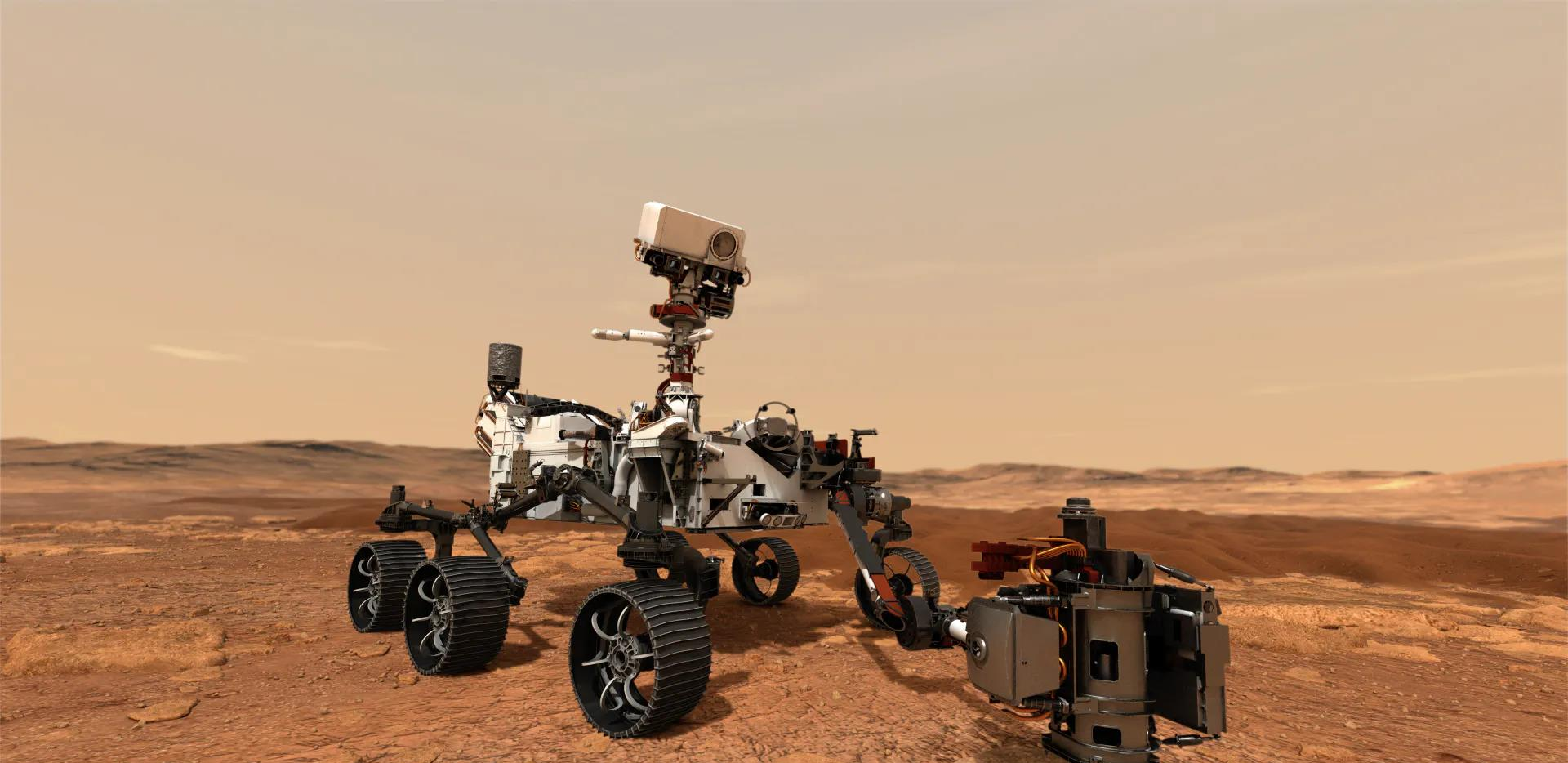
# AI: Science about agents acting in the world (Lat. agere: act)



Task description → Goal  
Is my task description still correct given the current state of the environment?  
Should I adopt a new task description?



Action planning strategy  
What is the best action in the current state for a given goal?  
14



# Perseverance: Mars Rover

# Mars Rover: Autonomy is Necessary

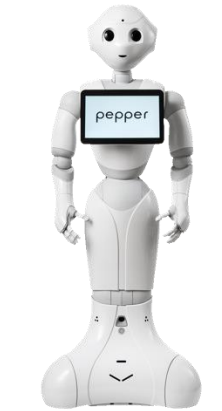
No remote  
control

- Systems must act! (Reinforcement learning necessary)
  - Development time
  - Deployment time
- Data interpretation → Model assumptions required
- Model assumptions possibly need to be revised
- Decision: Use policy/employ planning
- Task description → “goal”
- Goal still valid?

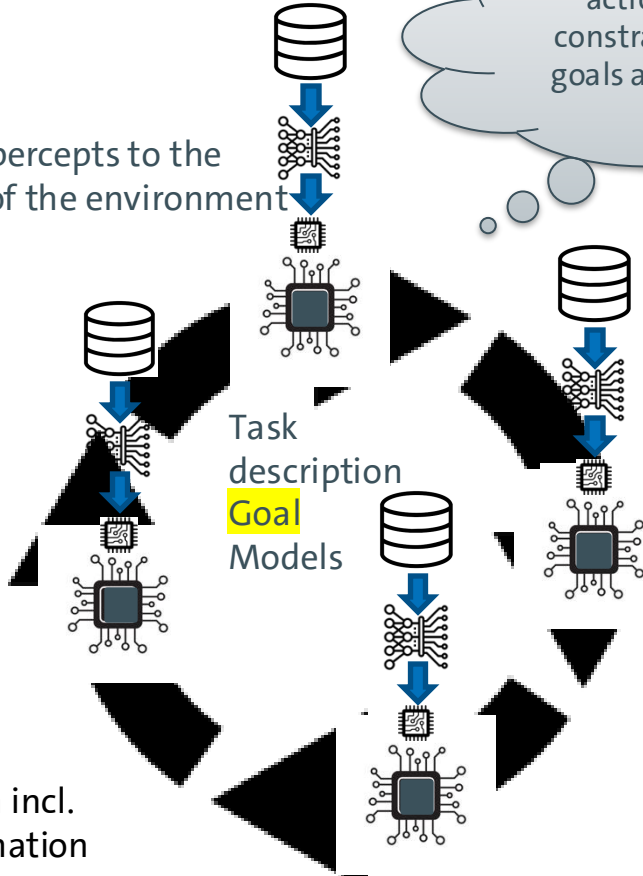
Percepts



From percepts to the state of the environment




Action incl. explanation



Intelligence concept: locally optimal action under (severe) resource constraints in relation to uncertain goals and the preferences of others in the environment

Task description → Goal  
 Is the goal from the task description still correctly selected given the current state of the environment? If necessary, define a (new) internal goal

Optimize local success measure (utility)

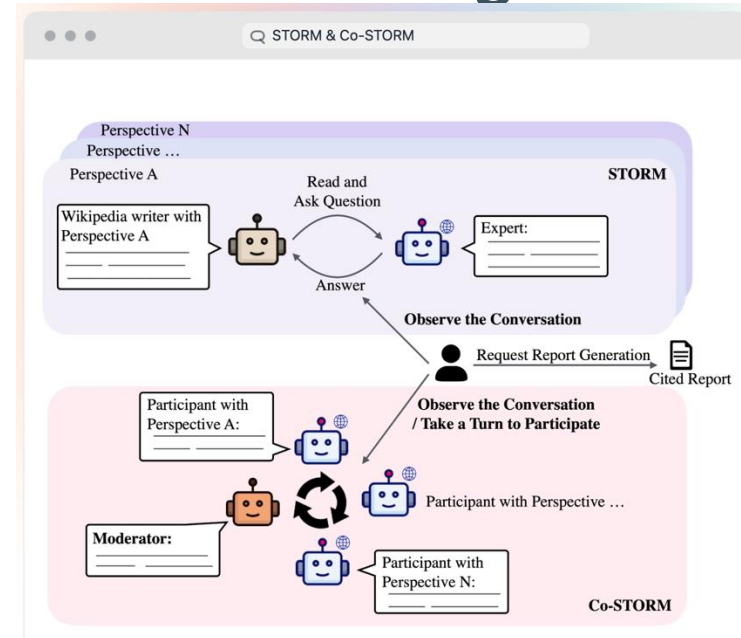
Action planning strategy  
 What is the best action in the current state for a given goal?

