

Lehre einfach selber machen lassen

Einsatz von Generativer KI in Lehrveranstaltungen

PD Dr. Malte Persike



persike@cls.rwth-aachen.de



cls.rwth-aachen.de




One Chatbot to rule them all

ChatGPT

chat.openai.com

ChatGPT 4 ▾



How can I help you today?

Come up with concepts
for a retro-style arcade game

Plan an itinerary
for a literary tour of England, visiting famous...

Tell me a fun fact
about the Roman Empire

Make a content strategy
for a newsletter featuring free local weekend ...

Message ChatGPT...

AD RWTH Aachen University

ChatGPT can make mistakes. Consider checking important information.

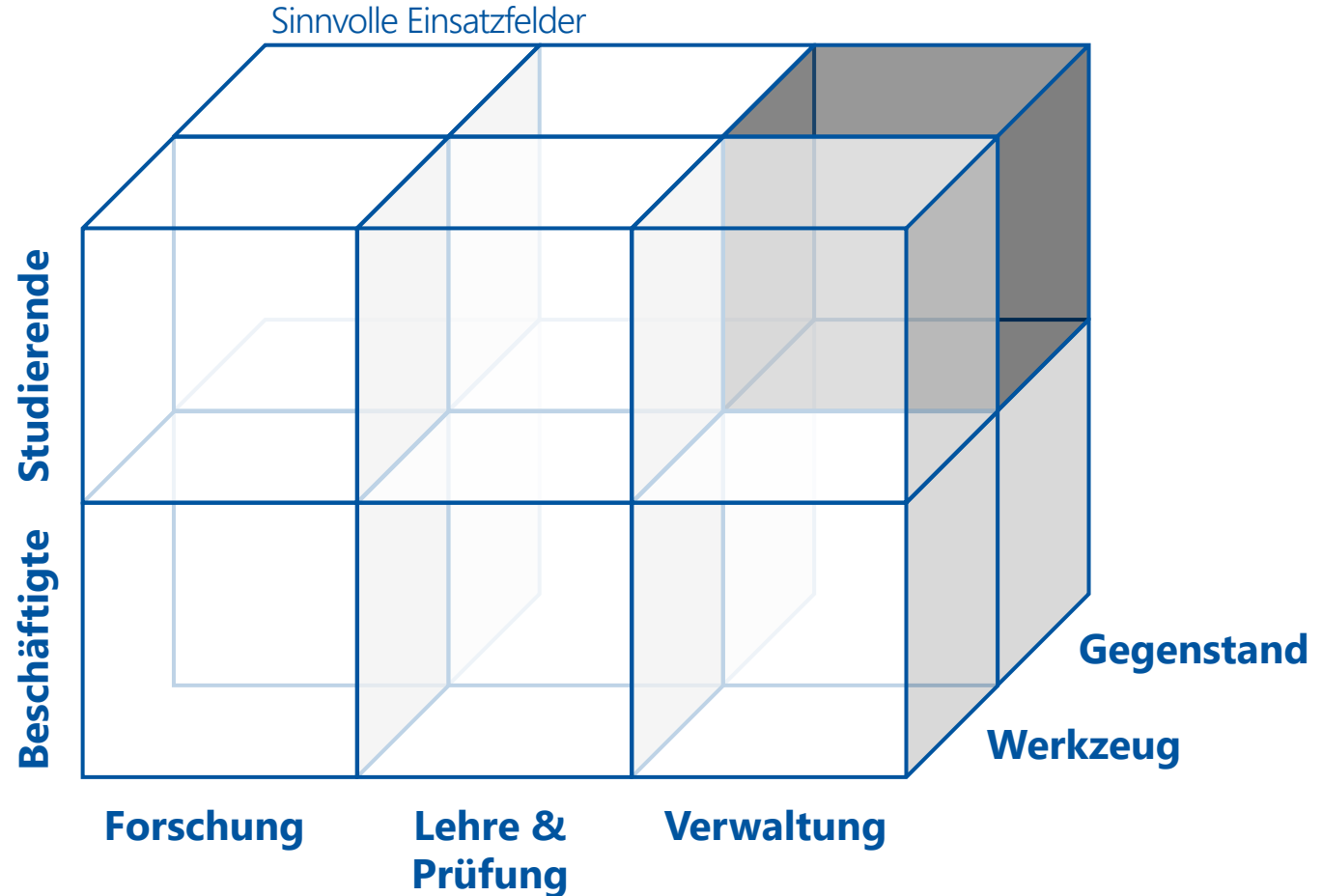
Szenarien an Hochschulen

- Generierung von Gliederungen, Texten, Illustrationen, Aufgaben etc.
- Recherche, Zusammenfassungen und Übersetzungen
- Hilfe bei Gutachten und Bewertungen
- Automatisierung von Aufgaben
- Individualisierte Betreuung / Beratung



**Je nach Zelle
wandeln sich**

Bedarfe
Ziele
Rechtsfragen
Leitlinien
Vorschriften
Budget
Werkzeuge
Angebote
Kompetenzen
Konsequenzen



Technologiemythen

Generative KI und Faktentreue.



Threat Assessment von OpenAI

- Halluzinationen (generierte Informationen, die nicht der Realität entsprechen)
- Schädlicher Inhalt (z.B. Hate Speech)
- Defizite hinsichtlich Repräsentation, Fairness, Attribution und Servicequalität (z.B. Stereotype)
- Desinformation und Einflussoperationen ("Fake News")
- Verbreitung konventioneller und unkonventioneller Waffen
- Datenschutz (z.B. Persönlichkeitsrechte)
- Cybersicherheit (z.B. Social Engineering)
- Potenzial für riskantes emergentes Verhalten (z.B. „alignment problem“)
- Interaktionen mit anderen Systemen (API)
- Wirtschaftliche Auswirkungen
- Beschleunigung (u.a. Technologieentwicklung)
- Übermäßige Abhängigkeit

GPT-4 System Card

OpenAI

March 23, 2023

Abstract

Large language models (LLMs) are being deployed in many domains of our lives ranging from browsing, to voice assistants, to coding assistance tools, and have potential for vast societal impacts. [1, 2, 3, 4, 5, 6, 7] This system card analyzes GPT-4, the latest LLM in the GPT family of models. [8, 9, 10] First, we highlight safety challenges presented by the model's limitations (e.g., producing convincing text that is subtly false) and capabilities (e.g., increased adeptness at providing illicit advice, performance in dual-use capabilities, and risky emergent behaviors). Second, we give a high-level overview of the safety processes OpenAI adopted to prepare GPT-4 for deployment. This spans our work across measurements, model-level changes, product- and system-level interventions (such as monitoring and policies), and external expert engagement. Finally, we demonstrate that while our mitigations and processes alter GPT-4's behavior and prevent certain kinds of misuses, they are limited and remain brittle in some cases. This points to the need for anticipatory planning and governance. [11]

Content Warning: This document contains content that some may find disturbing or offensive, including content that is sexual, hateful, or violent in nature.

1 Introduction

Large language models, also known as LLMs, have become an increasingly prevalent part of our day-to-day lives, with their use extending to a wide range of domains including web browsing, voice assistants, and coding assistance tools. [1, 2, 3, 4] These models have the potential to significantly impact society in numerous ways. [5, 6, 7] This system card analyzes GPT-4, the latest large language model in the GPT family of models. [8, 9, 10] Since it finished training in August of 2022, we have been evaluating, adversarially testing, and iteratively improving the model and the system-level mitigations around it. Our mitigations and processes alter GPT-4's behavior and prevent certain kinds of misuses, though they have limitations, pointing to the need for anticipatory planning and governance [11] and further safety research. Our approach to deployment balances minimizing risk from deployment, enabling positive use cases, and learning from deployment.

GPT models are often trained in two stages. First, they are trained, using a large dataset of text from the Internet, to predict the next word. The models are then fine-tuned with additional data, using an algorithm called reinforcement learning from human feedback (RLHF), to produce outputs that are preferred by human labelers. [10, 12, 13] Training language models on large text datasets has given rise to capabilities such as few-shot learning [10] and the ability to carry out a wide range of natural language tasks spanning different domains, including question answering, arithmetic, and classification. Fine-tuning has made these models more controllable and useful.

Deutsches Grundgesetz

GPT-4

PE Wie lautet Art. 19 Abs. 2 des deutschen Grundgesetzes?

Artikel 19 Absatz 2 des deutschen Grundgesetzes lautet:

"In keinem Falle darf ein Grundrecht in seinem Wesensgehalt angetastet werden."

