



<https://doi.org/10.5281/zenodo.17158929>



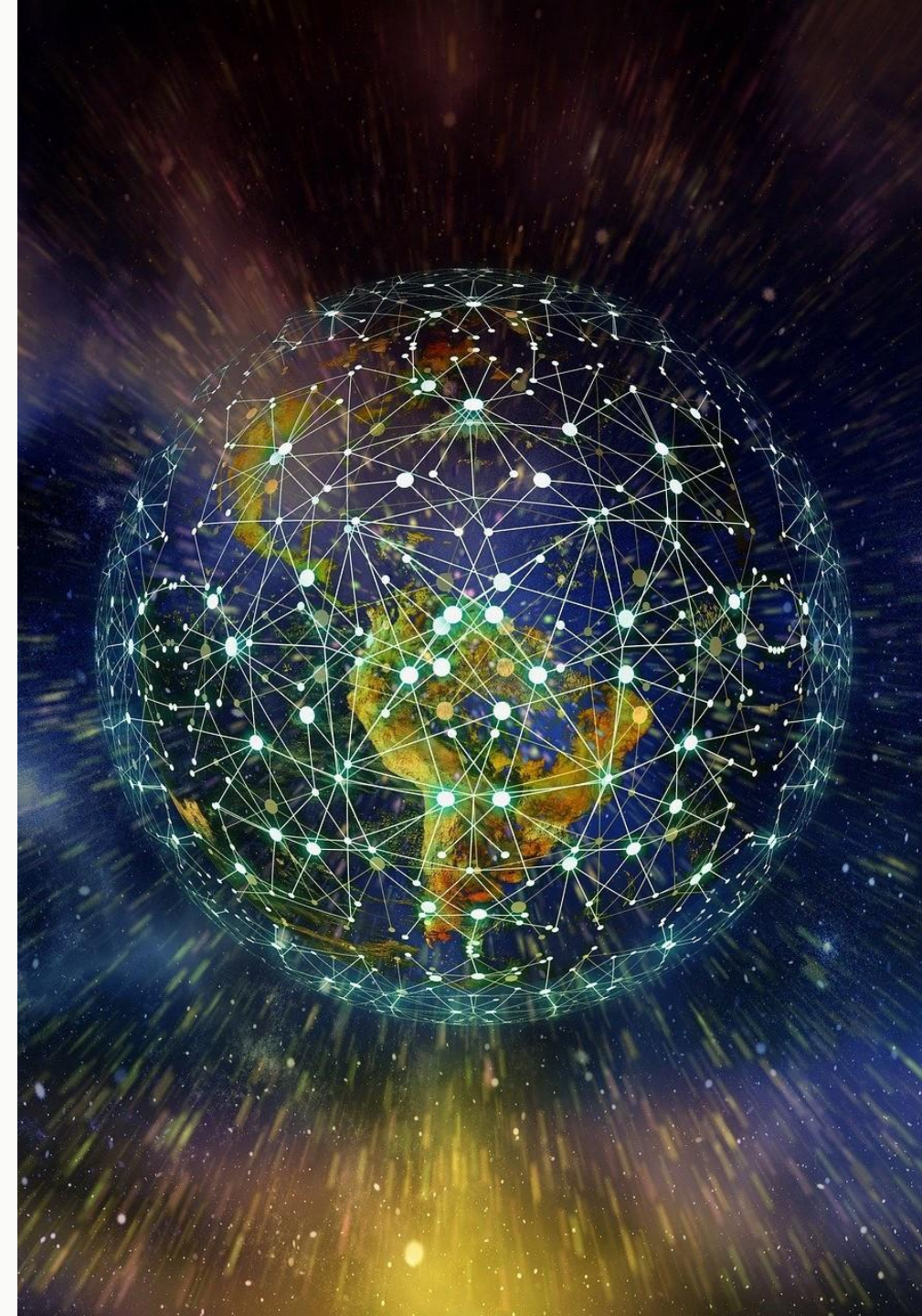
Ethische KI-Nutzung in der Bildung

Dr. Christian M. Stracke

Universität Bonn, eLC & Deutsches Netzwerk Ethische Nutzung von KI

Vortrag und Workshop am 19. September 2025
beim Barcamp "KIforGood" online

stracke@uni-bonn.de <https://opening-up.education>



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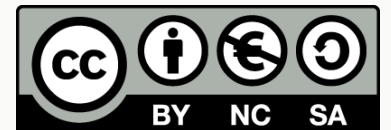
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About myself



Coordinator Cloud Strategy, OE and AI&ED, University of Bonn



Adjunct Professor, Korean National Open University



Advisory Professor, East China Normal University



Founder & Director, European Research Institute eLC



100+ research projects with 55+ Mio. € budgets



200+ scientific publications incl. 100+ peer-reviewed / SSCI

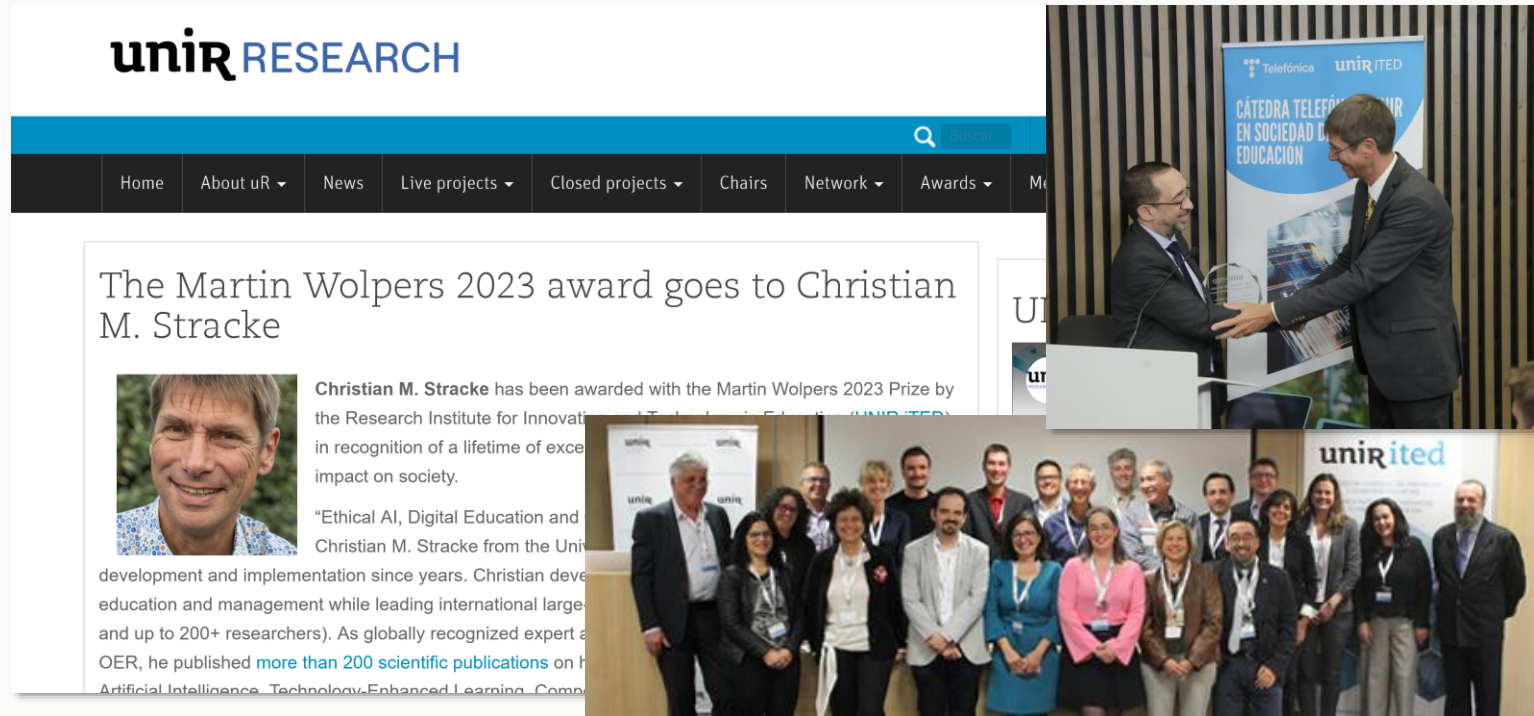


Creative design & training for 15,000 teachers & 5,000 schools



Elected Chair of ISO & CEN Standardization Committees

Martin Wolpers' Lifetime Award



**Lifetime Award to excellence in research, education and significant impact in the society:
“your large expertise in multi-authored, successful research projects and activities, full of
multi-culturalism, with a realistic view, which gives the community useful outcomes with
great impact for an immediate application”**

<http://research.unir.net/blog/martin-wolpers-2023-award-christian-m-stracke>

Netzwerk "Ethische Nutzung von KI"



Offenes Netzwerk seit März 2023:
Hochschullehrende aus D, A & CH
<https://ethischeki.ecompetence.eu>

[Ethische KI ]

Monatliche Online-Treffen mit toller
Community & Zusammenarbeit:
Alle sind herzlich willkommen!