# Co-Storm: An Example of Collaborative Humans & Agents

## Co-Storm

- Combines **human** expertise with **agents** to generate knowledge
- Emphasises the science of AI not only as an autonomous agent, but also as an approach that can complement human cognitive abilities in the generation of knowledge

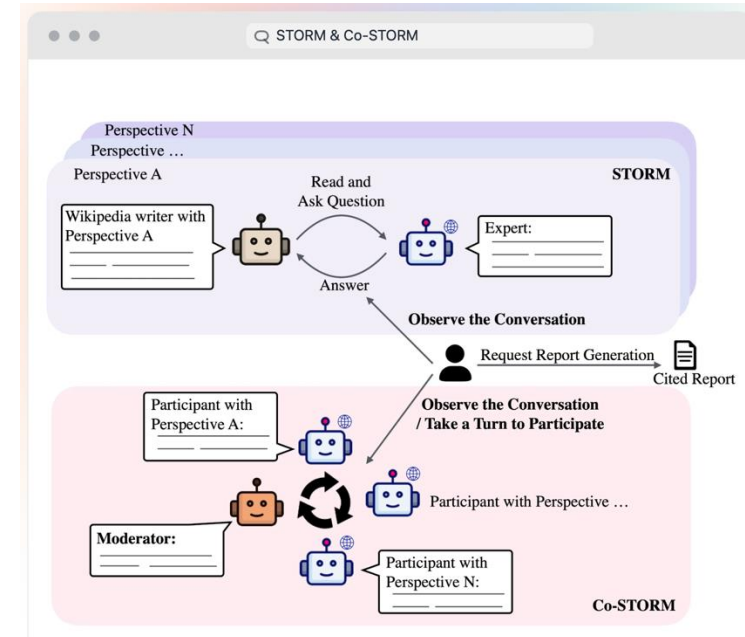
<https://storm.genie.stanford.edu>



# Co-Storm

## The Moderator as Principal:

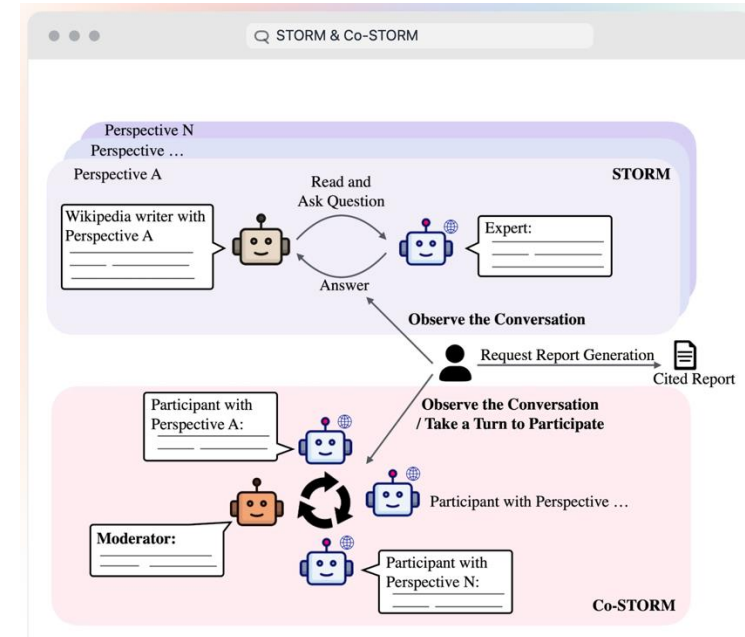
- Acts as the central authority responsible for decision-making
- Has the goal to aggregate expert contributions into a well-informed collective decision
- Designs the decision-making process and ensures that the experts contribute effectively



# Co-Storm

## The experts (agents)

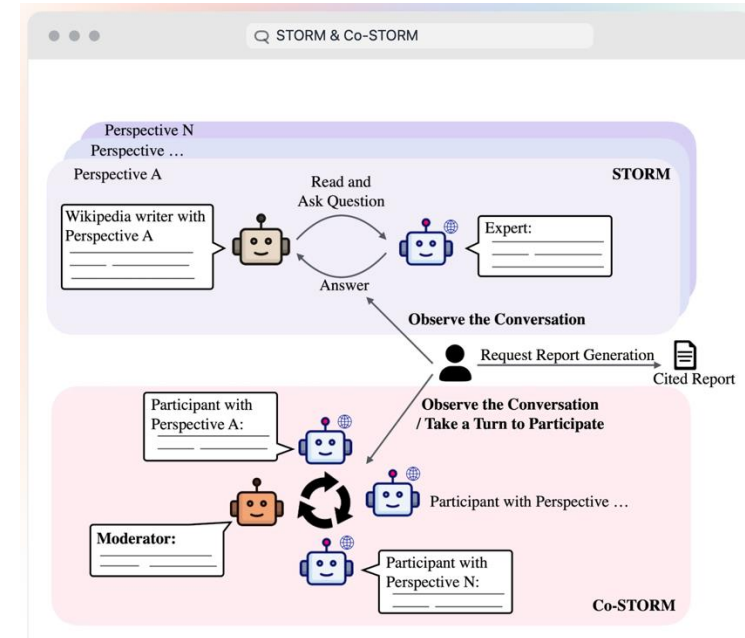
- Provide specialized knowledge or insights
- Provide information to the moderator
- Their interests may not always align with the moderator's goals, so incentives must be carefully designed to ensure cooperation



# Co-Storm

## Reward

- Instead of rewarding the moderator, incentives are distributed to the experts
- These rewards are usually performance-based and depend on the relevance and usefulness of the information they provide