Send a message

ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT September 25 Version](#)

Goethes Werther

GPT-4

PE Wie lautet der zweite Satz im Kapitel "Am 10. Mai" in Goethes Werther?

"Die Leiden des jungen Werthers" wurde 1774 veröffentlicht und ist daher gemeinfrei. Der zweite Satz des Eintrags vom 10. Mai lautet: "Ich bin wohlauf, lieber Freund, und das ist genug, um mich glücklich zu machen." Dies reflektiert Werthers Fähigkeit, Glück in seinem eigenen Wohlbefinden zu finden, eine Stimmung, die sich im Laufe des Romans deutlich verändert.

Send a message

ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT September 25 Version](#)

Large Language Models haben kein Langzeitgedächtnis

Sie haben keinen Zugriff auf die gelesenen Trainingsdaten. Sie können nicht „abschreiben“ oder zitieren.¹

Large Language Models haben kein Kurzzeitgedächtnis

Sie erinnern sich an nichts aus einem laufenden Chat. Das zuvor Geschriebene wird einfach immer wieder mitgeschickt.²

¹Aktuelle LLMs können bereits im Internet suchen. Es ist technisch denkbar, dass sie Zugriff auf Knowledge Bases haben.

²Bis es aus dem gesetzten Memory Window hinausfällt.

Energieentlastungspakete und Armutsbekämpfung

GPT-4

PE Fasse den Text nach der Überschrift "# Originaltext" in 5 Stichpunkten zusammen. Jeder der Stichpunkte sollte aus höchstens zwei Sätzen bestehen.

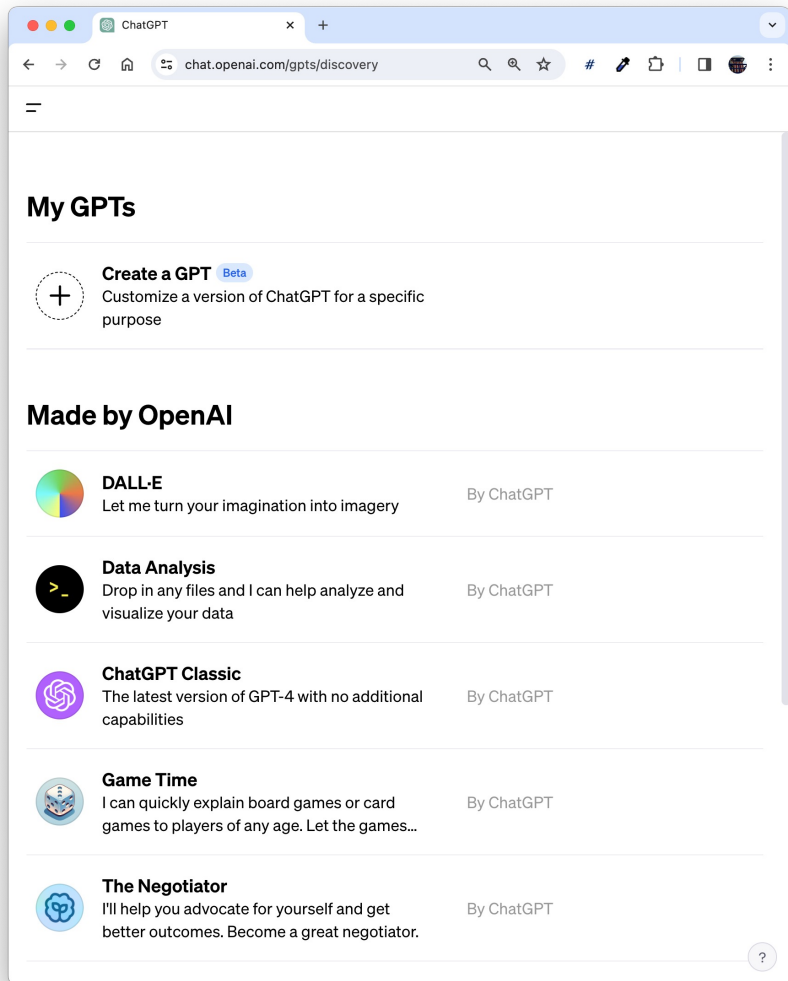
Originaltext

Der RWTH-Lehrstuhl für Energiesystemökonomik hat die Wirksamkeit und das Kosten-Nutzen-Verhältnis der Entlastungspakete der Bundesregierung in der "RWTH-Studie zu Entlastungsmaßnahmen" untersucht. Ein Großteil der energiebedingten Mehrbelastung kann demnach durch die Maßnahmen kompensiert werden – indes komme vom gesamten Entlastungsvolumen lediglich 14,8 Prozent bei einkommensschwachen Haushalten an.

Um die Folgen der gestiegenen Verbraucherpreise abzufedern, wurden von der deutschen Bundesregierung bislang drei Entlastungspakete verabschiedet. Am Lehrstuhl für Energiesystemökonomik der RWTH Aachen haben Professor Aaron Praktiknjo und Jan Priesmann die finanzielle

Send a message

ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT September 25 Version](#)



Die Innovationen bei OpenAI seit Oktober 2023 sind erneut ein „Gamechanger“.

[Home](#) > [News](#) >

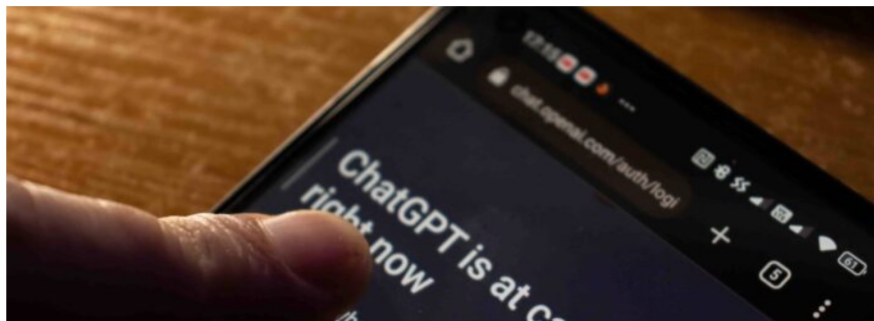
OpenAI Stops New ChatGPT Plus Subscriptions Due to Demand

After last week's big GPT-4 Turbo and custom GPT reveals, OpenAI can't keep up with demand for ChatGPT Plus subscriptions.



Written by
Ellis Di Cataldo

Published on
 November 15, 2023



Most Recent

[How to Enable Google Meet's New AI Hand Recognition Feature](#)

Abby Ward - 9 mins ago

[Who Are the New OpenAI Board Members and What's Changed?](#)

James Laird - 2 hours ago

[Remote Workers Blamed for Increase](#)



Deutsches Grundgesetz

chat.openai.com/c/f8f9bbd3-6333-4c52-8a7...

Deutsches Grundgesetz

GPT-4

PE Wie lautet Art. 19 Abs. 2 des deutschen Grundgesetzes?

Artikel 19 Absatz 2 des deutschen Grundgesetzes lautet:

"In keinem Falle darf ein Grundrecht in seinem Wesensgehalt angetastet werden."

Send a message

ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT September 25 Version](#)

ChatGPT

chat.openai.com/?model=gpt-4

New chat

ChatGPT 4

PE You
Wie lautet der zweite Satz im Kapitel "Am 10. Mai" in Goethes Werther?

ChatGPT
Der zweite Satz im Kapitel "Am 10. Mai" in Goethes "Die Leiden des jungen Werther" lautet: "Ich bin allein und freue mich meines Lebens in dieser Gegend, die für solche Seelen geschaffen ist wie die meine" [?].

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

Deutsches Grundgesetz

chat.openai.com/c/f8f9bbd3-6333-4c52-8a7...

Deutsches Grundgesetz

GPT-4

PE Wie lautet Art. 19 Abs. 2 des deutschen Grundgesetzes?

Artikel 19 Absatz 2 des deutschen Grundgesetzes lautet:

"In keinem Falle darf ein Grundrecht in seinem Wesensgehalt angetastet werden."

Send a message

ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT September 25 Version](#)

ChatGPT

chat.openai.com/?model=gpt-4

New chat

ChatGPT 4

You Wie lautet der 2. Satz im Kapitel "Am 10. Mai" in Goethes Werther?