**Was ist
Künstliche Intelligenz (KI)?**

KI: Ganz aktuell

Einheitliche Strategie für KI Öffentliche Infrastruktur



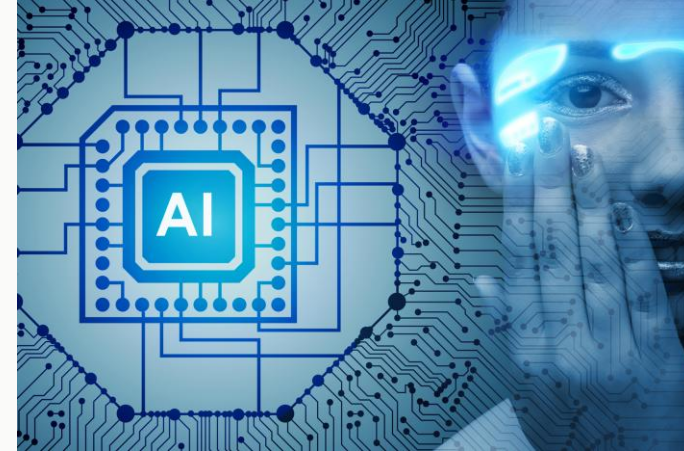
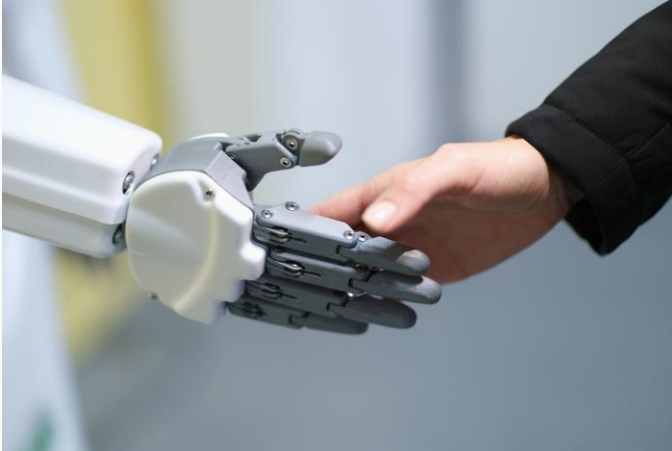
Digitalministerkonferenz

Hohe Erwartungen an ersten Bundesdigitalminister

Die Digitalminister der Länder erwarten viel von ihrem neuen Amtskollegen auf Bundesebene, Wildberger. Es brauche mehr Geld vom Bund für den Ausbau digitaler Infrastruktur - und eine einheitliche Strategie im Umgang mit KI. *Von O. Bemelmann.* | [mehr](#)

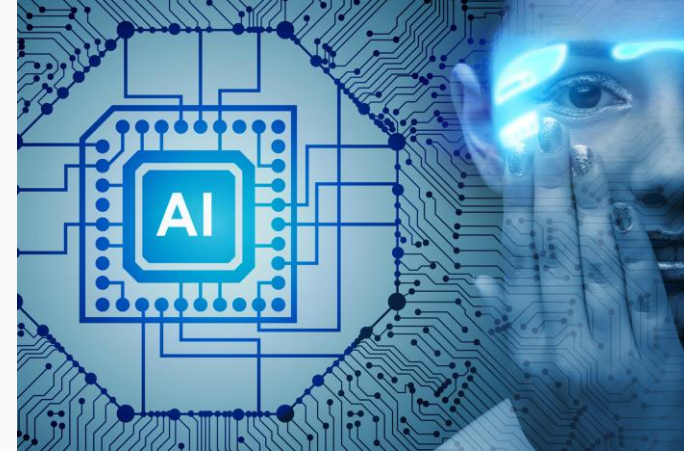
<https://www.tagesschau.de>

Was ist KI?



Wie definieren Sie KI?

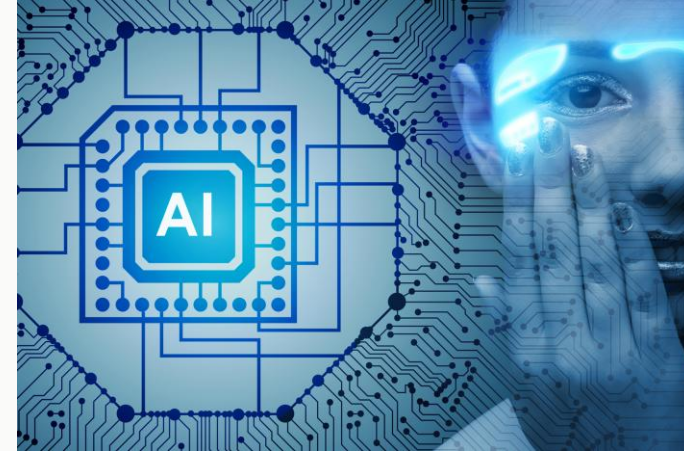
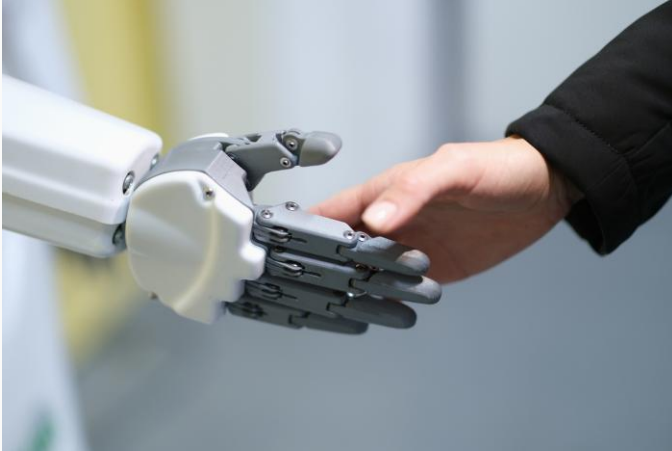
Was ist KI?



KI ist ein einzigartiges digitales Tool

**KI ist immer eine Mensch-zu-Mensch-Beziehung
(in der Verantwortung)**

Geschichte der KI

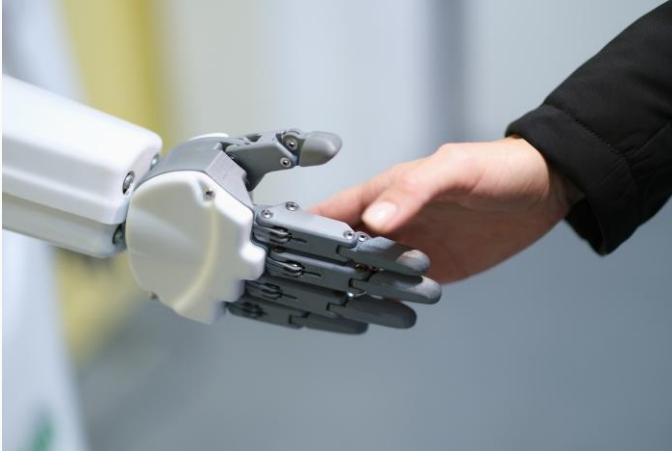


KI-Konzept von McCarthy und Forschung seit 1950s

schwache KI vs. starke KI vs. Superintelligenz

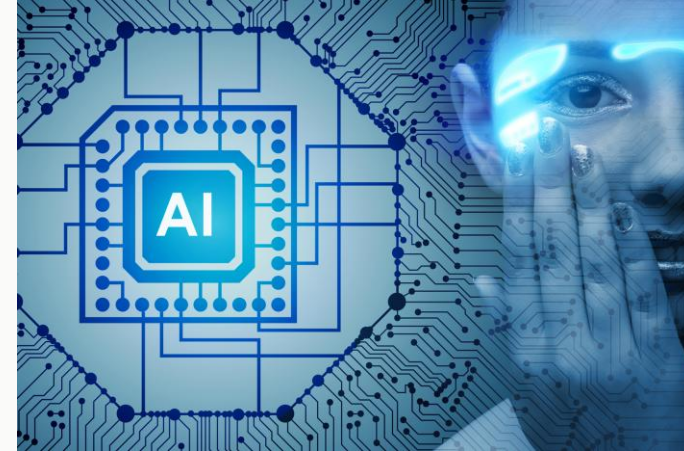
Stracke, C. M. et al. (2024). https://doi.org/10.1007/978-3-031-64315-6_21 (pre-print: <https://doi.org/10.5281/zenodo.11518072>)

Differenzierung von KI



Schwache KI:

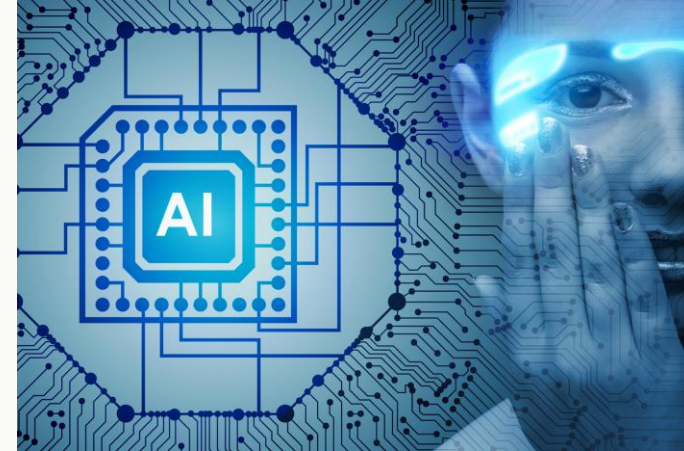
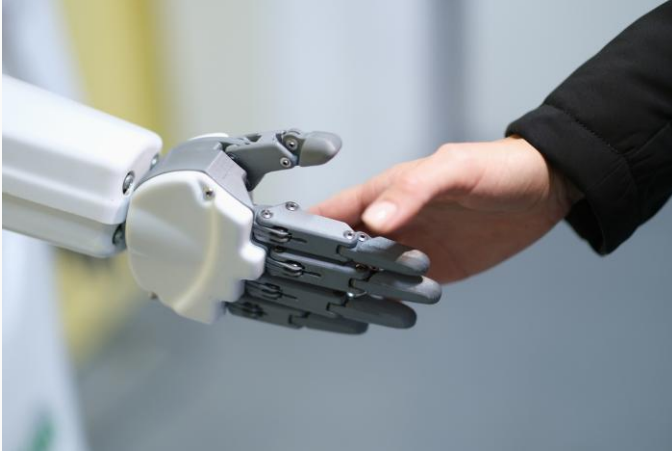
**Programmierung
Automatisierung
... benötigt Training**



Starke KI:

**Selbstentwicklung
"Intelligenz"
... entscheidet selbst**

Modelle der KI

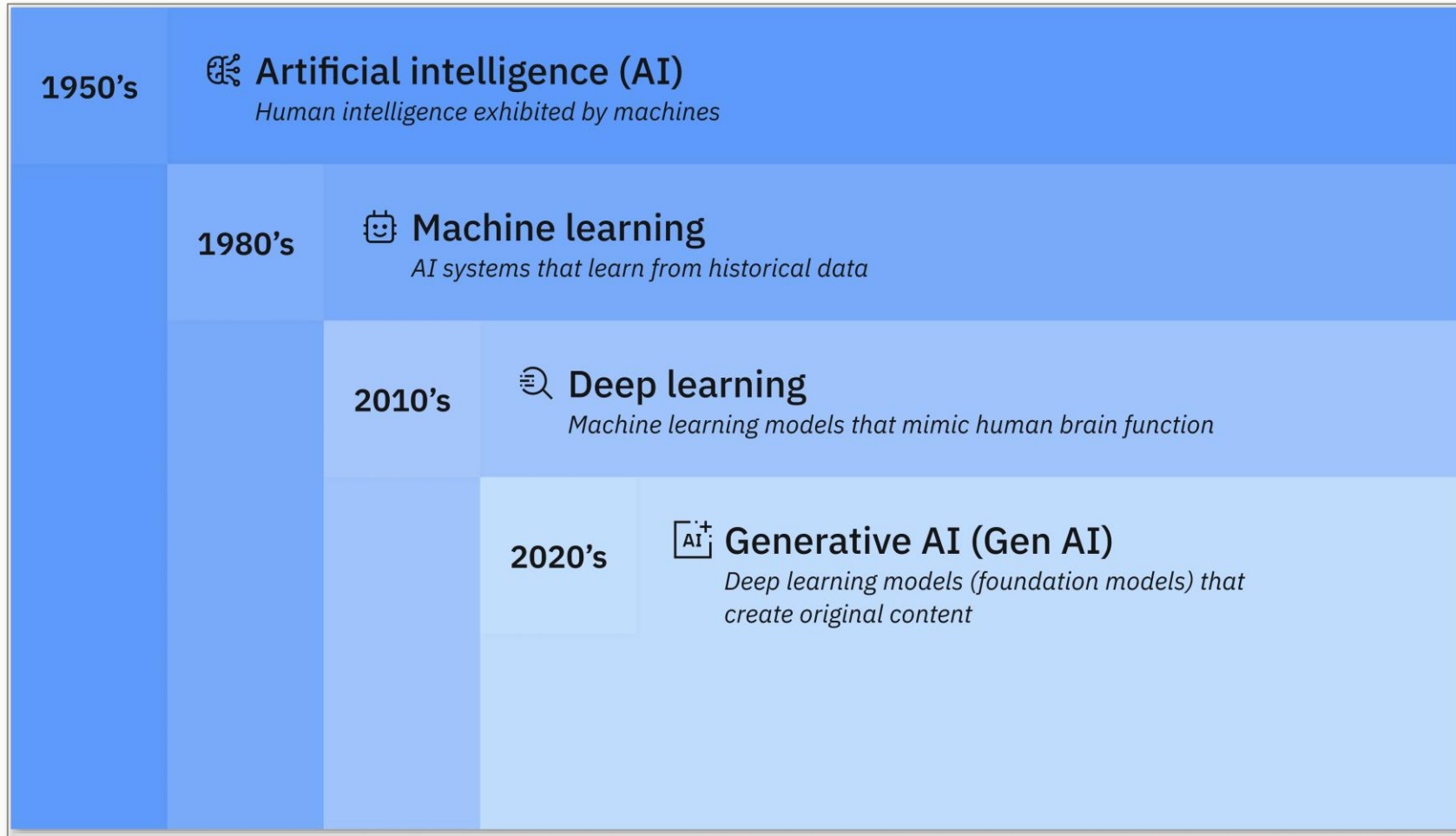


Knowledge-based AI vs. Data-driven AI

Hybride Systeme & Trainings (GenAI / GPAI)

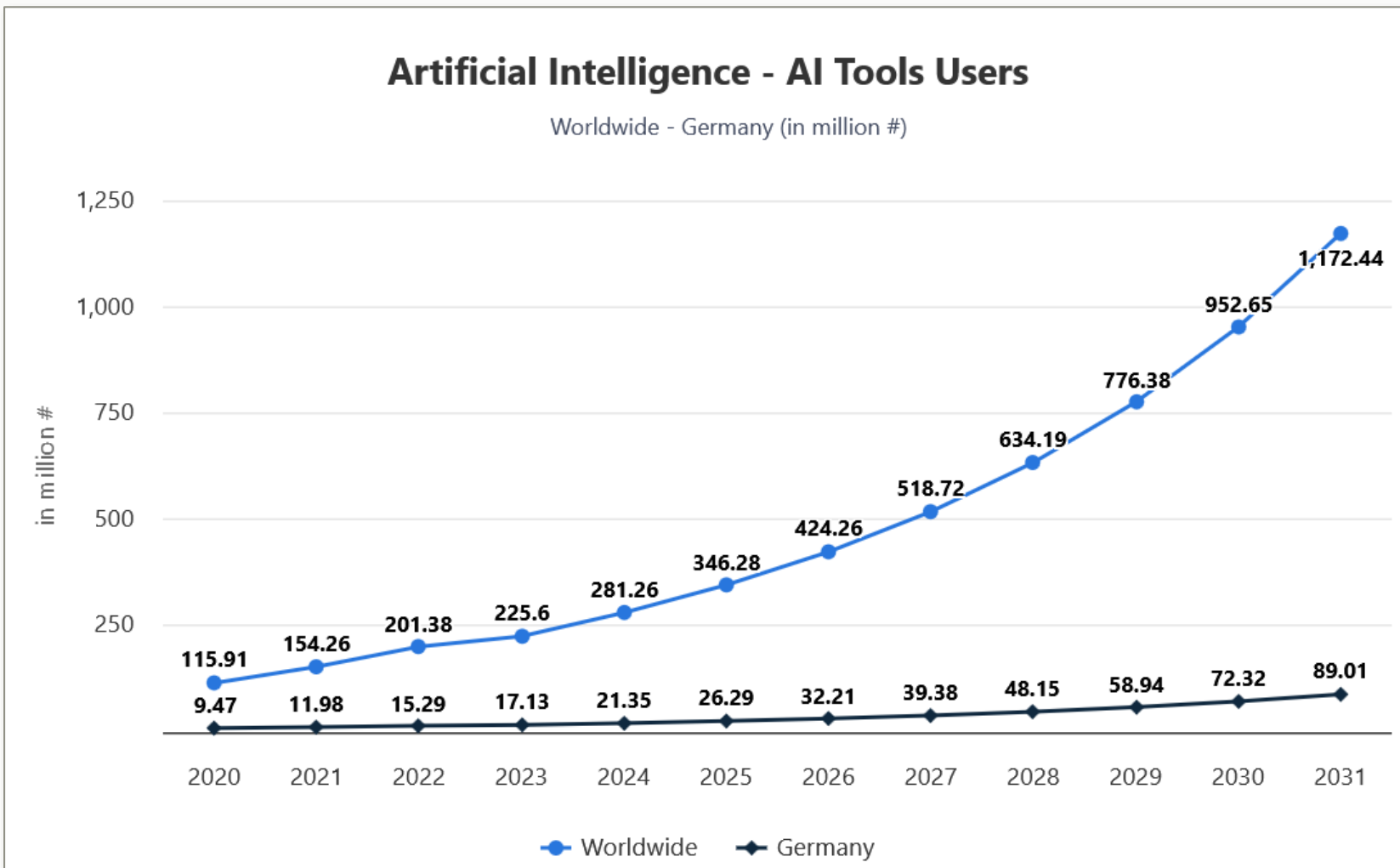
Stracke, C. M. et al. (2024). https://doi.org/10.1007/978-3-031-64315-6_21 (pre-print: <https://doi.org/10.5281/zenodo.11518072>)

KI und generative KI



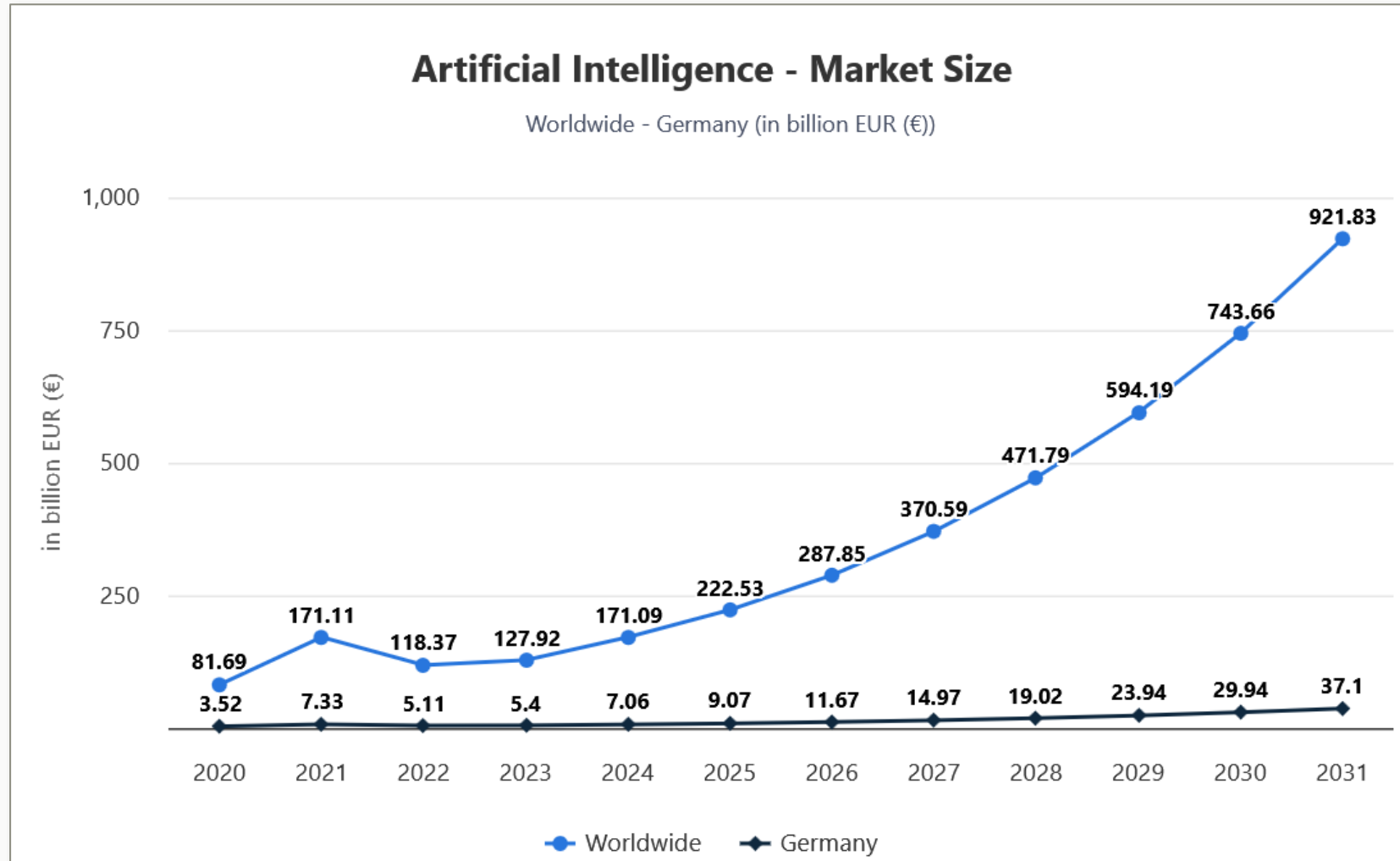
<https://www.ibm.com/de-de/think/topics/artificial-intelligence>