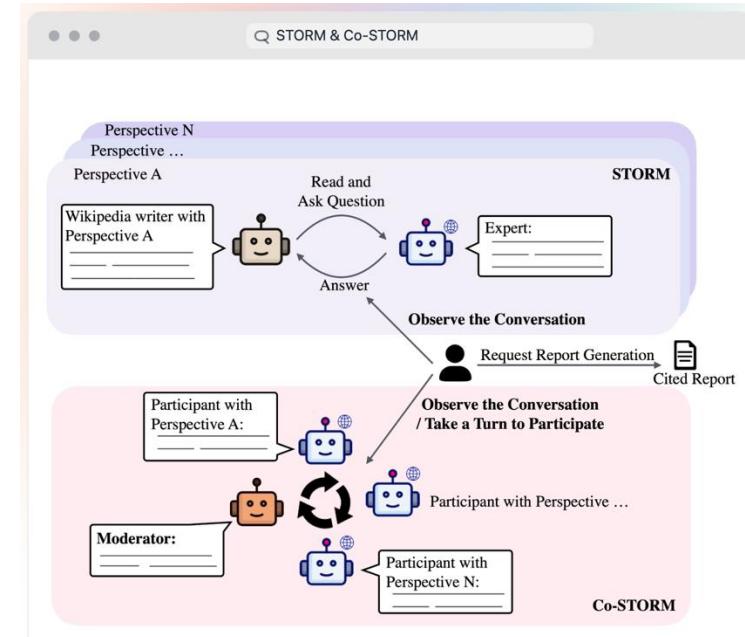


# Co-Storm

## Best Choice

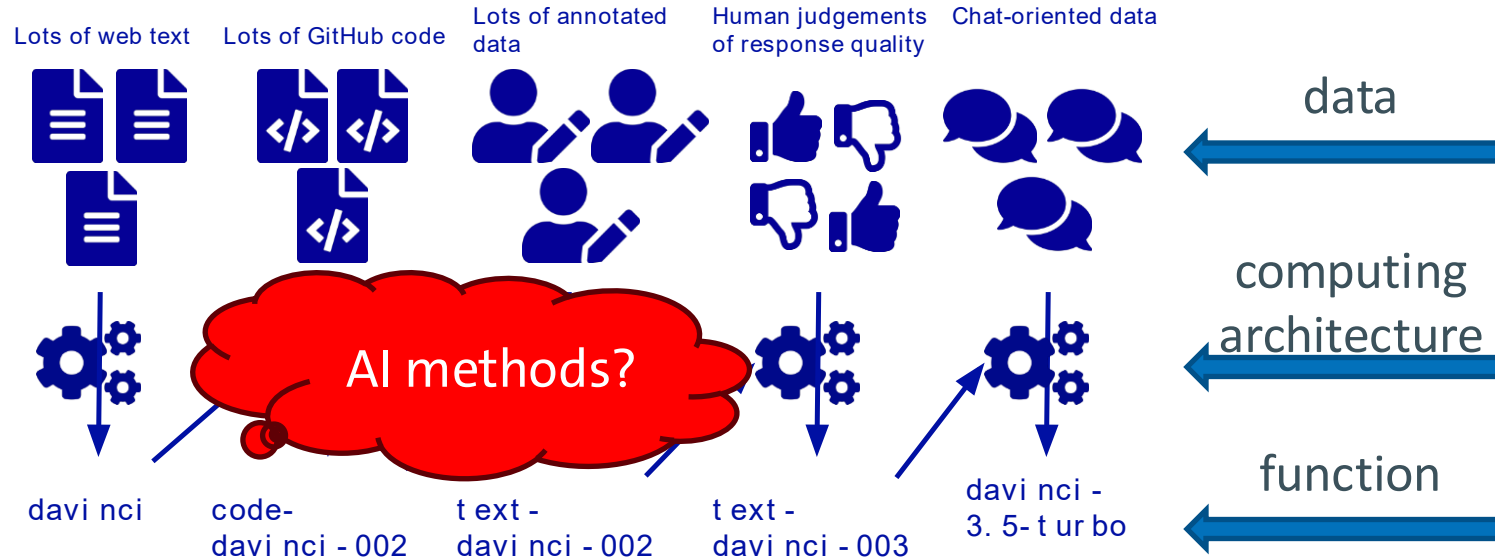
- The system aggregates expert inputs into a collective outcome that reflects the best possible decision (optimized local success measure) given the available information (→ principal agent problem)

[https://en.wikipedia.org/wiki/Principal-agent\\_problem#:~:text=The%20principal-agent%20problem%20refers,is%20called%20%22agency%20costs%22](https://en.wikipedia.org/wiki/Principal-agent_problem#:~:text=The%20principal-agent%20problem%20refers,is%20called%20%22agency%20costs%22)

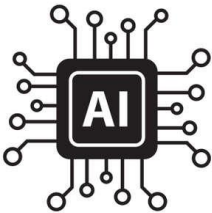
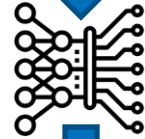


# Data, Architecture & Functions

Image: Graham Neubig, Large Language Models:  
A Bird's Eye View,  
<https://phontron.com/slides/neubig23llms.pdf>



AI Method



Customization of functions for special applications possible

Direct use in applications

Pre-trained model available (basic function)

# Functions vs. Agents

## Function

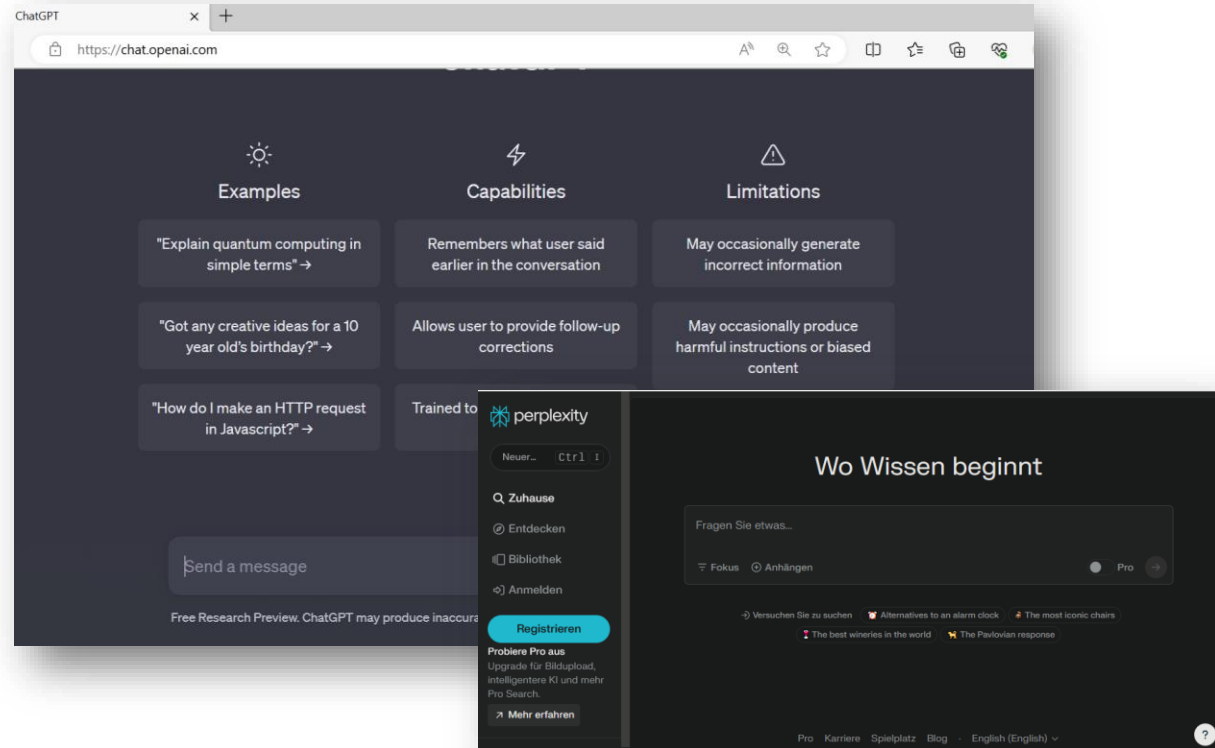
- Generative Pre-trained Transformer (GPT)

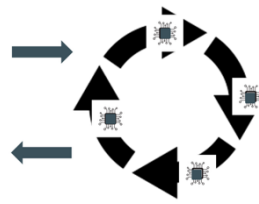
## Agents

- ChatGPT
- Perplexity.ai
- ...

## Usage

- code generation
- text generation
- ...





# Agents in Action

- Task description: Please summarize “Alice in Wonderland”

SY

You

Please summarize "Alice in Wonderland"



ChatGPT

"Alice's Adventures in Wonderland," commonly known as "Alice in Wonderland," is a novel written by Lewis Carroll (pseudonym for Charles Lutwidge Dodgson), published in 1865. The story follows a young girl named Alice who falls down a rabbit hole into a whimsical, fantastical world filled with peculiar characters and surreal events.

In Wonderland, Alice encounters anthropomorphic animals, such as the White Rabbit, the Cheshire Cat, and the March Hare, as well as eccentric figures like the Mad Hatter and the Queen of Hearts. She experiences a series of bizarre adventures, including changes in size, nonsensical conversations, and encounters with strange creatures.

The narrative is marked by its dreamlike quality, absurdity, and playful use of language and logic. As Alice navigates through Wonderland, she struggles to make sense of its nonsensical rules and illogical situations. The story explores themes of identity, growing up, and the nature of reality versus imagination.