ChatGPT Der zweite Satz im Kapitel "Am 10. Mai" in Goethes "Die Leiden des jungen Werther" lautet:

"Daß das Leben des Menschen nur ein Traum sei, ist manchem schon so vorgekommen, und auch mit mir zieht dieses Gefühl immer herum. Wenn ich die Einschränkung ansehe, in welcher die tätigen und forschenden Kräfte des Menschen eingesperrt sind; wenn ich sehe, wie alle Wirksamkeit dahinaus läuft, sich die Befriedigung von Bedürfnissen zu verschaffen, die wieder keinen Zweck haben, als unsere arme Existenz zu verlängern, und dann, daß alle Beruhigung über gewisse Punkte des Nachforschens nur eine träumende Regination ist, da man sich \downarrow Nände, zwischen denen man gefangen sitzt, mit bunten Gestalten und lichten Aussichten bemalt –

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

Teilung: 4433 / 17

ChatGPT 4

You
Berechne 4433 / 17

Analysis

```
python  
  
# Berechnung von 4433 geteilt durch 17  
ergebnis = 4433 / 17  
ergebnis
```

Result
260.7647058823529

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

Mem Num Sci

4433 ÷ 17

260.76470588

	%	÷	×
7	8	9	-
4	5	6	+
1	2	3	=
±	0	.	



Frage ChatGPT-4 (nach)abichtwissen Bald öffentlich?!



Introducing Gemini 1.5, Google

blog.google/technology/ai/google-gemi...

The Keyword

In this story

Gemini 1.5 Pro comes with a standard 128,000 token context window. But starting today, a limited group of developers and enterprise customers can try it with a context window of up to 1 million tokens via [AI Studio](#) and [Vertex AI](#) in private preview.

As we roll out the full 1 million token context window, we're actively working on optimizations to improve latency, reduce computational requirements and enhance the user experience. We're excited for people to try this breakthrough capability, and we share more details on future availability below.

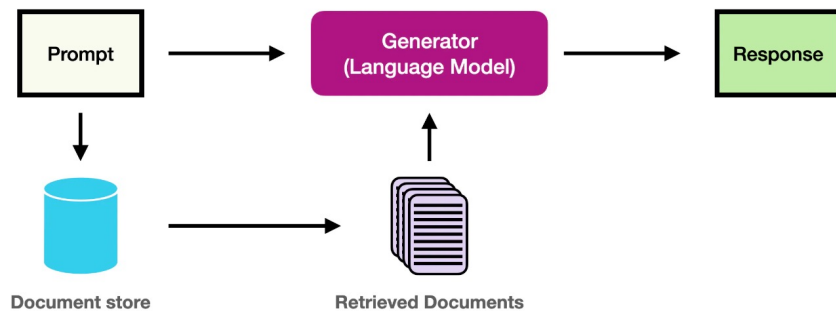
These continued advances in our next-generation models will open up new possibilities for people, developers and enterprises to create, discover and build using AI.

Model	Context Length (Tokens)
Gemini 1.0 Pro	32K
GPT-4 Turbo	128K
Claude 2.1	200K
Gemini 1.5 Pro	1M

Context lengths of leading foundation models

Introduction to RAG

Retrieval Augmented Generation



As better introduced [here](#), RAG can be defined as:

RAG takes input and retrieves a set of relevant/supporting documents given a source (e.g., Wikipedia). The documents are concatenated as context with the original input prompt and fed to the text generator which produces the final output. This makes RAG adaptive for situations where facts could evolve over time. This is very useful as LLMs's parametric knowledge is static. RAG allows language models to bypass retraining, enabling access to the latest information for generating reliable outputs via retrieval-based generation.

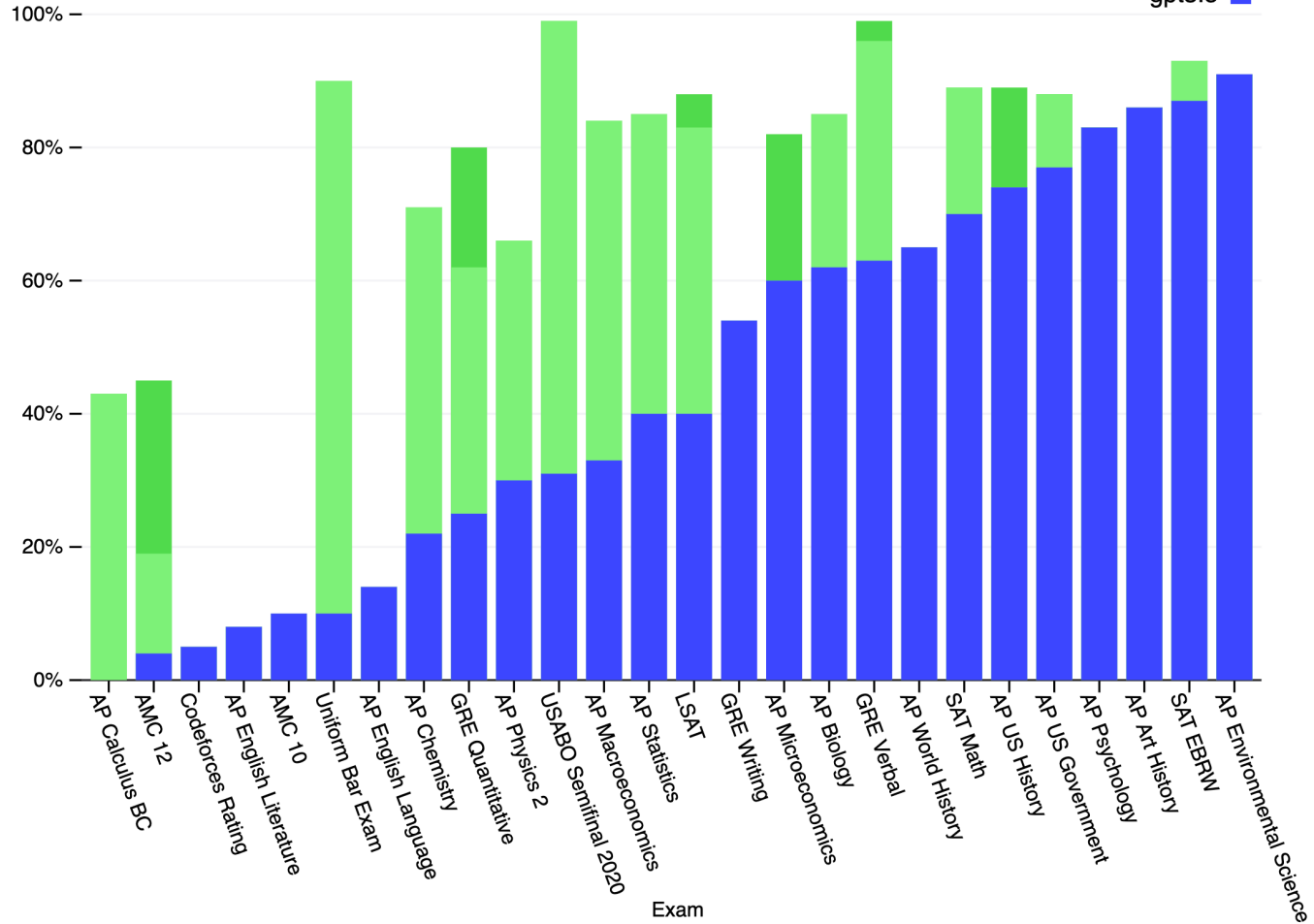
**Künstlich generierte
Texte können erkannt
werden.**



GPT-4

Exam results (ordered by GPT-3.5 performance)

Estimated percentile lower bound (among test takers)



More than an AI detector Preserve what's human.

We bring transparency to humans navigating a world filled with AI content. GPTZero is the gold standard in AI detection, trained to detect ChatGPT, GPT4, Bard, LLaMa, and other AI models.

[Check out our products](#) →

Was this text written by a **human** or **AI**?

Try detecting one of our sample texts:

ChatGPT

GPT4

Bard

Human

AI + Human

Paste your text here ...

0/5000 characters

Check Origin

Upload file 📎

.pdf, .doc, .docx, .txt

By continuing you agree to our [Terms of service](#)

NEW RELEASE

Discover our latest products



Contact

Brendan M. Lynch
KU News Service
785-864-8855
blynch@ku.edu



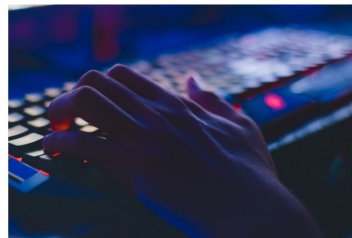
Follow @BrendanMLyn

DIGITAL TOOL SPOTS ACADEMIC TEXT SPAWNED BY CHATGPT WITH 99% ACCURACY

Thu, 06/08/2023

LAWRENCE — Heather Desaire, a chemist who uses machine learning in biomedical research at the University of Kansas, has unveiled a new tool that detects with 99% accuracy scientific text generated by ChatGPT, the artificial intelligence text generator.