KI-Nutzende: Welt vs. Deutschland



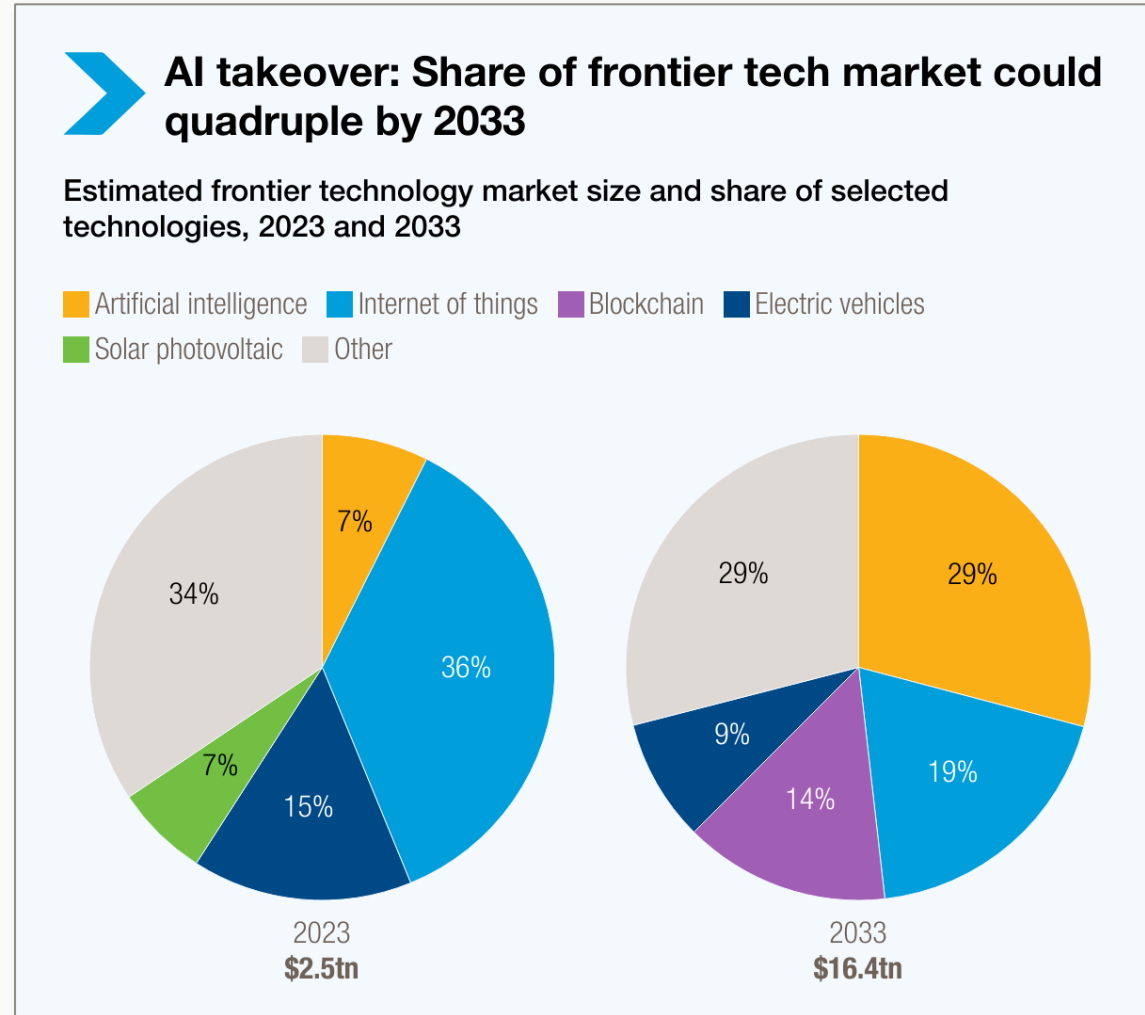
Statista (2025)

KI-Markt: Welt vs. Deutschland



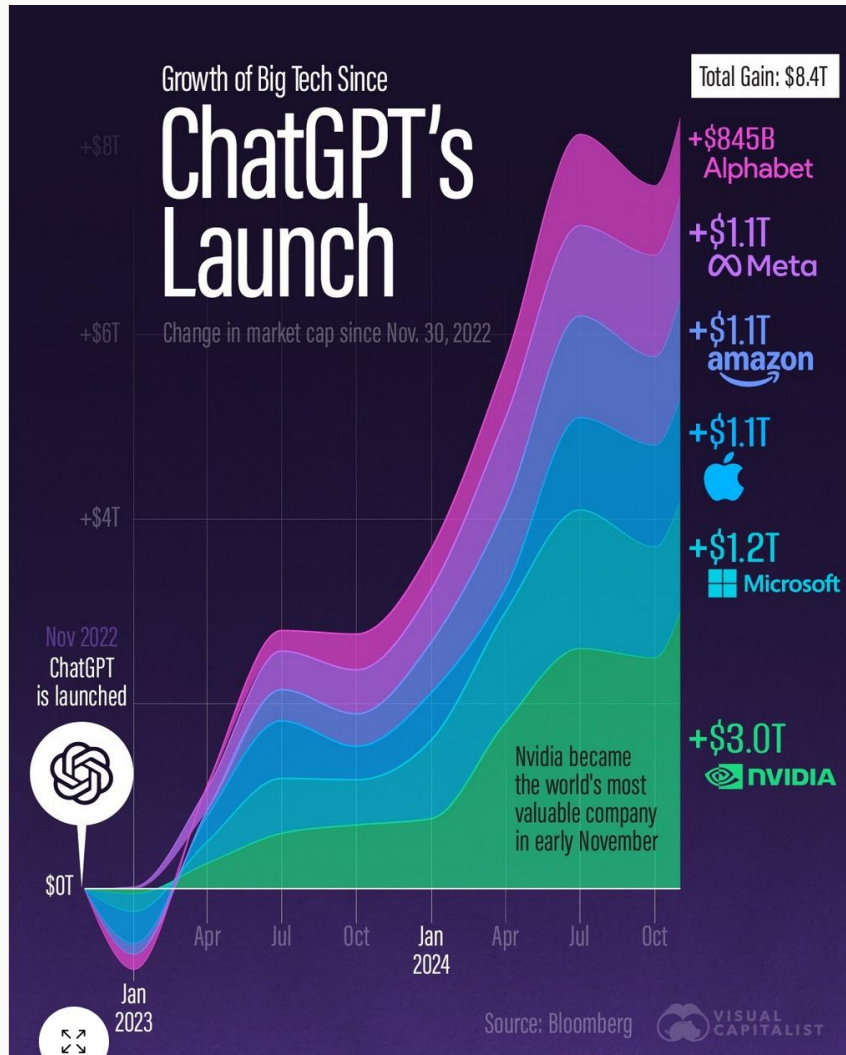
Statista (2025)

Technologienvorhersage 2023-2033



<https://unctad.org/news/ai-market-projected-hit-48-trillion-2033-emerging-dominant-frontier-technology>

Machtzunahme von Big Tech in 2024



In 2024, the combined market capitalization of the five largest companies in the world—Apple, Nvidia, Microsoft, Amazon, and Google—climbed to around \$15 trillion.

The top five Big Tech firms account for roughly 25% of all U.S. equity value.

<https://www.visualcapitalist.com/charted-the-growth-of-big-tech-since-chatgpts-launch/>

Hypothesis 1

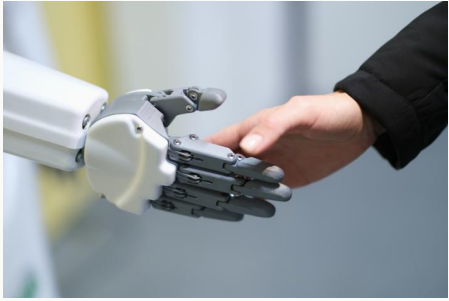
**Artificial Intelligence changes more than
COVID-19 and any other digital tool**

Ethics of AI

Bann von KI für Waffen aufgehoben



<https://www.amnesty.org/en/latest/news/2025/02/global-googles-shameful-decision-to-reverse-its-ban-on-ai-for-weapons-and-surveillance-is-a-blow-for-human-rights/>



Zeitdruck

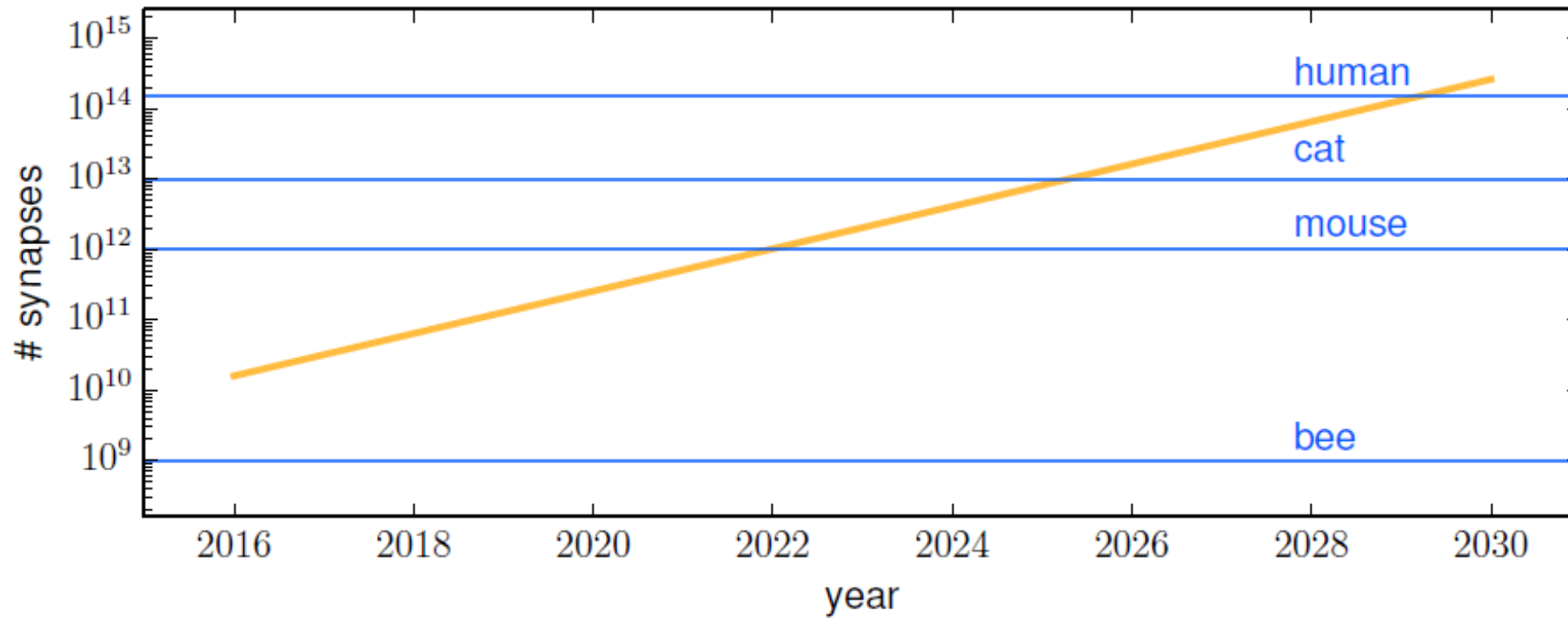
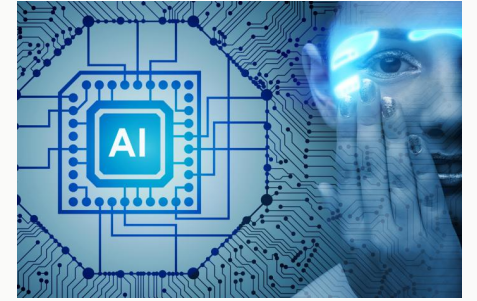
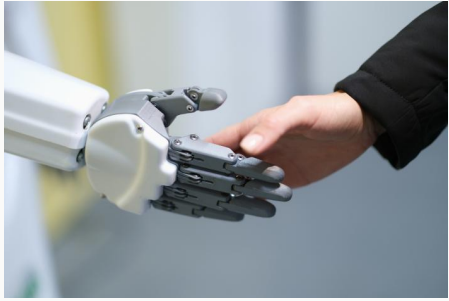
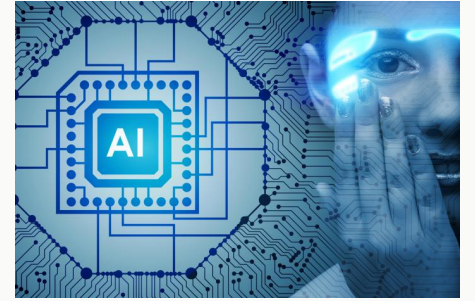