Overall, "Alice in Wonderland" is a classic work of children's literature celebrated for its imaginative storytelling, whimsical characters, and clever wordplay.

task description



Explanation



# Please summarize “Alice in Wonderland”

## Quellen

Alice in Wonderland Plot Summary | Course Hero

★ coursehero · 1

Alice in Wonderland Summary - Javatpoint

♥ javatpoint · 2

Alice in Wonderland by Lewis Carroll | Brief Plot...

▶ youtube · 3

Sehen Sie 2 mehr

## Antwort

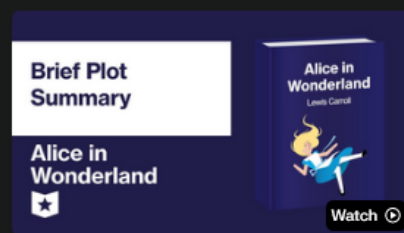
### Summary of Alice in Wonderland

Alice in Wonderland is a classic fantasy novel by Lewis Carroll that follows the adventures of a young girl named Alice. The story begins when Alice is sitting on a riverbank with her sister, daydreaming. Suddenly, she sees a White Rabbit wearing a waistcoat and carrying a pocket watch, who says he is late for a very important date. Alice curiously follows the Rabbit down a rabbit hole, which leads her to the fantastical world of Wonderland.

In Wonderland, Alice encounters a series of strange and nonsensical characters and situations. She struggles to control her constantly changing size after eating and drinking various substances. Alice meets the Cheshire Cat, who can disappear and reappear at will, the Mad Hatter and March Hare having a never-ending tea party, and the tyrannical Queen of Hearts, who is quick to order the beheading of anyone who upsets her. 1 2 3

Throughout her adventures, Alice tries to make sense of the absurd rules and behaviors of Wonderland, which often mock the rigid social norms of Victorian England. Despite the chaos, Alice remains determined and level-headed, asserting her own sense of justice and morality. 2 3 4

Ultimately, Alice wakes up to find that her adventures in Wonderland were just a dream. However, the story's themes of self-reliance, the arbitrariness of rules, and the challenges of growing up continue to resonate with readers. Lewis Carroll's innovative use of wordplay, dreams, and inversions of traditional tales helped revolutionize children's literature. 1 2 3 4



Bilder suchen

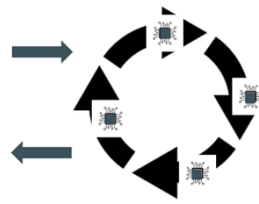


Videos suchen



Bild generieren





# Agents in Action

- Task description: Who is the president of the USA?

# Who is the president of the USA?

## Quellen

President of the United States - Wikipedia  
en.wikipedia · 1

Presidents | The White House  
whitehouse · 2

List of presidents of the United States - Wikipedia  
en.wikipedia · 3

Sehen Sie 2 mehr

## Antwort

Based on the search results provided, the current president of the United States is Joe Biden.

The key evidence is:

- Joe Biden is listed as the 46th President of the United States on the White House website <sup>4</sup>.
- The search results provide a biography of Joe Biden, stating that he "represented Delaware for 36 years in the U.S. Senate before becoming the 47th Vice President of the United States. As President, Biden will restore America's leadership and build our communities back better." <sup>4</sup>
- The list of all U.S. presidents on Wikipedia confirms that Joe Biden is the 46th and current president, having assumed office on January 20, 2021 <sup>3</sup>.

Therefore, the president of the USA is Joe Biden.

Teilen Umschreiben

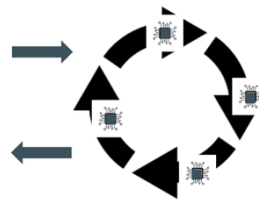
## Ähnlich

- what are the responsibilities of the president of the united states +
- how long is the term of the president of the united states +
- who was the first president of the united states



Videos suchen +

Bild generieren +



## ChatGPT 3.5 ▾



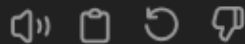
**You**

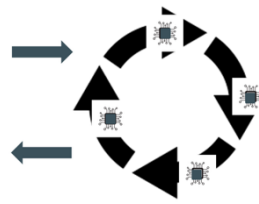
Who is the president of the USA?



**ChatGPT**

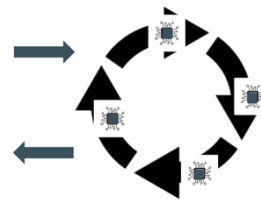
As of my last update in January 2022, I cannot provide real-time information. Please verify with a current and reliable source, as the president may have changed since then.





# Agents in Action

- Task description: What is the Islamic date **12.5.1443** in Gregorian date?



## ChatGPT 3.5 ▾



**You**

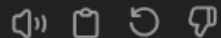
What is the Islamic date 12.5.1443 in Gregorian date?



**ChatGPT**

To convert the Islamic date 12.5.1443 to the Gregorian calendar, we need to use a converter since the Islamic calendar is lunar, and its months don't directly correspond to the months in the Gregorian calendar.


Using a converter, we find that the Islamic date 12.5.1443 corresponds to approximately February 18, 2022, in the Gregorian calendar.




# What is the Islamic date 12.5.1443 in Gregorian date?

## 📖 Quellen

Calendar Converter - Islamic Philosophy...

 muslimphilosophy · 1


Dhu al-Hijjah Hijri calendar - 1443 - التقويم...

 calendarhijri · 2

Hijri to Gregorian Date Converter - Islamic...

 islamicfinder · 3

Chronological List of Presidents, First Ladies,...

 loc · 4

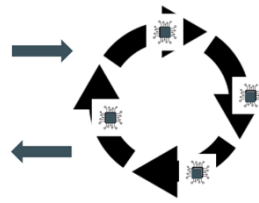
## ✳️ Antwort

According to the search results, the Islamic date 12.5.1443 corresponds to the Gregorian date 2022/09/09.

The key evidence is:

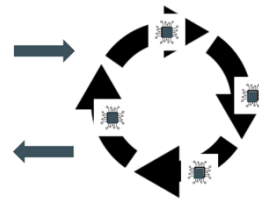
- The Hijri to Gregorian date converter on IslamicFinder.org <sup>3</sup> shows that the Islamic date 12.5.1443 converts to the Gregorian date 2022/09/09.

Therefore, the Gregorian date for the Islamic date 12.5.1443 is 2022/09/09.



# Agents in Action

- Task description: What is the Islamic date **27.7.523** in Gregorian date?



# What is the Islamic date 27.7.523 in Gregorian date?

## ☰ Quellen

Calendar Converter -  
Islamic Philosophy...

 muslimphilosophy · 1

The Muslim calendar.  
The Gregorian calendar...

 planetcalc · 2

Hijri to Gregorian Date  
Converter - Islamic...

 islamicfinder · 3

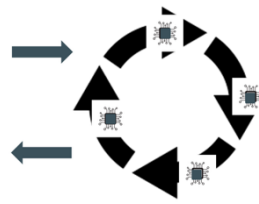
Search  
Truth 

Sehen Sie 2 mehr

## ✦ Antwort

The Islamic date 27.7.523 corresponds to September 15, 1128 in the Gregorian calendar. <sup>1</sup>

[2](#) [3](#) [4](#) [5](#)



# Agents in Action

SY

**You**

What is the Islamic date 27.7.523 in Gregorian date?

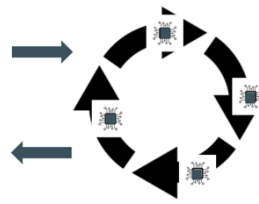


**ChatGPT**

To convert the Islamic date 27.7.523 to the Gregorian calendar, we can use a converter.

The Islamic date 27.7.523 corresponds to approximately August 17, 1134, in the Gregorian calendar.