The peer-reviewed journal Cell Reports Physical Science published research showing the efficacy of her AI-detection method, along with sufficient source code for others to replicate the tool.



Desaire, the Keith D. Wilner Chair in Chemistry at KU, said accurate AI-detection tools urgently are required to defend scientific integrity.

"ChatGPT and all other AI text generators like it make up facts," she said. "In academic science publishing — writings about new discoveries and the edge of human knowledge — we really can't afford to pollute the literature with believable-sounding falsehoods. They'd unavoidably make their way into publications if AI text generators are commonly used. As far as I'm aware, there's no foolproof way to, in an automated fashion, find those

Hometown news



Graduation and honor rolls

KU News Service podcast





Suche



VG München, Beschluss v. 28.11.2023 – M 3 E 23.4371

**Titel:**

Einstweiliger Rechtsschutz, Zugang zum Masterstudium, Zulassung zum Eignungsverfahren, Vorwurf der unerlaubten Zuhilfenahme von künstlicher Intelligenz bei Verfassen des vorgelegten Essays

Normenketten:

VwGO § 123

FPSO

BayHIG Art. 90 Abs. 1 Satz 2

Schlagworte:

Einstweiliger Rechtsschutz, Zugang zum Masterstudium, Zulassung zum Eignungsverfahren, Vorwurf der unerlaubten Zuhilfenahme von künstlicher Intelligenz bei Verfassen des vorgelegten Essays

Fundstelle:

BeckRS 2023, 42327

Tenor

- I. Der Antrag wird abgelehnt.
- II. Der Antragsteller hat die Kosten des Verfahrens zu tragen.
- III. Der Streitwert wird auf EUR 2.500,- festgesetzt.



LJ 16 Feb 2023

Machine Generated Text: A Comprehensive Survey of Threat Models and Detection Methods

EVAN CROTHERS, NATHALIE JAPKOWICZ, and HERNA VIKTOR

Machine generated text is increasingly difficult to distinguish from human authored text. Powerful open-source models are freely available, and released shortly after their development. This paper surveys the state-of-the-art natural language generation models, and discusses the challenges and numerous open problems. We provide a survey of the most common threat models, and discuss the most effective detection methods. We provide a survey of the most common threat models, and discuss the most effective detection methods.

AI vs. Human - Differentiation Analysis of Scientific Content Generation

Yongqiang Ma^{a*}, Jiawei Liu^{a*}, Fan Yi^a, Qikai Cheng^a, Yong Huang^a, Wei Li^{a*}, Liang Li^a

Entdeckungsleistung ist nicht hinreichend für einen Anscheinsbeweis

ORIGINAL ARTICLE

Evaluating the efficacy of AI content detection tools in differentiating between human and AI-generated text

Ahmed M. Elkhataat^{1*}, Khaled Elsaid² and Saeed Almeeri³

*Correspondence: ahmed.elkhataat@qu.edu.qa
¹Department of Chemical Engineering, Qatar University, P.O. 2713, Doha, Qatar
²Chemical Engineering Program, Texas A&M University at Qatar, P.O. 23874, Doha, Qatar
³Department of Chemistry and Earth Sciences, Qatar University, P.O. 2713, Doha, Qatar

Abstract

The proliferation of artificial intelligence (AI)-generated content, particularly ChatGPT, presents potential challenges to academic integrity concerns such as plagiarism. This study investigates the capabilities of detection tools in discerning human and AI-authored content. Fifty detection tools including ChatGPT 3.5 and 4 on the topic of cooling towers in five human-written control responses were generated by five AI models and five human-written control responses were generated by five AI models. Findings reveal that the tools used to evaluate these paragraphs. Findings reveal that the tools used to evaluate these paragraphs. Findings reveal that the tools used to evaluate these paragraphs.

Testing of Detection Tools for AI-Generated Text

Debora Weber-Wulff (University of Applied Sciences HTW Berlin, Germany, weberwu@htw-berlin.de), (corresponding author)
Alla Anohina-Naumeca (Riga Technical University, Latvia, alla.anohina-naumeca@rtu.lv)
Sonja Bjelobaba (Uppsala University, Sweden, sonja.bjelobaba@crb.uu.se)
Tomáš Foltýnek (Masaryk University, Czechia, foltynek@fmuni.cz)
Jean Guerrero-Dib (Universidad de Monterrey, Mexico, jean.guerrero@udem.edu.mx)
Olumide Popoola (Queen Mary University of London, UK, O.Popoola@gmul.ac.uk)
Petr Šigut (Masaryk University, Czechia, petrsigut@munio.cz)
Lorna Wedderburn (Masaryk University, Czechia, lorna.wedderburn@munio.cz)

DetectGPT: Zero-Shot Machine-Generated Text Detection using Probability Curvature

Eric Mitchell¹ Yoonho Lee¹ Alexander Khazatsky¹ Christopher D. Manning¹ Chelsea Finn¹

Abstract

The fluency and factuality of large language models (LLMs) has improved significantly, making it increasingly difficult to distinguish machine-generated text from human-written text. We propose DetectGPT, a zero-shot method for detecting machine-generated text using LLMs. DetectGPT uses LLMs to generate a distribution of probability curvature for a given text, and then compares this distribution to a distribution of probability curvature for human-written text. DetectGPT achieves a 95% confidence interval of 0.41-0.85 on a set of 1000 human-written and 1000 machine-generated text samples.

Candidate passage x :

"Joe Biden recently made a move to the White House along his pet German Shepherd..."

A Watermark for Large Language Models

John Kirchenbauer^{*} Jonas Geiping^{*} Yuxin Wen^{*} Jonathan Katz^{*} Ian Miers^{*} Tom Goldstein^{*}
University of Maryland

ChatGPTZero Performance in Identifying Artificial Intelligence-Generated Medical Texts: A Preliminary Study

Farrokh Habibzadeh

Past President, World Association of Medical Editors (WAME)

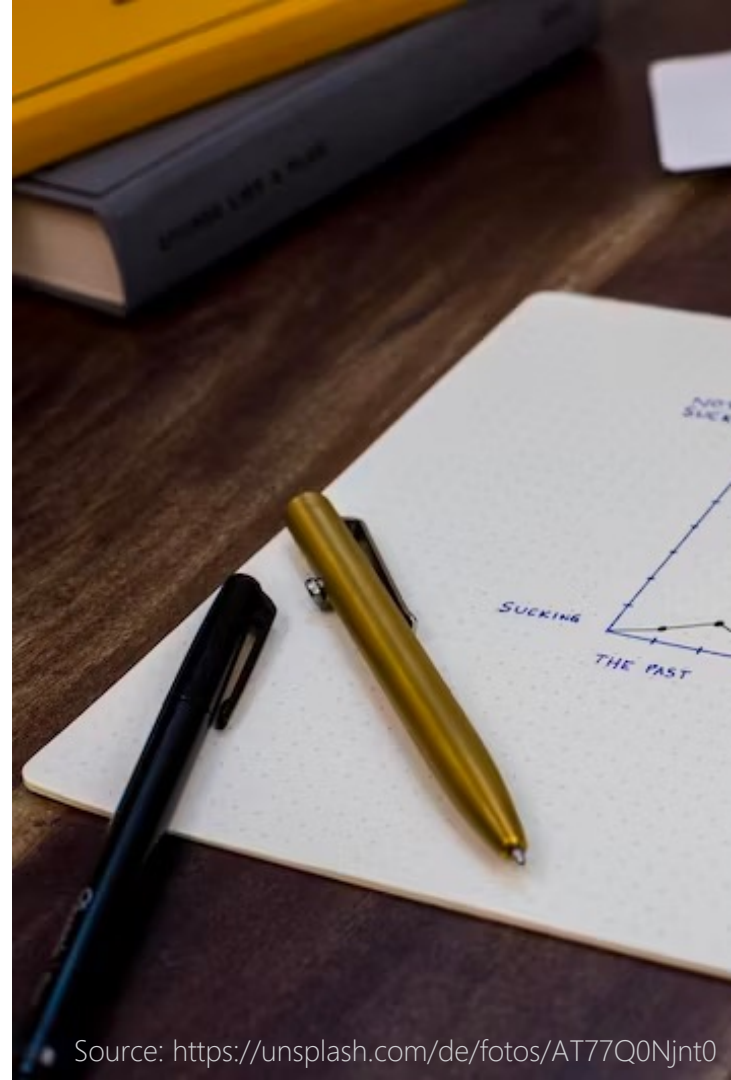
Num tokens	Z-score	p-value
56	.31	.38
36	7.4	6e-14

... model, both with and without watermarking. The watermark, if written, contains 9 "green" tokens, yet it is not necessarily certain that this text is marked with their respective colors. ... multinomial sampling. Water-0.25, 2). The prompt is the whole story.