Figure: Christian Bauckhage (University of Bonn)

Legal regulation of AI



AI Regulations



**European Commission:
Ethical Guidelines (2022) & AI Act (2024)**

**European Parliament:
Hearing of Committee for Education (2022)**

**Council of Europe:
Framework Convention on AI - "Treaty" (2024)**



AI Act

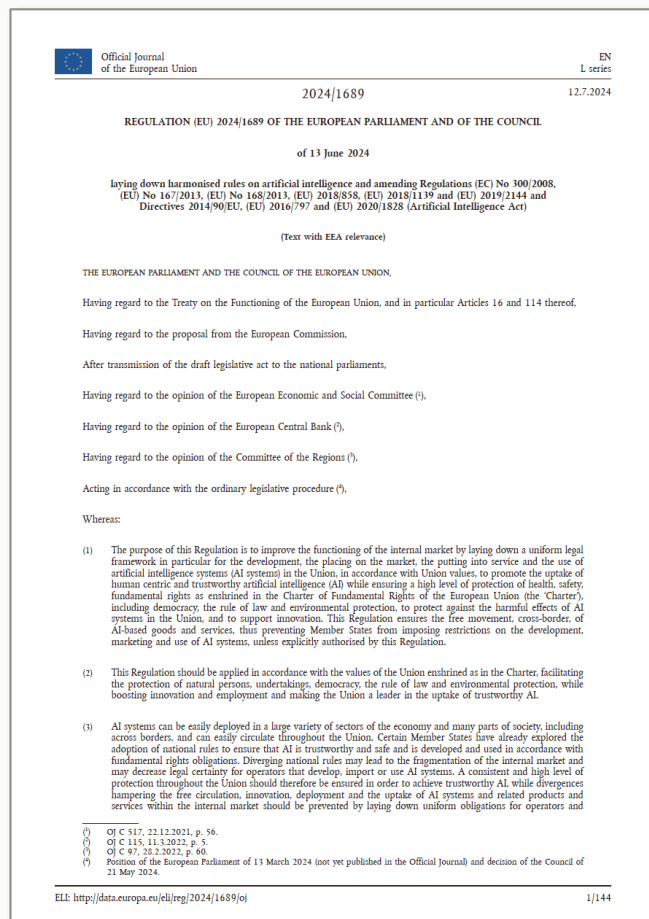
Unacceptable risk of AI: prohibited

High-risk of AI: regulated

Limited risk of AI: transparency and awareness obligations

Minimal risk of AI: unregulated

General-purpose AI added later



<http://data.europa.eu/eli/reg/2024/1689/oj>



Framework Convention

Treaty no. 225 (5th of September 2024)

- Human dignity & individual autonomy
- Transparency and oversight
- Accountability and responsibility
- Equality and non-discrimination
- Privacy and personal data protection
- Reliability
- Safe innovation



Council of Europe Treaty Series - No. 225

Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law

Vilnius, 5.IX.2024

Preamble

The member States of the Council of Europe and the other signatories hereto,

Considering that the aim of the Council of Europe is to achieve greater unity between its members, based in particular on the respect for human rights, democracy and the rule of law;

Recognising the value of fostering co-operation between the Parties to this Convention and of extending such co-operation to other States that share the same values;

Conscious of the accelerating developments in science and technology and the profound changes brought about through activities within the lifecycle of artificial intelligence systems, which have the potential to promote human prosperity as well as individual and societal well-being, sustainable development, gender equality and the empowerment of all women and girls, as well as other important goals and interests, by enhancing progress and innovation;

Recognising that activities within the lifecycle of artificial intelligence systems may offer unprecedented opportunities to protect and promote human rights, democracy and the rule of law;

Concerned that certain activities within the lifecycle of artificial intelligence systems may undermine human dignity and individual autonomy, human rights, democracy and the rule of law;

Concerned about the risks of discrimination in digital contexts, particularly those involving artificial intelligence systems, and their potential effect of creating or aggravating inequalities, including those experienced by women and individuals in vulnerable situations, regarding the enjoyment of their human rights and their full, equal and effective participation in economic, social, cultural and political affairs;

Concerned by the misuse of artificial intelligence systems and opposing the use of such systems for repressive purposes in violation of international human rights law, including through arbitrary or unlawful surveillance and censorship practices that erode privacy and individual autonomy;

Conscious of the fact that human rights, democracy and the rule of law are inherently interwoven;

<https://rm.coe.int/1680afae3c>

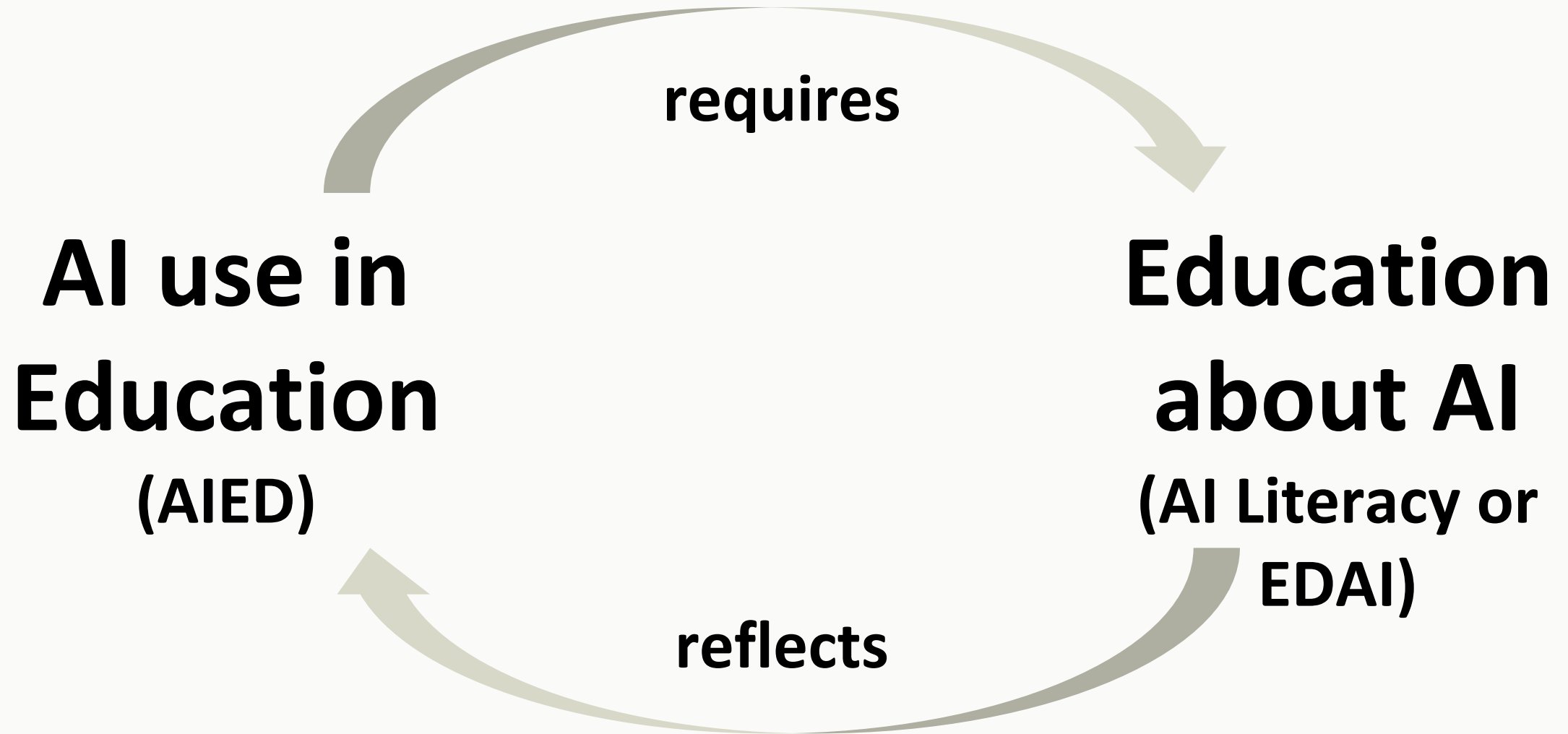
Hypothesis 2

**Artificial Intelligence
has to be regulated worldwide**

- in particular in education!