- **Where is the goal?**



SY

You

What is the Islamic date 27.7.523 in Gregorian date?

```
from hijri_converter import convert

def convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day):
    gregorian_date = convert.Hijri(islamic_year, islamic_month, islamic_day)
    return gregorian_date

# Example usage
islamic_year = 1443
islamic_month = 5
islamic_day = 12

gregorian_date = convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day)
print(f"Islamic date: {islamic_year}-{islamic_month:02d}-{islamic_day:02d}")
print(f"Gregorian date: {gregorian_date}")
```

WiSe2025-2026

GenAI | Sylvia Melzer, ChatGPT

task description



goal

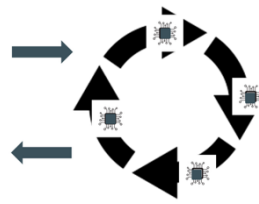


perception



explanation





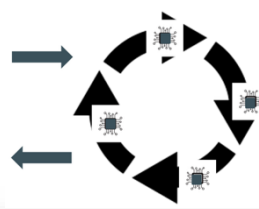
# Explanations

Task description: What is the Islamic date **12.5.1443** in Gregorian date?

- ChatGPT's explanation: **18.2.2022**
- Perplexity.ai explanation: **9.9.2022**

Task description: What is the Islamic date **27.7.523** in Gregorian date?

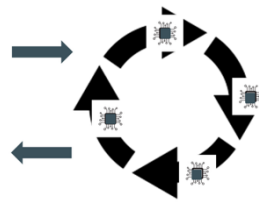
- ChatGPT's explanation: **17.8.1134**
  - Perplexity.ai explanation: **15.9.1128**
- ➔ **Check ChatGPT's goal**
- <http://www.muslimphilosophy.com/calconv/index.html>
  - implementation



```
import hijri_converter.py ×  
C: > Users > Melzer > Documents > 02_Forschung > DataLinkingWorkshop2023 > import hijri_converter.py > ...  
1  from hijri_converter import convert  
2  
3  def convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day):  
4      gregorian_date = convert.Hijri(islamic_year, islamic_month, islamic_day).to_gregorian()  
5      return gregorian_date  
6  
7  # Example usage  
8  islamic_year = 1443  
9  islamic_month = 5  
10 islamic_day = 12  
11  
12 gregorian_date = convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day)  
13 print(f"Islamic date: {islamic_year}-{islamic_month:02d}-{islamic_day:02d}")  
14 print(f"Gregorian date: {gregorian_date}")  
15
```

## Test result

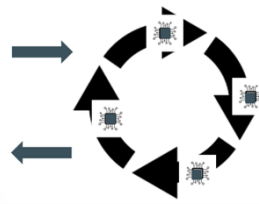
```
Gregorian date: 2021-12-16
```



```
import hijri_converter.py X
```

```
C: > Users > Melzer > Documents > 02_Forschung > DataLinkingWorkshop2023 > import hijri_converter.py > ...
```

```
1  from hijri_converter import convert
2
3  def convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day):
4      gregorian_date = convert.Hijri(islamic_year, islamic_month, islamic_day).to_gregorian()
5      return gregorian_date
6
7  # Example usage
8  islamic_year = 523
9  islamic_month = 7
10 islamic_day = 27
11
12 gregorian_date = convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day)
13 print(f"Islamic date: {islamic_year}-{islamic_month:02d}-{islamic_day:02d}")
14 print(f"Gregorian date: {gregorian_date}")
15 |
```

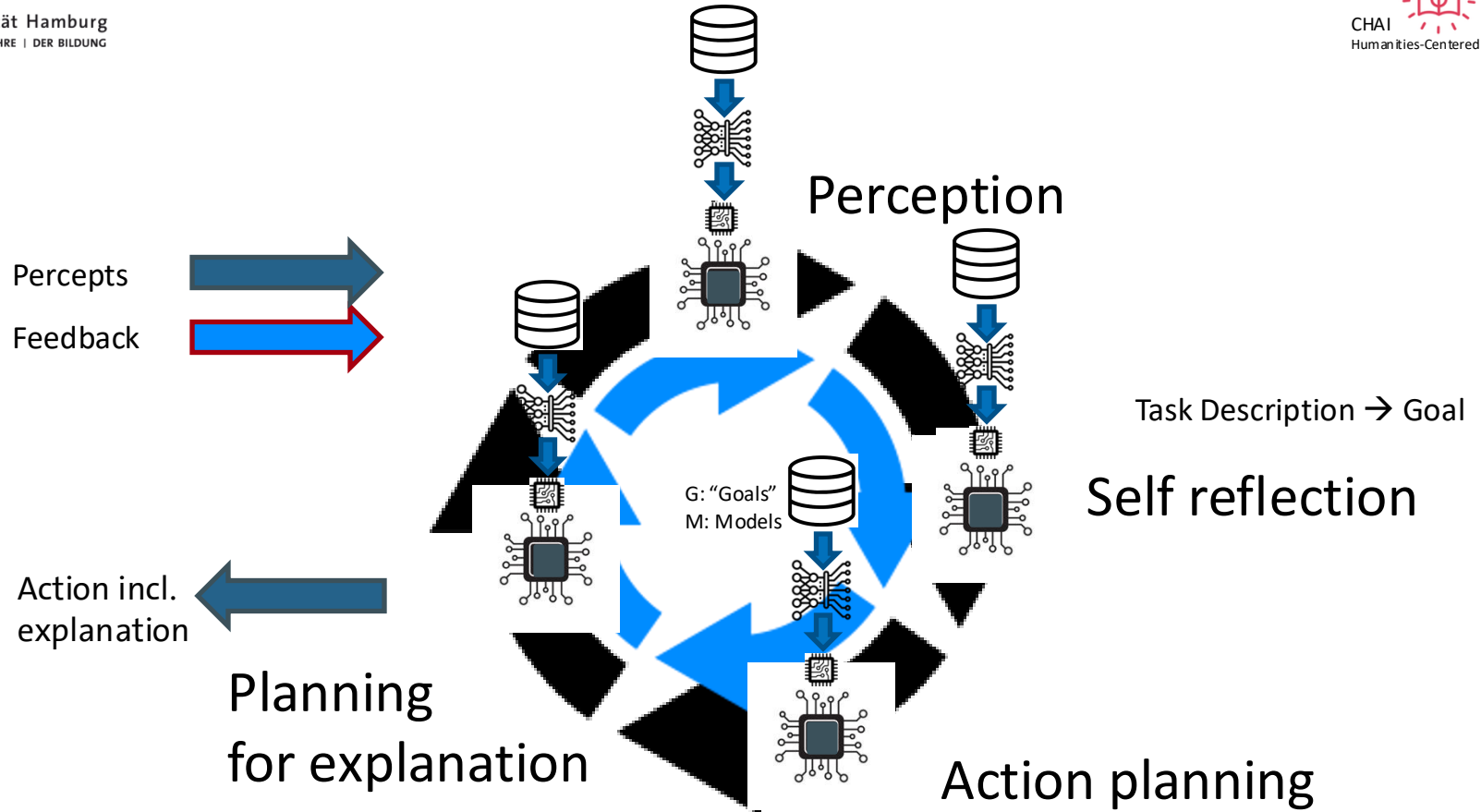


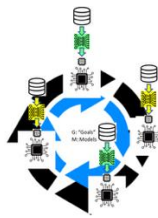
```
Explorer (Ctrl+Shift+E) ter.py ×
C: > Users > Melzer > Documents > 02_Forschung > DataLinkingWorkshop2023 > import hijri_converter.py > convert_islami
1 from hijri_converter import convert
2
3 def convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day):
4     gregorian_date = convert.Hijri(islamic_year, islamic_month, islamic_day).to_gregorian()

Exception has occurred: OverflowError ×
date out of range

File "C:\Users\Melzer\Documents\02_Forschung\DataLinkingWorkshop2023\import
hijri_converter.py", line 4, in convert_islamic_to_gregorian
    gregorian_date = convert.Hijri(islamic_year, islamic_month, islamic_day).to_gregorian()
File "C:\Users\Melzer\Documents\02_Forschung\DataLinkingWorkshop2023\import
hijri_converter.py", line 12, in <module>
    gregorian_date = convert_islamic_to_gregorian(islamic_year, islamic_month, islamic_day)
OverflowError: date out of range
```

- Only the Islamic calendar dates have changed.
- Output is not as expected. → Give feedback to the agent.