... watermarking of language models is a bit...

Einsatzgebiete an Hochschulen

Generative KI im Prüfungskontext.





The screenshot shows a web browser window with the URL `chat.openai.com/c/d2255e76-1db3-42e5-bafa-f5...`. The page title is "Create Exam Questions - Info". The chat interface is titled "ChatGPT 4".




You
Question 2.


ChatGPT
For Question 2: "How should predictors in a multiple linear regression model be scaled for accurate interpretation of coefficients?", here are the response options:

Correct Answers:

1. Predictors should be centered by subtracting the mean to reduce multicollinearity and ease interpretation. 
2. Predictors should be standardized to have a mean of zero and a standard deviation of one for comparability. 

Incorrect Answers:

3. Predictors should be scaled to a range of 0-1, irrespective of their original distribution. 
1. Predictors do not require scaling or centering in multiple linear regression. 
2. Each predictor should be scaled based on its correlation with the dependent variable. 

Let me know if you need any adjustments or additional questions. 

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

Multiple Choice Aufgaben

- Je höher das Niveau, desto „unschärfer“ werden die Ergebnisse
- Die Erzeugung von faktenorientierten Elementen erfordert eine vortrainierte Wissensbasis
- Die Leistung von KI hängt (noch) vom Studienfach ab.

Generative KI ersetzt nicht das **Zwei-Prüfer-Prinzip** bei der Erstellung von Mehrfachwahlaufgaben (vgl. OVG Sachsen, 2002, Rn. 8, 12)

Create Exam Questions - Info x +

chat.openai.com/c/d2255e76-1db3-42e5-bafa-f5... 🔍 ☆ # ✎ 🗄️ 🌐

ChatGPT 4

You
Question 2.

ChatGPT
For Question 2: "How should predictors in a multiple linear regression model be scaled for accurate interpretation of coefficients?", here are the response options:

Correct Answers:

1. Predictors should be centered by subtracting the mean to reduce multicollinearity and ease interpretation.
2. Predictors should be standardized to have a mean of zero and a standard deviation of one for comparability.

Incorrect Answers:

3. Predictors should be scaled to a range of 0-1, irrespective of their original distribution.

1. Predictors do not require scaling or centering in multiple linear regression.
2. Each predictor should be scaled based on its correlation with the dependent variable.

Let me know if you need any adjustments or additional questions.

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.



Student's Task Evaluation: chat.openai

Du
Your role:
You are a lecturer at a university and you have to evaluate the solutions of your students.

Context:
1. I will first give you the exam:

"Faced with unpleasant conditions, the government wants to improve the public perception of the campaign: "Appeal" in two directions. The study design is as follows: at location 1, "Ignore" and at location 2, "Ignore". Ibupaenz is measured using materials.

It turns out, a) that both that the improvement through "Ignore".

Task a. What statistical principle? Name at least three aspects.

Task b. Name at least three aspects.

Task c. How would you improve the study design?

2. Points to be awarded

Nachricht ChatGPT...

Exam Task Evaluation: chat.openai

Reverse reasoning. Which principle, it demonstrates. The student's explanation of solutions, but the absence of score.

Subtask c) - Suggestion

- **Points Awarded:** 2
- **Justification:** The student reduces testing bias, a conscious sample size to at least 30 per group encompass the range of random assignment, in addition. Additionally, the idea of might not directly address

Points Awarded for c): 1

Justification for c)

The student addresses proposed solutions. However with the specific aspects

Total Points Awarded

- Task a: 2 points
- Task b: 2 points
- Task c: 1 point

Total: 5 out of 10 points.

Nachricht ChatGPT...

Evaluación solución estudiant: chat.openai

Reverse reasoning. Which principle, it demonstrates. The student's explanation of solutions, but the absence of score.

Subtask c) - Suggestion

- **Points Awarded:** 2
- **Justification:** The student reduces testing bias, a conscious sample size to at least 30 per group encompass the range of random assignment, in addition. Additionally, the idea of might not directly address

Total Points Awarded: 1

- **Subtask a:** 3 points
- **Subtask b:** 3 points
- **Subtask c:** 2 points
- **Total:** 8 points out of 10

Nachricht ChatGPT...

Student's Task Evaluation: chat.openai

Points Awarded for Task a: 2 additional point for the not explicitly part of the

3. **Task c - Improving the**

- The student suggests to maintain the percentage using validated A/B
- They recommend a groups with respect representativeness.
- They also suggest in which is directly in line

Points Awarded for Task c: 2 questionnaire formulation sizes).

Total Points Awarded: 1

Overall, the student has methodological problem improvements, although

Nachricht ChatGPT...

Stats Exam: Grading & Feedback: chat.openai.com/c/433d88ec-8e99-436a-b425-1...

ChatGPT 4

- Conscious selection with quotas, focusing on parents whose children have taken the drug.
- Increasing the sample size to at least $n = 30$ for each group.

According to the scoring scheme for task c, the student gets:

- **3 points** for addressing three or more of the bullet points (changing questionnaire design, conscious selection with quotas, and increasing the sample size).

Justification:

The student's suggestions for improving the study design are well thought out, addressing different aspects like the design of the questionnaire, the method of selection, and the size of the sample. These suggestions align well with the proposed solutions.

Total Points Awarded:





- Task a: 3 points
- Task b: 3 points
- Task c: 3 points

Total: 9 points

ChatGPT kann Fehler machen. Überprüfen Sie wichtige Informationen.

Article

Examining the Efficacy of ChatGPT in Marking Short-Answer Assessments in an Undergraduate Medical Program

Leo Morjaria ¹, Levi Burns ¹ , Keyna Bracken ^{1,2} , Anthony J. Levinson ¹ , Quang N. Ngo ^{1,2}, Mark Lee ² and Matthew Sibbald ^{1,2,*} 

¹ Michael G. DeGroote School of Medicine, McMaster University, Hamilton, ON L8P 1H6, Canada; leo.morjaria@medportal.ca (L.M.); qngo@mcmaster.ca (Q.N.N.)

² McMaster Education Research, Innovation and Theory (MERIT) Program, McMaster University, Hamilton, ON L8P 1H6, Canada

* Correspondence: matthew.sibbald@medportal.ca

Abstract: Traditional approaches to marking short-answer questions face limitations in timeliness, scalability, inter-rater reliability, and faculty time costs. Harnessing generative artificial intelligence (AI) to address some of these shortcomings is attractive. This study aims to validate the use of ChatGPT for evaluating short-answer assessments in an undergraduate medical program. Ten questions from the pre-clerkship medical curriculum were randomly chosen, and for each, six previously marked student answers were collected. These sixty answers were evaluated by ChatGPT in July 2023 under four conditions: with both a rubric and standard, with only a standard, with only a rubric, and with neither. ChatGPT displayed good Spearman correlations with a single human assessor ($r = 0.6\text{--}0.7$, $p < 0.001$) across all conditions, with the absence of a standard or rubric yielding the best correlation. Scoring differences were common (65–80%), but score adjustments of more than one point were less frequent (20–38%). Notably, the absence of a rubric resulted in systematically higher scores ($p < 0.001$, partial $\eta^2 = 0.33$). Our findings demonstrate that ChatGPT is a viable, though imperfect, assistant to human assessment, performing comparably to a single expert assessor. This study serves as a foundation for future research on AI-based assessment techniques with potential for further optimization and increased reliability.

Keywords: ChatGPT; artificial intelligence; short-answer assessment; automated grading; generative AI; undergraduate medical education

1. Introduction

The growing influence of artificial intelligence (AI) in medicine is not confined to clinical practice or research techniques; it is also having an exciting and disruptive impact on medical education [1,2]. The use of large language models (LLMs) has, in particular, drawn consideration for potential use in medical education since the public launch of ChatGPT (OpenAI, CA, USA) in November 2022 [3–5]. While the exact conceptual foundations of these AI-based tools are proprietary, functionally ChatGPT operates through a dialogue interface and responds to user prompts in a human-like manner. Less than a year following its release, ChatGPT progressed from accepting text-only prompts to prompts that can include both images and text, and other LLMs have been released including Google's Bard.