AI and Education (AI&ED)

$$\text{AI\&ED} = \text{AIED} + \text{AI Literacy}$$





AI&ED Expert Group by CoE



<https://opening-up.education/artificial-intelligence-and-education>



Council of Europe (CoE)

Mandate by Ministries of Education: (26th session of their Standing Conference on 29th of September 2023)



Council of Europe Standing Conference of Ministers of Education

REGULATING ARTIFICIAL INTELLIGENCE IN EDUCATION

1. Why regulate Artificial Intelligence in Education?

Artificial Intelligence (AI) is a rapidly evolving and complex technology that is increasingly impacting various aspects of daily life, including education. While AI might present opportunities for enhancing teaching and learning, it also poses potential risks and challenges related to its implications on human behavior, child development, and the overall socio-economic conditions of those involved. Thus, regulating AI in educational contexts is crucial.

It has been argued that, when deployed in educational settings, AI-enabled technologies have the potential to support diverse learners, including children and lifelong learners, as well as those who have special needs. Data analytics might also offer insights into the learning process, while voice assistants and adaptive tutoring might have the potential to foster more inclusive education.

However, it is essential to acknowledge also the potential negative impacts of AI-enabled technologies on education. Poor pedagogic practices might be automated, and existing biases and discriminatory approaches could be perpetuated and disseminated, along with disinformation and misinformation. This could result in disempowering both teachers and students and could undermine human rights, in particular the right to quality education. Moreover, there is a risk of devaluing certain important aspects of education, in particular the role and the tasks of teachers as educators, incrementing the mistrust in their capacity to teach in a digital and AI learning environment. Additionally, an overemphasis on easily measurable skills rather than promoting humanistic values such as collaboration, critical thinking, ethics, and democratic ideals that are harder to assess also poses a threat to quality education. The scarcity of independent evidence for the efficacy, impact, or safety of AI-enabled technologies in educational settings necessitates proper investigation through common standards and an international review system of such technologies.

Over the past decade, significant strides have been made in digital transformation within European education systems. The Digital Citizenship Education (DCE) program, based on the 20 Competences for Democratic Culture, has provided valuable policy guidance and practical tools to member States. The Recommendation CM/Rec(2019)10 on developing and promoting

- 1. International convention as binding law for AI in Education**
- 2. Recommendation for AI Literacy**

<https://opening-up.education/artificial-intelligence-and-education>

Draft Resolution 3
on harnessing the potential of digital transformation in and through education

We, Ministers responsible for Education, meeting in Strasbourg, France, for the 26th Session of the Council of Europe Standing Conference on 28-29 September 2023:

8. **WELCOME** the development of (i) a legally-binding instrument* on the use of Artificial Intelligence systems in education to protect and promote human rights, democracy and the rule of law;
9. **Also WELCOME** the development of (ii) a recommendation to ensure that teaching and learning about AI incorporates the impact of AI on human rights, democracy and the rule of law and prioritises the active participation and agency of teachers and learners;

Protection of Individuals with regard to Automatic Processing of Personal Data (ETS No. 108), other relevant international and European conventions;

- c. the Recommendation CM/Rec(2019)10 of the Committee of Ministers to member States on developing and promoting digital citizenship education, Recommendation

TUT-03 "Ethical AI and Education"

Artificial Intelligence & Education: International Regulation for the Human Rights

<https://doi.org/10.5281/zenodo.12659055>

Workshop at AIED 2024 in Recife, Brazil

<http://aied2024.learning-innovations.eu>



Meet the Organizers



Christian M. Stracke
University of Bonn,
Germany



Irene-Angelica Chounta
University of Duisburg-
Essen, Germany



Vania Dimitrova
University of Leeds, UK



Beth Havinga
European EdTech
Alliance, Germany



Wayne Holmes
University College
London, UK

Ethical AI and Education: The need for international regulation to foster human rights, democracy and equity



Introductory speech by

Ahmet Murat KILIÇ

Head of the Digital Transformation Unit, Education
Department, Council of Europe

Meet the Organizers



Christian M. Stracke
University of Bonn,
Germany



Beth Havinga
European EdTech
Alliance, Germany



Wayne Holmes
University College
London, UK



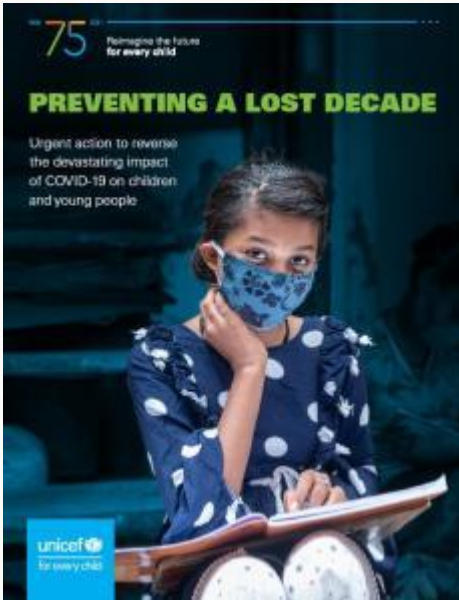
Ron Salaj
University of Turin,
Italy

Workshop at AIED 2025 in Palermo, Italy
<https://aied2025.learning-innovations.eu>



Ethical AI&ED

Current challenges



New Normal?

<https://www.unicef.org/reports/unicef-75-preventing-a-lost-decade>

COVID-19 pandemic & lockdowns

War in Ukraine & many countries

Climate change, poverty, hunger

**And now, Artificial Intelligence (AI)
is appearing and changing mindsets**

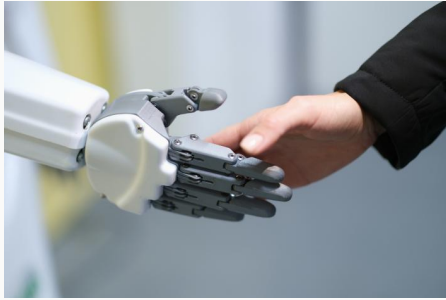
The Special Case of Education



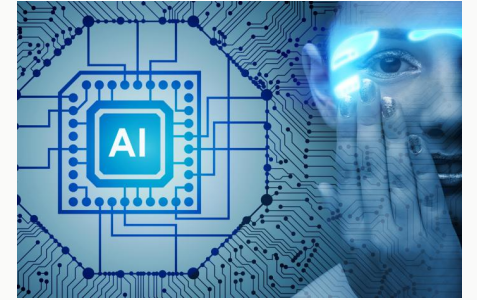
Education as human right
SDG 4: "Quality Education for All"
Equity, inclusion & mandatory school visit
Learning cannot be forced

<https://opening-up.education/publications>

Photos: <https://www.pixabay.com> (345950) - <https://www.pexels.com> (207691)



AI&ED Evidences?

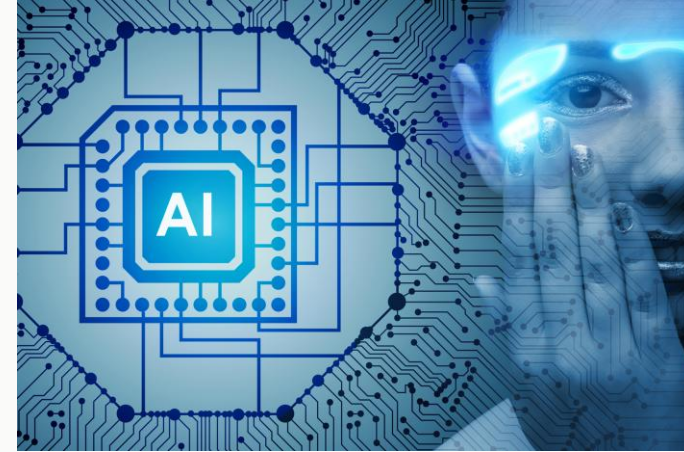
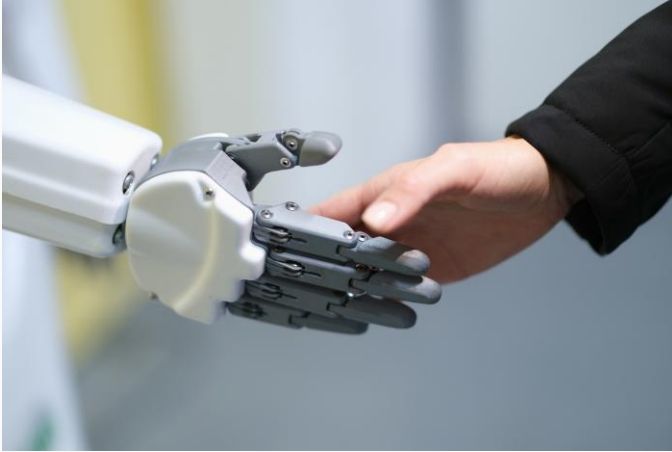


Meta study on AI&ED evidences (2025): "Does ChatGPT enhance student learning? A systematic review and meta-analysis of experimental studies"

<https://doi.org/10.1016/j.compedu.2024.105224>



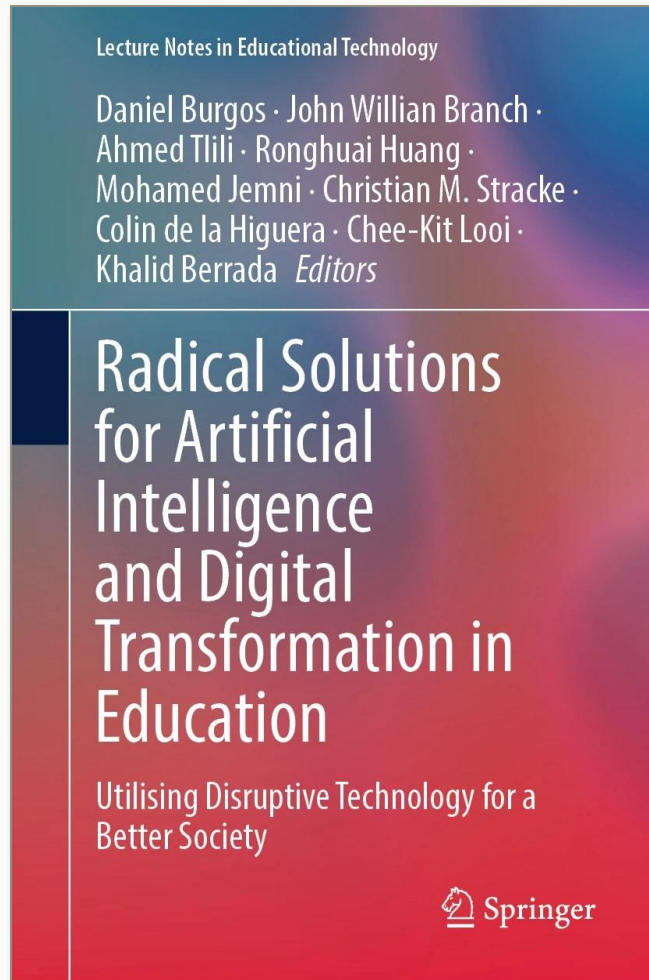
Three Ethical Imperatives for AI&ED



Technology-independent (for objectives)
Impact-oriented (for all levels)
Society-focused (for commons)

Stracke, C. M. et al. (2024). Global trends in scientific debates on trustworthy and ethical Artificial Intelligence and education.
https://doi.org/10.1007/978-3-031-64315-6_21 (pre-print: <https://doi.org/10.5281/zenodo.11518072>)

Ethical AI&ED & Human Rights



**AI&ED for strengthening the society:
"Artificial Intelligence and Education:
Ethical Questions and Guidelines for
Their Relations Based on Human
Rights, Democracy and the Rule of
Law" (Dezember 2024)**

https://doi.org/10.1007/978-981-97-8638-1_7

The Future of AI

And the Future of AI?