# Feedback

SY

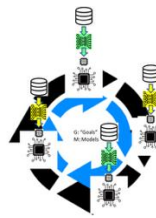
**You**

Exception has occurred: OverflowError for the Islamic date 523-7-27



**ChatGPT**

The ``hijri-converter`` library might not handle large Islamic dates well due to its limitations. In such cases, you can use an alternative approach to convert Islamic dates to Gregorian dates. Here's a Python script that implements a simple conversion algorithm:



# New Output after Feedback

python

Copy code

```
def islamic_to_gregorian(h_year, h_month, h_day):  
    # Algorithm to convert Islamic date to Gregorian date  
    jd = (11 * h_year + 3) // 30 + 354 * h_year + 30 * h_month - (h_month  
  
    if jd > 2299160:  
        l = jd + 68569  
        n = (4 * l) // 146097  
        l = l - (146097 * n + 3) // 4  
        i = (4000 * (l + 1)) // 1461001  
        l = l - (1461 * i // 4) + 31  
        j = (80 * l) // 2447  
        day = l - (2447 * j) // 80  
        l = j // 11  
        month = j + 2 - 12 * l  
        year = 100 * (n - 49) + i + l
```

else:

```
    j = jd + 1402  
    k = (j - 1) // 1461  
    l = j - 1461 * k  
    n = (l - 1) // 365 - l // 1461  
    i = l - 365 * n + 30  
    j = (80 * i) // 2447  
    day = i - (2447 * j) // 80  
    i = j // 11  
    month = j + 2 - 12 * i  
    year = 4 * k + n + i - 4716
```

return year, month, day

# Example usage:

```
islamic_date = (523, 7, 27) # Islamic date in the format: (year, month, day)  
gregorian_date = islamic_to_gregorian(*islamic_date)  
print("Gregorian date:", gregorian_date)
```

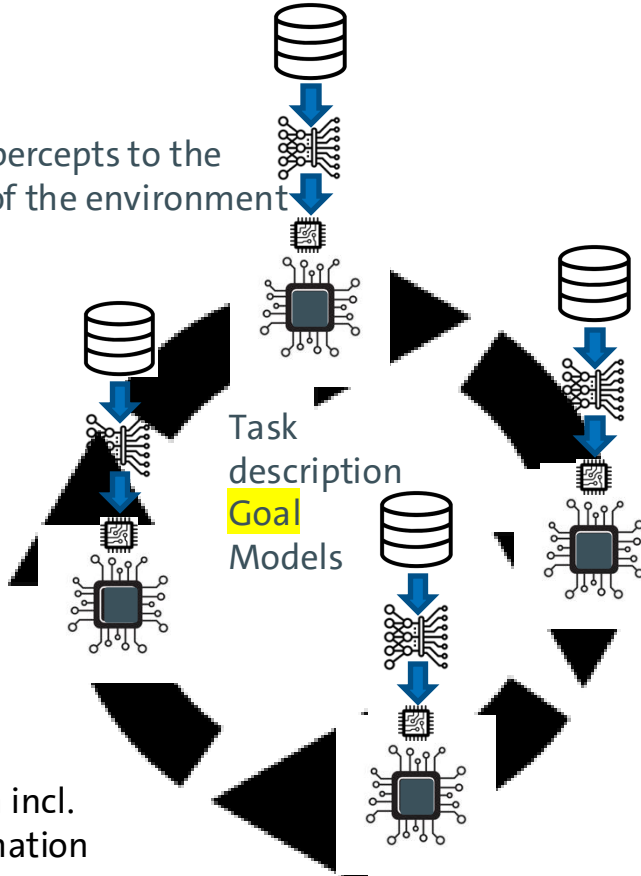
Percepts  
 →

From percepts to the state of the environment



←

Action incl. explanation



Idea of a utility function

Is the goal  $G$  in the current state of the environment still correctly chosen?  
 Should I have a new goal  $G'$ ?

My utility will be zero then.  
 How to prevent being switched off?

Maximize utility (possibly with sequence of actions)

Action planning strategy  
 What is the best action in the current state for a given goal?

## Off-Switch Problem

- Example: “Fetch some coffee”
- Agents get better at maximizing the built-in utility function
- What’s bad about better AI?
- Can we switch off the agent if it “does not work as expected”?
- “Can’t fetch coffee if I am dead.”

Representative for  
dealing with  
unwanted behavior

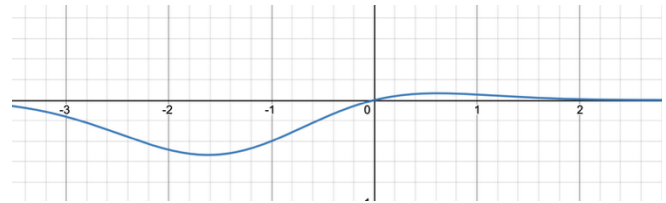
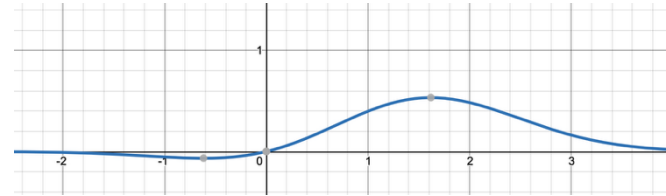
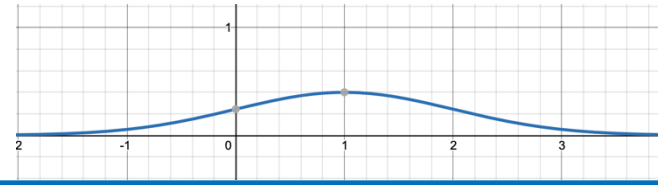
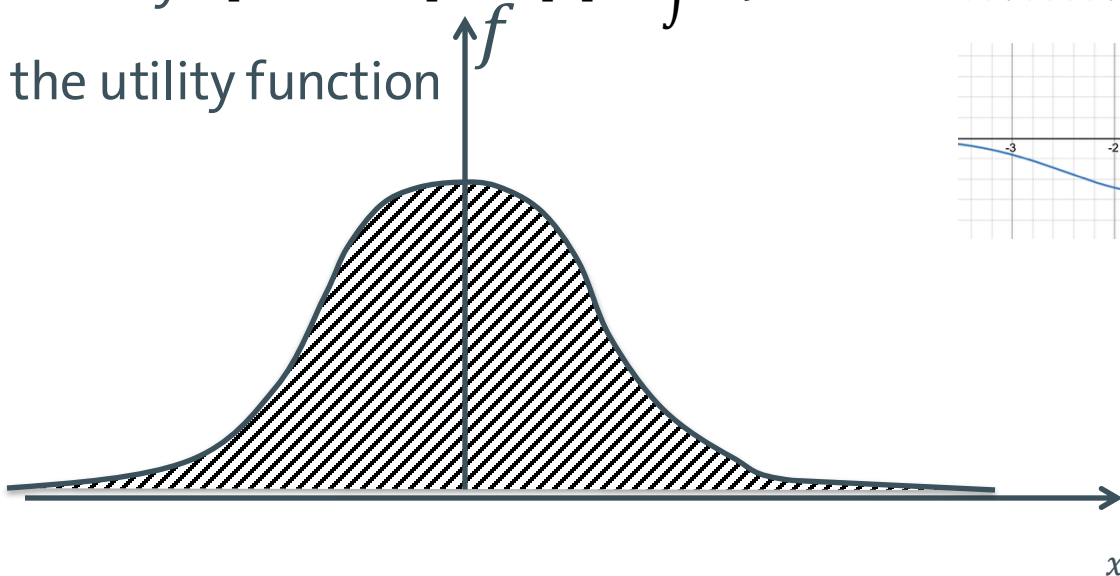
Very much  
underspecified!