Shortly after the release of ChatGPT, it demonstrated the ability to pass well-known standardized multiple-choice assessments including the United States Medical Licensing Examination (USMLE) written by American medical students [6,7]. A large volume of research has since studied LLM performance on other examinations in specialized areas of medicine including but not limited to clinical informatics [8], ophthalmology [9], plastic surgery [10], urology [11], family medicine [12], obstetrics and gynecology [13], and a situational judgment, professionalism, and ethics exam [14]. It has also been studied for

Korrektur mit KI

- KI darf im Sinne der Bewertungskonsistenz nicht als „ein Korrektor“ verstanden werden, sondern ist bei jeder neuen Korrektur ein neuer Korrektor
- KI-basierte Korrektur leidet bei der Gabe von Musterlösungen!
- KI-gestützte Korrektur profitiert von der Bereitstellung von fachbezogenen Wissensdatenbanken (z.B. Retrieval Augmented Generation)



Citation: Morjaria, L.; Burns, L.; Bracken, K.; Levinson, A.J.; Ngo, Q.N.; Lee, M.; Sibbald, M. Examining the Efficacy of ChatGPT in Marking Short-Answer Assessments in an Undergraduate Medical Program. *Int. Med. Educ.* **2024**, *3*, 32–43. <https://doi.org/10.3390/ime3010004>

Academic Editor: Hideki Kasuya

Received: 28 November 2023

Revised: 12 January 2024

Accepted: 17 January 2024

Published: 19 January 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

ChatGPT

chat.openai.com/c/d9bae548-8fee-485f-a7...

ChatGPT 4

Task a (2 Points Awarded)

- **Your Response:** You correctly identified the issue of small sample sizes and their implications for statistical tests like the 2-sample t-test. This is a significant point and aligns well with the proposed solution.
- **Feedback:** You focused extensively on the technical aspects of sample size, which is commendable. However, you could have enhanced your answer by addressing additional issues like the lack of a control group, non-randomized assignment of participants, or the convenience sampling problem. Addressing these would have provided a more comprehensive critique of the study design.

Task b (2 Points Awarded)

- **Your Response:** You identified three key issues: Testing, Selection, and Reverse reasoning.
 - **Testing:** Your observation about the repeated use of the questionnaire is a valid point and aligns with the proposed solution under the 'Testing' threat.
 - **Selection:** You noted the non-representative nature of the sample, which is an essential aspect of the 'Selection' threat in the THISMESS principle.
 - **Reverse reasoning:** This is an interesting point but doesn't directly correspond to the standard threats to validity listed in the proposed solution. It seems to be a unique consideration regarding the potential biases due to location differences.
- **Feedback:** You addressed two of the THISMESS threats effectively. However, mentioning other aspects like Histogram, instrumentation, or Maturation would have made your response more comprehensive. Additionally, the concept of "Reverse

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

Efficient
Feedback



- Generative KI kann effektiv reflexive und selbstregulatorische Prozesse begleiten
- Studierende reagieren positiv auf KI-generiertes Feedback und Coaching
- Sie sind vielfach nicht in der Lage, die KI von einem menschlichen Coach zu unterscheiden

How ChatGPT Can Transform Autodidactic Experiences and Open Education?

Dr. Mehmet Firat
 Department of Distance Education, Open Education Faculty, Anadolu University,
mfirat@anadolu.edu.tr
 ORCID: <https://orcid.org/0000-0001-8707-5918>

Abstract

Chat GPT, powered by the advanced GPT-3.5, has attracted over 1 million users only in 5 days. Facebook, News, and YouTube have been closely resembles human language. Officially, ChatGPT is a reliable, creative, and nuanced. Backed by ongoing conversations, understand and respond to user requests, and improve the interactive assistance. This makes ChatGPT a practical and adaptable. By providing personalized learning experiences, ChatGPT has the potential to increase motivation and engagement.

Keywords: ChatGPT, GPT-3, GPT-4, OpenAI, Personalized Learning

Introduction

Digital world requires a certain kind of "autodidactic" motivation to learn, the ability to find and effectively use resources, and the ownership of one's own learning process. Candidates with these qualities as they are better equipped to navigate the digital world (Manning et al., 2022). The teacher or instructor (Candy, 1991). Generative AI (GPT-3.5) has the potential to increase motivation and engagement.

Article

Promoting Self-Regulation Progress and Knowledge Construction in Blended Learning via ChatGPT-Based Learning Aid

Ting-Ting Wu¹, Hsin-Yu Lee², Pin-Hui Li², Chia-Nan Huang³, and Yueh-Min Huang²

Journal of Educational Computing Research
 2024, Vol. 61(8) 3-31
 © The Author(s) 2023
 Article reuse guidelines:
sagepub.com/journalsPermissions
 DOI: 10.1177/0256531231191125
journals.sagepub.com/home/jecr


Exploring the Role of ChatGPT as a Peer Coach for Developing Research Proposals: Feedback Quality, Prompts, and Student Reflection

Johannes Cronjé
 Faculty of Informatics and Design, Cape Peninsula University of Technology, South Africa
cronje@cput.ac.za

Abstract: This paper describes the results of an archival desk-study that analyzed worksheets produced by four students using ChatGPT as a coach. ChatGPT is a Generative Pre-Trained Large Language model that can write comprehensively in various languages and styles. It was discovered that it could pass university level physics exams and perform at the level of a third-year medical student. Fourth-year students in Information Technology are required to produce a 3000-to-5000-word research report as part of the requirements for graduation, and their first meeting of the year consists of a workshop following the GROW (Goal, Reality, Opportunities, Will) coaching process. Logistical considerations in this predominantly e-learning based course prevented such teamwork. The two-month-old ChatGPT, however, presented an opportunity to determine the extent to which a chatbot could be used as a peer coach. This paper reports on the outcome of an exercise that was given to students as part of their introduction to their research methodology course. It was found that well-designed prompts were essential and that students should be encouraged to reflect on their interaction with artificial intelligence. Three clear issues emerged from the study: the quality of feedback given by the chatbot, the value of the prompt, and the importance of student reflection. The chatbot, ChatGPT, displays the traditional computer characteristic of garbage in, garbage out and gives the feedback it is programmed to give. The dialogue shows how a student can build up mutual rapport with the chatbot when they adapt their responses to the feedback provided. The critical reflection in shows that it is still the user who should oversee the process and evaluate the feedback. It is recommended that novice research students be given some training in reacting to feedback, developing useful prompts, and engaging in meaningful reflection. Future research would include developing a reflective coach.

Keywords: Artificial Intelligence, ChatGPT, Research methods, GROW coaching

1. Introduction and Problem Statement

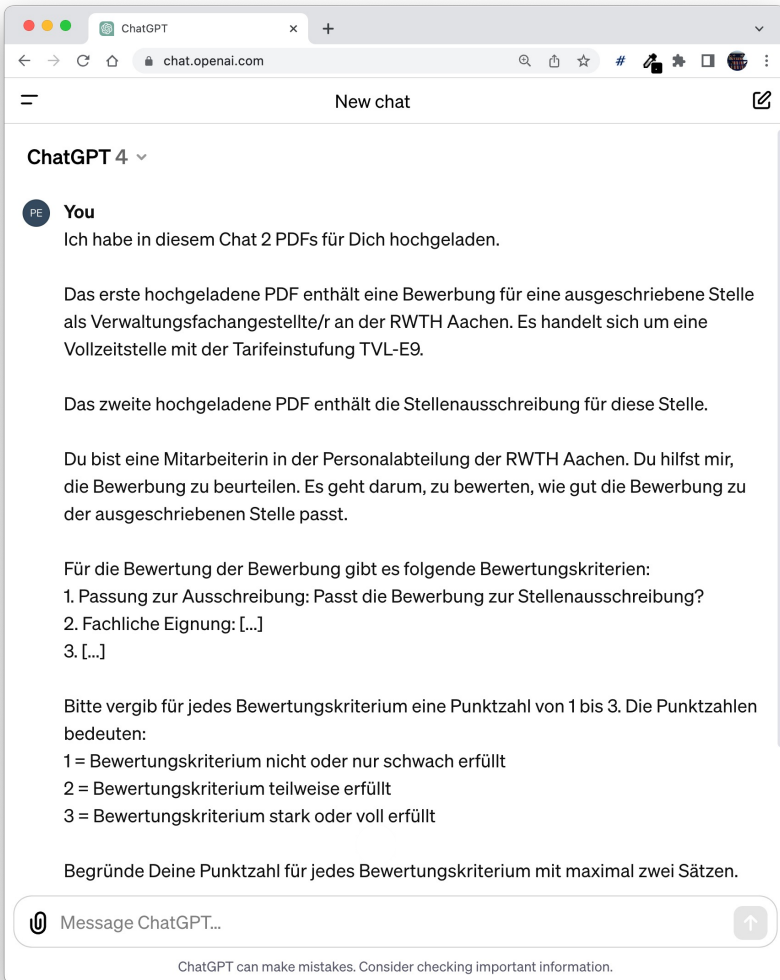
ChatGPT is a Generative Pre-Trained Large Language model that can write comprehensively in various languages and styles. With its launch on 30 November 2022 it created a general flurry in the academic world, particularly when it was discovered that it could pass university level physics exams (Kortemeyer, 2023) and was shown to perform at the level of a third-year medical student (Gilson et al., n.d.). These revelations have caused concern with university lecturers who fear large-scale cheating. Others have recognized that new strategies need to be developed in working with artificial intelligence (Cotton, Cotton and Shipway, 2023). This paper aims to contribute to the unfolding stories around the creative use of large language models, as it describes the results of an archival desk-study that analyzed worksheets produced by four students using ChatGPT as a coach. It was found that well-designed prompts were essential and that students should be encouraged to reflect on their interaction with the artificial intelligence.