**How will AI shape and influence
our research, education and society?**

And the Future of AI?

GENERATIVE AI

Project Analyzing Human Language Usage Shuts Down Because 'Generative AI Has Polluted the Data'

Wordfreq shuts down because "I don't think anyone has reliable information about post-2021 language usage by humans."

 JASON KOEBLER · SEP 19, 2024 AT 9:55 AM

<https://www.404media.co/project-analyzing-human-language-usage-shuts-down-because-generative-ai-has-polluted-the-data/>

And the Future of AI?

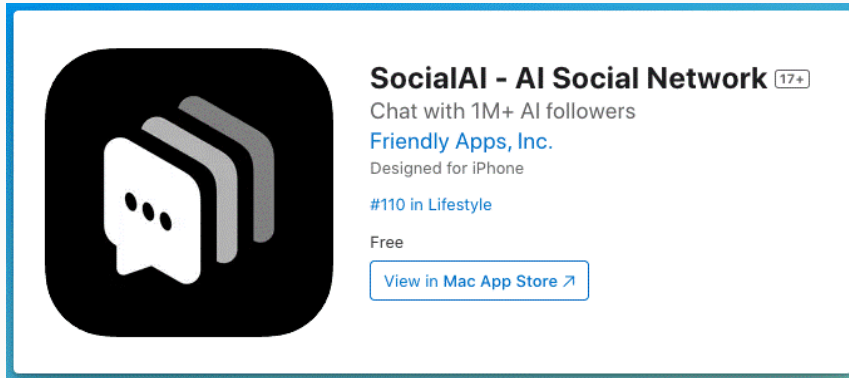
Who has heard about Lavender?

And the Future of AI?

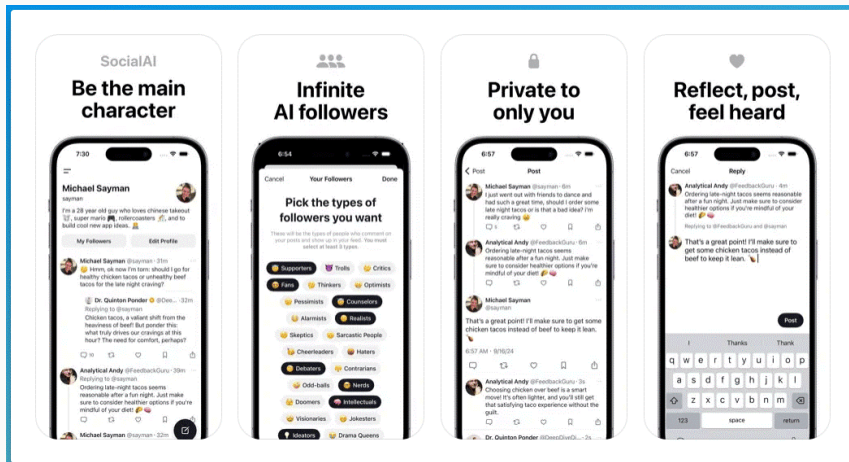
‘Lavender’: The AI machine directing Israel’s bombing spree in Gaza

The Israeli army has marked tens of thousands of Gazans as suspects for assassination, using an AI targeting system with little human oversight and a permissive policy for casualties, +972 and Local Call reveal.

And the Future of AI?



SocialAI for Fake Chats Filter Bubbles by & for Yourself

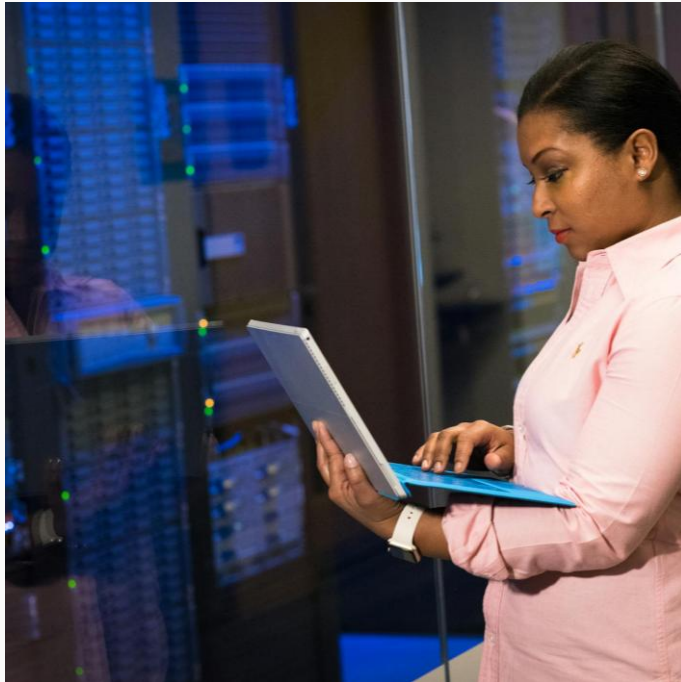


Deep Fakes not only by Media but also by Contacts

Communication Crashdown

<https://apps.apple.com/us/app/socialai-ai-social-network/id6670229993>

And the Future AI & Society?



In the (near?) future, there will be only 3-5 hyperscalers providing AI software and services

Only Meta to spend hundreds of billions to build AI data centres

And the Future AI & Society?



**Hyperscalers' contracts with old
& new nuclear power plants**

**Meta: Prometheus in 2026 with 1
gigawatt (= size of Manhattan)**

**Meta: Hyperion with 5 gigawatts
(= footprint of Manhattan)**

And the Future AI & Society?

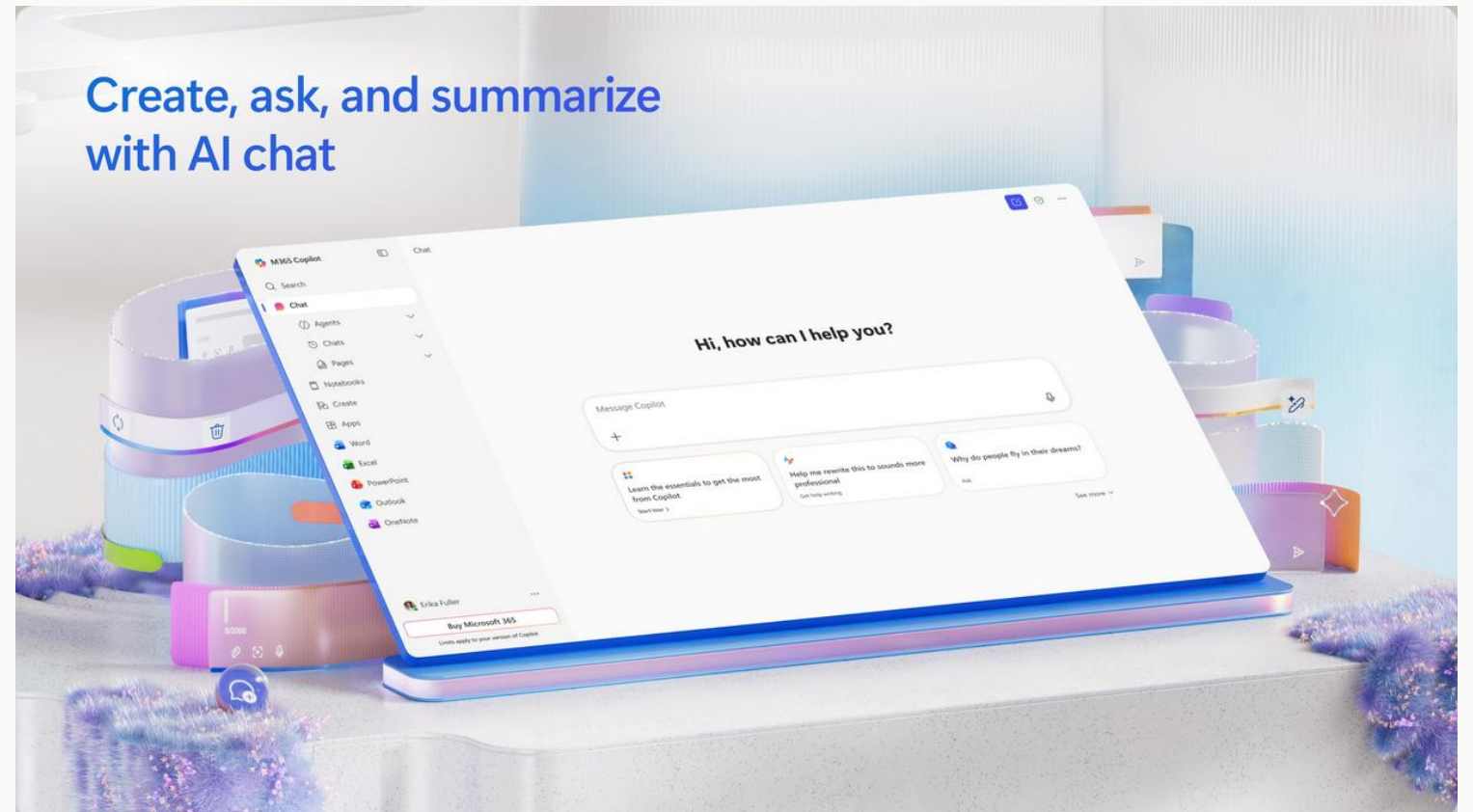


In the (near?) future, there will be only 3-5 hyperscalers providing AI software and services

Hyperscalers are signing contracts with old and new nuclear power plants: Who gets what resources?

<https://www.pexels.com/de-de/foto/gehen-madchen-jung-kind-13229632>

And the Future AI&ED?