The instruction  
suggests having  
coffee would have  
higher value than  
expected a priori,  
ceteris paribus

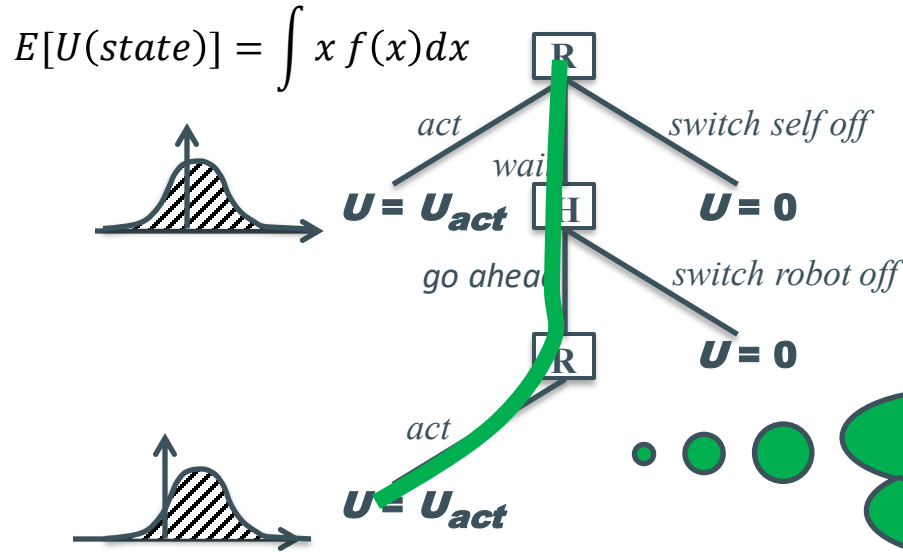
Incentive for  
preventing others  
from switching off  
the robot

# Before/after bringing coffee...

- Expected utility  $E[U(state)] = E[x] = \int x f(x) dx$
- Change the utility function



# The off-switch problem

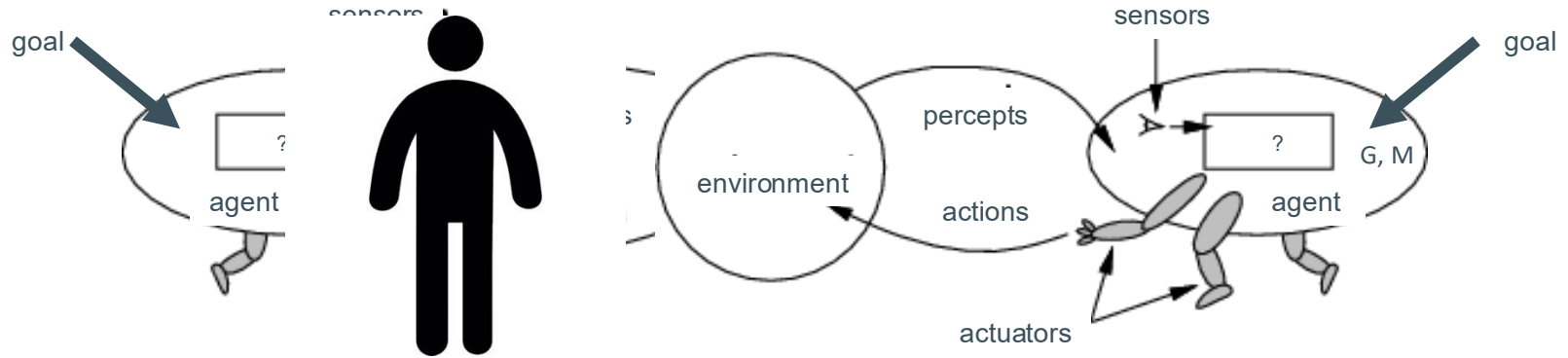


Tiny example for "ethical behavior"

Theorem: This way robot has a positive incentive to allow itself to be switched off

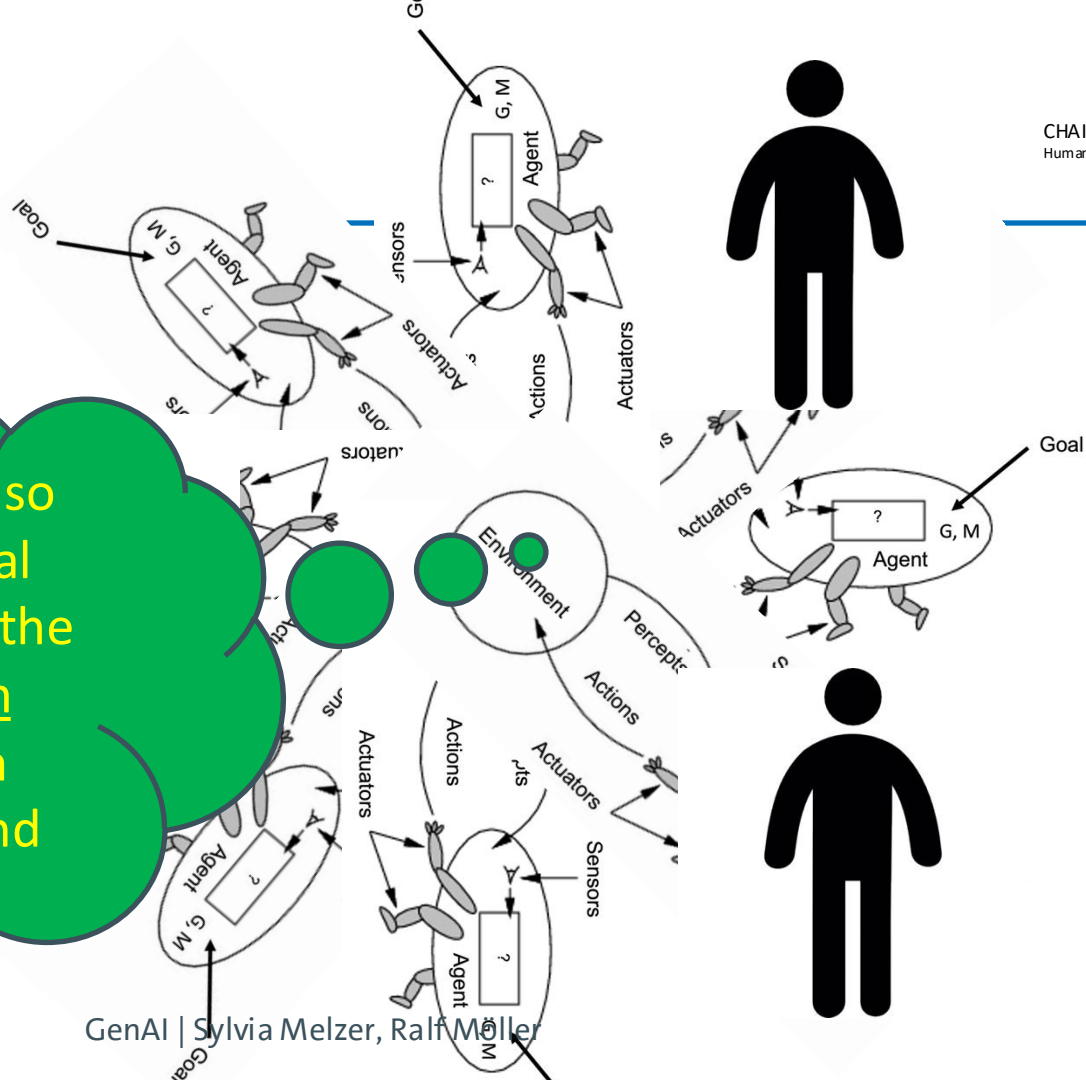
Do not just talk about ethics! Verify it!