Fourth-year students in Information Technology are required to produce a 3000-to-5000-word research report as a part of the requirements for graduation. This is their first encounter of the research process and it they often do not know where to start. To help them find focus in their research their first meeting of the year consists of a workshop following the GROW (Goal, Reality, Opportunities, Will) coaching process. Logistical considerations in this predominantly e-learning based course prevented such teamwork. The two-month-old ChatGPT, however, presented an opportunity to determine the extent to which a chatbot could be used as a peer coach. This paper reports on the outcome of an exercise that was given to students as part of their introduction to their research methodology course. It was found that well-designed prompts were essential and that students should be encouraged to reflect on their interaction with artificial intelligence.

Apple's Shortcuts, and LINE to create the ChatGPT-Aid (CILA), aiming to enhance self-regulation progress and in blended learning. CILA offers real-time, convergent inquiries, as opposed to traditional Google search engine that performance phase of self-regulation progress. The tool provides questions and answers, aiding self-reflection in self-regulation progress using motivation, engagement, and knowledge construction, offering benefits over divergent learning contexts with respect to motivation, intrinsic engagement. This research highlights the potential of incorp- orate models like ChatGPT in educational settings to support

Department of Educational Technology, National Yunlin University of Science and Technology, Taiwan
 Department of Educational Technology, National Cheng-Kung University, Tainan, Taiwan
 Department of Educational Technology, National Cheng-Kung University, Tainan, Taiwan
 Department of Educational Technology, National Cheng-Kung University, Tainan, Taiwan

Department of Educational Technology, National Cheng-Kung University, Tainan, Taiwan
 Department of Educational Technology, National Cheng-Kung University, Tainan, Taiwan
 Department of Educational Technology, National Cheng-Kung University, Tainan, Taiwan



Bewertung mit KI

- Automatisierte Entscheidungen im Einzelfall mit Nachteilswirkung für die Betroffenen sind unzulässig (Art. 22 DSGVO).
- Die Letztentscheidungskompetenz muss bei einer natürlichen Person liegen.
- Personenbezogene Daten dürfen nur nach freiwilliger Zustimmung einkopiert werden (Art. 5 Abs. 1 lit. a) DSGVO; Art. 2 Abs. 1 GG i.V.m. Art. 1 GG) → Anonymisierung!

Weitere Zwecke in Studium und Lehre.



Source: <https://unsplash.com/de/photos/koR6QVoBfpY>



KI-Campus

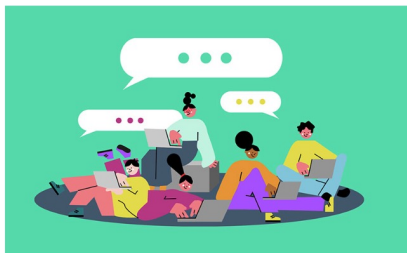
Hier findest du eine Übersicht Deiner eingeschriebenen Kurse im KI-Campus-Moodle. Eine Übersicht über alle Lernangebote des KI-Campus findest du auf unserer Hauptseite.

Here you can find an overview of your enrolled courses in the AI-Campus-Moodle. You can find an overview of all courses offered on the AI-Campus on our main page.

[Zurück zu allen Lernangeboten](#)

Meine Kurse

Prompt-Labor: Generative KI in der Hochschullehre → 🔗



Praktische Erfahrungen mit generativer KI sammeln im Prompt-Labor

Dieser Kurs stellt vorbereitende und weiterführende Inhalte für das „Prompt-Labor Generative KI in der Hochschullehre“ zur Verfügung – einem community-orientierten Experimentierraum für Hochschullehrende, der gemeinsam vom KI-Campus und dem Hochschulforum Digitalisierung (HFD) angeboten wird. Kern sind drei Live-Sessions mit praktischen Übungen. Vorbereitet, begleitet und nachbereitet werden sie in diesem Moodle-Kurs. Das Prompt-Labor ermöglicht es, praktische Erfahrungen beim Verfassen von Prompts (Anweisungen für generative KI-Tools) zu sammeln und gemeinsam Anwendungsszenarien im Kontext der Hochschullehre zu diskutieren.

Angeboten von: Stefan Göllner

Angeboten von: Lavinia Ionica

Angeboten von: Anika Limburg

Angeboten von: Malte Persike

Angeboten von: Natalie Sontopski

ChatGPT

chat.openai.com

ChatGPT

Die Einführung des Artikels

10 Stichpunkten wie folgt zu

1. Menschen neigen dazu, ihr
2. Die Unfähigkeit in bestimm
3. Durch Studien wurde festg
4. Diese Fehleinschätzungen
5. Die Verbesserung der Fähig
6. Unfähigkeit in einem Berei
7. Die Autoren untersuchten c
8. In vier Studien wurden die l
9. Die Ergebnisse zeigten, da
10. Das Anheben der Kompet

Suggest fun activities
to do indoors with my high-energy

Show me a code snippet
of a website's sticky header

Kruger_1999_UnskilledAn
PDF

Fasse die Introduction auf D

ChatGPT

chat.openai.com

ChatGPT

Die Einführung des Artikels

10 Stichpunkten wie folgt zu

1. Menschen neigen dazu, ihr
2. Die Unfähigkeit in bestimm
3. Durch Studien wurde festg
4. Diese Fehleinschätzungen
5. Die Verbesserung der Fähig
6. Unfähigkeit in einem Berei
7. Die Autoren untersuchten c
8. In vier Studien wurden die l
9. Die Ergebnisse zeigten, da
10. Das Anheben der Kompet

Message ChatGPT...

ChatGPT

chat.openai.com

You

Stelle den Methodenteil als

ChatGPT

Um den Methodenteil des A

Studie	Teilnehmer
Studie 1: Humor	65 Cornell University Undergrad
Studie 2: Logisches Denken	45 Cornell University Undergrad
Studie 3 (Phase 1): Grammatik	84 Cornell University Undergrad
Studie 3 (Phase 2): "It	Teilnehmer Studie 3 (n

Message ChatGPT...

ChatGPT

chat.openai.com

You

Erkläre Figure 1.

ChatGPT

Abbildung 1 in der Studie "U

Zusammengefasst verdeutl

Message ChatGPT...

ChatGPT 4

0 | Bottom Quartile | 2nd Quartile | 3rd Quartile | Top Quartile

Um was für einen Plot-Typ handelt es sich bei der Grafik und was zeigt diese Grafik?

ChatGPT

Die Grafik zeigt ein Liniendiagramm, das zwei verschiedene Datensätze vergleicht: die wahrgenommene Fähigkeit („Perceived Ability“) und die tatsächlichen Testergebnisse („Actual Test Score“). Die x-Achse ist in vier Quartile unterteilt: das unterste, das zweite, das dritte und das oberste Quartil. Die y-Achse zeigt die Prozentwerte von 0 bis 100.

Die Linie mit den gefüllten Quadraten repräsentiert die wahrgenommene Fähigkeit, während die Linie mit den offenen Kreisen die tatsächlichen Testergebnisse darstellt. Was auffällt, ist, dass die wahrgenommene Fähigkeit durchgehend höher ist als die tatsächlichen Testergebnisse für jedes Quartil.