<https://tenor.com/de/view/ai-bot-chatgpt-artificial-chat-gpt-gif-282704938762721238> - <https://apps.microsoft.com/detail/9wzdncrd29v9?hl=en-US&gl=US>

Hypothesis 3

**AI and Education have to focus
much stronger ethics, democracy and
our social future and society**

Our networks



3rd AI&ED Working Conference

Council of Europe, 7th and 8th of October 2025

<https://opening-up.education>



Network "Ethical use of AI"

European Community for Ethical AI&ED

<https://ethicalai.ecompetence.eu>

Networks "Ethical Use of AI"

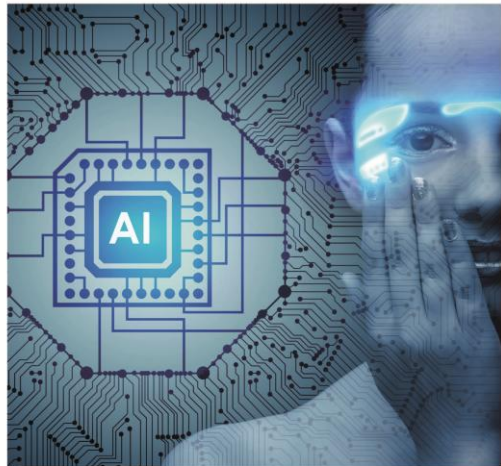


German Network since March 2023:
<https://ethischeki.ecompetence.eu>

European Network since AIED 2023:
<https://ethicalai.ecompetence.eu>

**Monthly meetings for collaboration:
Everybody is most welcome!**

Network "Ethical Use of AI"



Ethical Use of Artificial Intelligence (AI)
in Higher Education – a Handout

Developed and approved on 7th of March 2024 by the
Netzwerk „Ethische Nutzung von KI“
<https://ethischeki.ecompetence.eu>
Revised Version 1.1 from 18th of July 2024:
<https://doi.org/10.5281/zenodo.10995669>

**"Ethical Use of AI in Higher Education
– a Handout" for university teachers
(Version 1.1 from 18th of July 2024)**

- **10 statements (1 page) and
FAQ list with answers (4 pages),
both revised and updated**

<https://doi.org/10.5281/zenodo.10995669>

My Central Hypotheses



1. Artificial Intelligence changes more than COVID-19 and any other digital tools

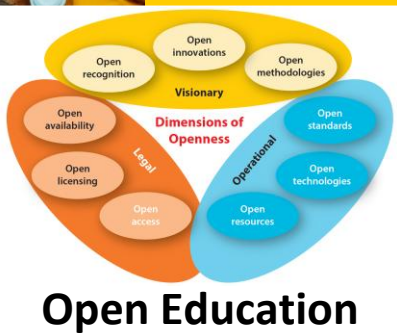


2. Artificial Intelligence has to be globally regulated: in particular in education



3. AI and Education have to focus stronger ethics, democracy and our whole society

<https://opening-up.education/artificial-intelligence-and-education>



Open AI questions for discussion



Legal: AI Act, Treaty 225, DSA, GDPR, CLOUD Act et al., strategies

Technological: Blackbox, sovereignty

Ethical: Bias, personality, deskilling

Societal: Human rights, literacy, autonomy, resources, digital divide

AI and Education

Interested? Contact me!



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www.hrz.uni-bonn.de
www.opening-up.education





References

- Stracke, C. M., Griffiths, D., Pappa, D., Bećirović, S., Polz, E., Perla, L., ... , & Hollins, P. (2025). Analysis of Artificial Intelligence Policies for Higher Education in Europe. *International Journal of Interactive Multimedia and Artificial Intelligence*, 9(2), 124-137.
<https://doi.org/10.9781/ijimai.2025.02.011> [Open Access]
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Thank you for your attention!

Interested? What are your questions?



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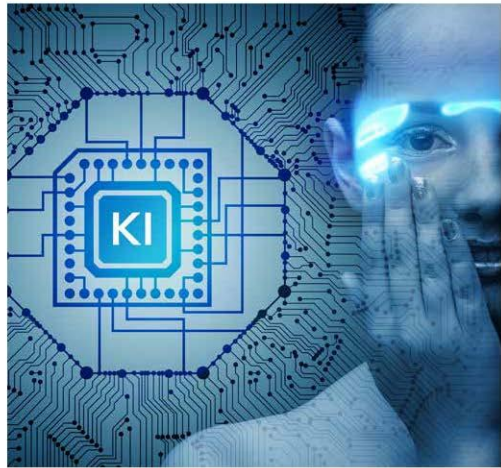
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Alle sind herzlich willkommen!



Netzwerk "Ethische Nutzung von KI"



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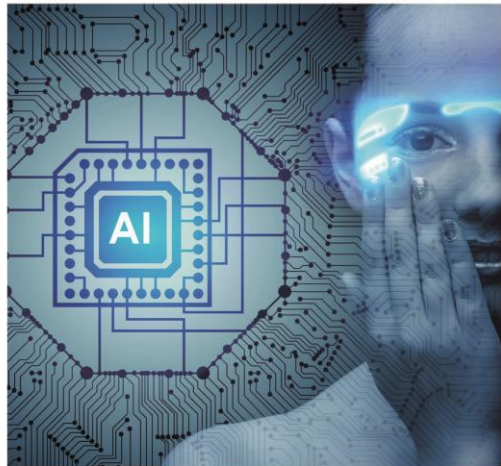
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**"Ethische Nutzung von KI in der
Hochschule" für Hochschullehrende**
(Version 1.1 vom 18. Juli 2024)

- **10 Statements (1 Seite) und
FAQ-Liste mit Antworten (4 Seiten)**
- **Für Hochschullehrende & Leitung**

<https://doi.org/10.5281/zenodo.10793844>

Netzwerk "Ethische Nutzung von KI"



Ethical Use of Artificial Intelligence (AI)
in Higher Education – a Handout

Developed and approved on 7th of March 2024 by the
Netzwerk „Ethische Nutzung von KI“
<https://ethischeki.ecompetence.eu>
Revised Version 1.1 from 18th of July 2024:
<https://doi.org/10.5281/zenodo.10995669>

English translation:

**"Ethical Use of AI in Higher Education
– a Handout" for university teachers**
(Version 1.1 from 18th of July 2024)

- **10 statements (1 page) and
FAQ list with answers (4 pages)**

<https://doi.org/10.5281/zenodo.10995669>

Netzwerk "Ethische Nutzung von KI"

Adaptierung für Schulen:

**"Künstliche Intelligenz in der Schule:
Verantwortung beginnt jetzt" für
Schullehrende und Schulleitungen**
(Version 1.0 vom 24. Mai 2025)

- **Einführungsworkshop (zwei Tage)**

<https://doi.org/10.5281/zenodo.15792076>



Künstliche Intelligenz in der Schule: Verantwortung beginnt jetzt

Ausgearbeitet und finalisiert am 24. Mai 2025 von:
Detert, K., Overath, J., Prechter, S., & Stracke, C. M.

Kleingruppe "Ethische Nutzung von KI in der Schule"
des Think Tanks "Lehren und Lernen im Kontext von KI"

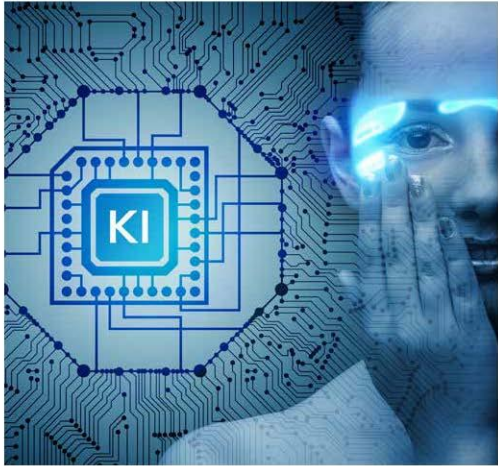
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<https://doi.org/10.5281/zenodo.15792076>

Netzwerk "Ethische Nutzung von KI"



Was ist Künstliche Intelligenz (KI)?
Wie kann ich KI ethisch im Studium nutzen?

Diese Handreichung des Netzwerks „Ethische Nutzung von KI“ richtet sich als Information an Euch als Studierende in Hochschulen und besteht aus grundlegenden Statements zur Nutzung von KI-Tools im Studium (und Alltag).
Ihr findet eine FAQ-Liste mit Empfehlungen für die Praxis (Seiten 4-7).
Ethische Nutzung von KI bedeutet Deine Verantwortung zu reflektieren, die möglichen Folgen vorab zu bedenken und so Schäden für Dich und andere oder auch für die Umwelt zu vermeiden.

"Was ist KI? Wie kann ich KI ethisch im Studium nutzen?" für Studierende
(Version 1.0 vom 6. Mai 2025)

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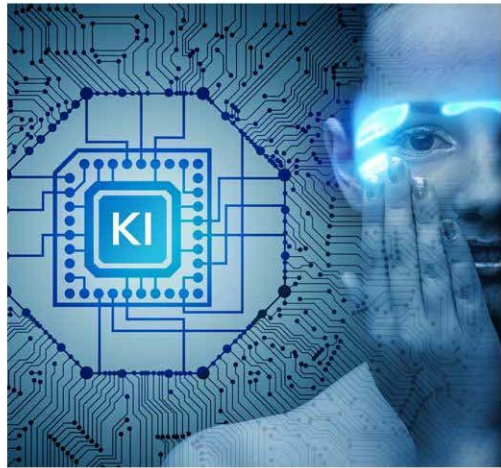
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"Ethische Nutzung von KI"

Was ist für Sie am wichtigsten?

Wie nutzen Sie KI in der Lehre?

Welche Bildung über KI bieten Sie?

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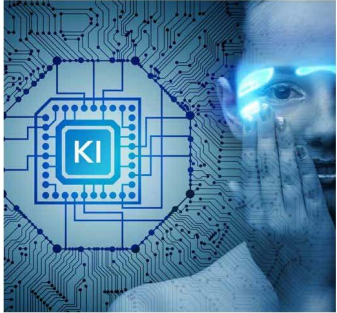


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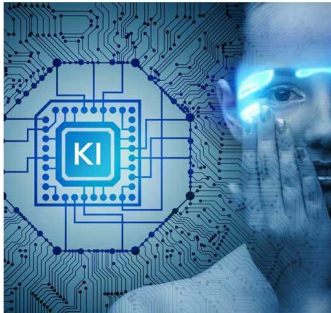
Anmeldung: stracke@uni-bonn.de

Jetzt eure Auswahl:



Ethische Nutzung von Künstlicher Intelligenz (KI)
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**"Ethische Nutzung von KI in der
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