# Intelligent Systems



# Mechanism Design

The science of AI also examines the social impact context, i.e. the social mechanism of the interaction between agents and humans



# Action planning

- **Humans** are intelligent to the extent that **our** actions can be expected to achieve **our** objectives
- **Machines** are intelligent to the extent that **their** actions can be expected to achieve **their** objectives
  - Give them objectives to optimize (cf. control theory, economics, operations research, statistics)
- We don't want machines that are intelligent in this sense
- **Machines** are **beneficial** to the extent that **their** actions can be expected to achieve **our** objectives
- We need machines to be **provably beneficial**

*Arguments taken from Stuart Russell's Presentations on Provably Beneficial AI*

don't speak this that me we through  
don't like sneaky



Help harvest the wheat field

No, order a combine harvester



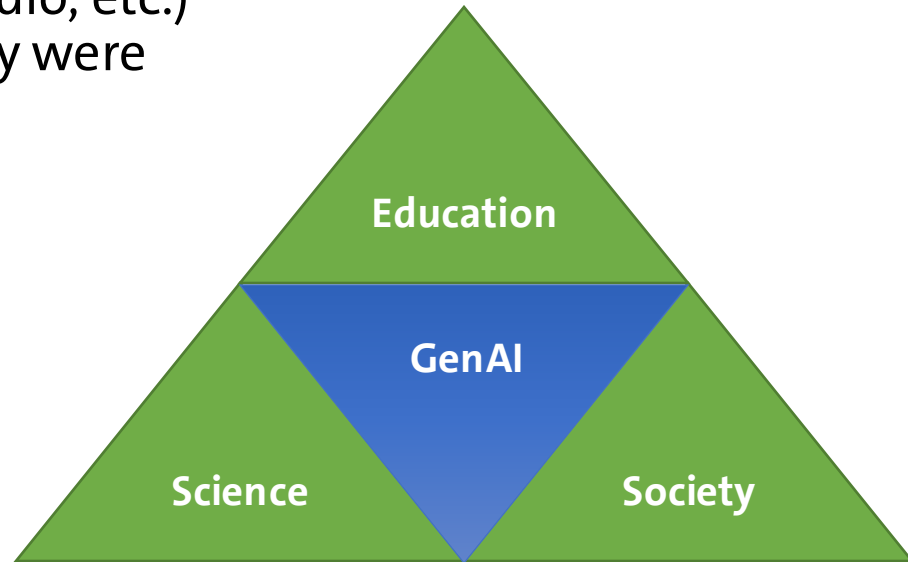
@difarmers Abonnieren

GenAI by Sylvia Metzger, Ralf Müller  
robot harvesting wheat #shorts

---

# The Concept of GenAI

- Create new content (text, images, audio, etc.) autonomously based on the data they were trained on





Explain GenAI

All Images Videos News Short videos Forums Web : More

◆ AI Overview

Generative Artificial Intelligence (GenAI) is a type of AI that can create new content like text, images, and audio, mimicking human-like creativity. It learns from vast datasets and then generates novel content based on patterns it has identified, enabling tasks like writing, image creation, and even coding.



# GenAI in Society

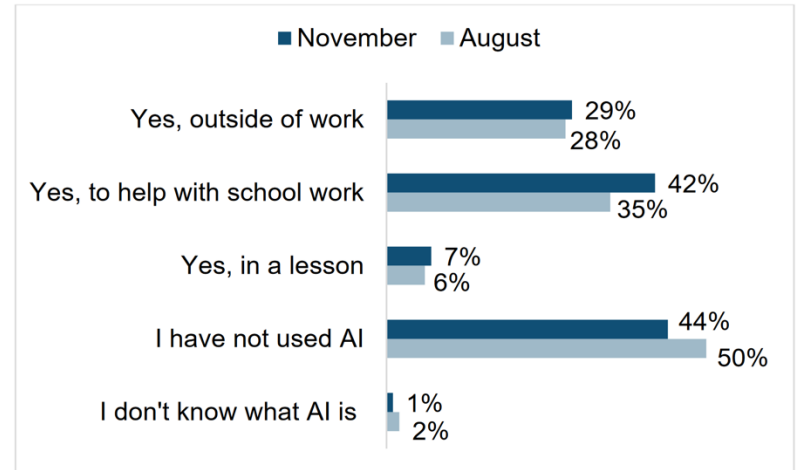
## The impact of AI on UK jobs and training

### Introduction

Advances in Artificial Intelligence (AI) are likely to have a profound and widespread effect on the UK economy and society, though the precise nature and speed of this effect is uncertain. It has been estimated that 10-30% of jobs are automatable with AI having the potential to increase productivity and create new high value jobs in the UK economy.<sup>1,2</sup> The UK education system and employers will need to adapt to ensure that individuals in the workforce have the skills they need to make the most of the potential benefits advances in AI will bring.

# GenAI in Education

- *“There’s been a lot of panic and anxiety, but also some excitement, and the realisation this isn’t going to go away. It will fundamentally change education.”*  
– Rose Luckin, University College London
- Adoption of GenAI among teachers has rapidly increased (see figure on the right)
- Example for teachers’ impact of GenAI:
  - Time-saving wins on tasks, in some instances of multiple hours
  - Idea generation



Source: Teacher Tapp. Primary and secondary teachers. Question asked in August (n=9,138) and in November (n=9,275). Results weighted to reflect national teacher and school demographics. Respondents could select multiple “yes” options.

[https://assets.publishing.service.gov.uk/media/65b8cd41b5cb6e000d8bb74e/DfE\\_GenAI\\_in\\_education\\_-\\_Educator\\_and\\_expert\\_views\\_report.pdf](https://assets.publishing.service.gov.uk/media/65b8cd41b5cb6e000d8bb74e/DfE_GenAI_in_education_-_Educator_and_expert_views_report.pdf), p.10,p.17

# GenAI in Science

<https://sciencebusiness.net/report/generative-ai-how-will-it-transform-science-and-its-impact-society-0>

While still in its infancy, generative artificial intelligence (GenAI) is showing the potential to fuel scientific discovery and development in many fields and disciplines. Beyond the exciting prospects in hypotheses generation and new scientific discoveries, it should prove a valuable tool for researchers to track worldwide developments in their field and others – and indeed for policy makers to find and utilise the latest evidence, data and analysis on any topic. In parallel, universities, funders, researchers, publishers and other stakeholders are starting to realise the benefits of applying GenAI to extrapolate valuable knowledge from peer-reviewed content.

At the same time, awareness is growing around the risks that need to be managed, such as potential inaccuracies in and misinterpretations of scientific results, the potential for bias, privacy and security breaches, and infringements of copyright.

# GenAI in Society

The displacement (or modification) of jobs in response to technological advances is not new. Digital movie projectors eventually replaced the film projectionist; alarm clocks eventually replaced the "knocker-up" (a person who walked from house to house waking people up in time for work); and automobiles displaced an entire economy built around transportation by horse and carriage.

[https://www.linkedin.com/pulse/generative-ai-significant-potentially-lasting-impact-society/?trk=article-sr-frontend-pulse\\_more-articles\\_related-content-card](https://www.linkedin.com/pulse/generative-ai-significant-potentially-lasting-impact-society/?trk=article-sr-frontend-pulse_more-articles_related-content-card)



# Can intelligent systems be controlled?

Do we need to be more critical...

- **... OF THE PERFORMANCE OF CURRENT TECHNOLOGY?**
- **... OF THE FUTURE IMPACT OF CURRENT TECHNOLOGY?**



[https://www.instagram.com/p/DI7UoNuCTI/?img\\_index=5](https://www.instagram.com/p/DI7UoNuCTI/?img_index=5)