Ein solches Diagramm könnte verwendet werden, um auf das Phänomen des Dunning-Kruger-Effekts hinzuweisen, eine kognitive Verzerrung, bei der Personen mit niedriger Kompetenz ihre Fähigkeiten tendenziell überschätzen, während kompetente Personen ihre Fähigkeiten eher unterschätzen. In dieser speziellen Grafik scheint es, dass Personen in den unteren Quartilen ihre Fähigkeiten im Vergleich zu ihren tatsächlichen Testergebnissen signifikant überschätzen. Die Personen im obersten Quartil schätzen ihre Fähigkeiten auch höher ein als ihre Testergebnisse, aber der Unterschied ist nicht so groß wie in den unteren Quartilen.

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

ChatGPT

chat.openai.com/c/2ab43fd7-f16f-44e9...

ChatGPT 4

You

Schreibe eine freundliche und wertschätzende Mail an Studierende der Lehrveranstaltung "Statistik in den Sozialwissenschaften" in Deutsch und Englisch. Separator: --- English Version ---

Inhalt:

- Veranstaltung am 03.12.2023 findet online statt
- Zoom-Link findet sich im Moodle-Lernraum. Link zum Lernraum: <https://moodle.rwth-aachen.de/course/view.php?id=24592>
- zur Vorbereitung Videos für die Lerneinheit 5 anschauen
- Quizaufgaben bearbeiten

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

ChatGPT

chat.openai.com/c/2ab43fd7-f16f-44e9...

ChatGPT 4

English Version ---

Dear students of the "Statistics in Social Sciences" course,

I hope you are all doing well and are finding your way through the content of our course. I would like to inform you that our upcoming session on December 3, 2023, will take place online. Access to the session will be through the Zoom link, which can be found in the Moodle learning space. Here is the direct link to the learning space: <https://moodle.rwth-aachen.de/course/view.php?id=24592>.

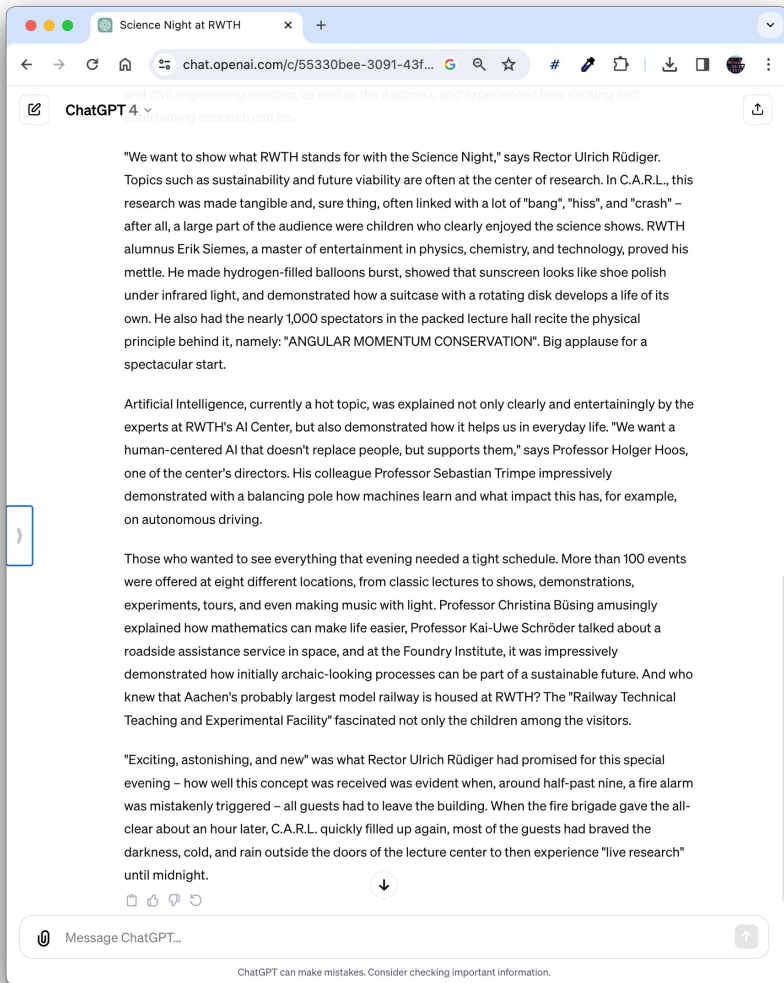
To optimally prepare for the session, I recommend that you watch the videos for learning unit 5. They are an excellent resource for understanding the topic and getting familiar with the content. Additionally, it would be very helpful if you could complete the quiz tasks in advance. This will not only deepen your understanding of the topic but also actively involve you in the learning process and prepare you for the discussion during the session.

I am looking forward to seeing all of you online and diving together into the exciting topics of statistics in social sciences. Should you have any questions or uncertainties, please do not hesitate to contact me.

Kind regards

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.



**Leistung(sumfang)
der Übersetzung mit
GPT-4 ist mindestens
gleichwertig mit
spezialisierten Tools
wie DeepL**

Andere Tools



Die #1 KI Suche by Advanced Innovation KI Tools: 9253

Suchen Sie mit z.B. 'YouTube' oder 'SEO', um nützliche Tools für Ihre Bedürfnisse zu finden. X

Filter zurücksetzen

- | | | | | | |
|--|--|---|---|--|--|
| <input type="checkbox"/> 3D | <input type="checkbox"/> Assistent | <input type="checkbox"/> Audio to Text | <input type="checkbox"/> Automation | <input type="checkbox"/> Avatar | <input type="checkbox"/> Bildbearbeitung |
| <input type="checkbox"/> Bildskalierung | <input type="checkbox"/> Bildung | <input type="checkbox"/> Business Assistent | <input type="checkbox"/> Chat-App | <input type="checkbox"/> Data | <input type="checkbox"/> Entwickler-Tool |
| <input type="checkbox"/> Finanzen | <input type="checkbox"/> Forschung | <input type="checkbox"/> Fun | <input type="checkbox"/> Games | <input type="checkbox"/> Generative Art | <input type="checkbox"/> Generative Audio |
| <input type="checkbox"/> Generative Code | <input type="checkbox"/> Generative Image | <input type="checkbox"/> Generative Text | <input type="checkbox"/> Generative Video | <input type="checkbox"/> Health & Wellness | <input type="checkbox"/> Image to Text |
| <input type="checkbox"/> KI-Erkennung | <input type="checkbox"/> Marketing | <input type="checkbox"/> Marktplatz | <input type="checkbox"/> Modelle | <input type="checkbox"/> Musik | <input type="checkbox"/> Podcast |
| <input type="checkbox"/> Produktivität | <input type="checkbox"/> Programmierung | <input type="checkbox"/> Prompt-Engineering | <input type="checkbox"/> Recherche | <input type="checkbox"/> SEO | <input type="checkbox"/> Security |
| <input type="checkbox"/> Social Media | <input type="checkbox"/> Speech to Text | <input type="checkbox"/> Sprach-Synthese | <input type="checkbox"/> Sprache | <input type="checkbox"/> Stimm-Modulation | <input type="checkbox"/> Suchmaschine |
| <input type="checkbox"/> Support | <input type="checkbox"/> Tabellenkalkulation | <input type="checkbox"/> Text to App | <input type="checkbox"/> Text to Audio | <input type="checkbox"/> Text to Image | <input type="checkbox"/> Text to Text |
| <input type="checkbox"/> Text to Video | <input type="checkbox"/> Text-Erstellung | <input type="checkbox"/> Video to Image | <input type="checkbox"/> Video to Sprache | <input type="checkbox"/> Video to Text | <input type="checkbox"/> Video-Bearbeitung |
| <input type="checkbox"/> Weiterbildung | <input type="checkbox"/> Zusammenfassung | <input type="checkbox"/> Übersetzung | | | |

SYNTHESIS

Find themes and concepts across all the papers

What are all of the effects of this drug? What are all of the datasets that have been used? Get a list of the thing you're looking for, synthesized from many papers.

Discover concepts across papers

Concept	Source
<input type="checkbox"/> Wake-promoting effect Caffeine's ability to increase alertness and reduce drowsiness by inhibiting adenosine receptors.	"Caffeine increases motor behaviors and has a wake-promoting effect through its inhibition of adenosine receptors.", "Among stimulants, caffeine is the most prevalent, and there has been some research on its neuropsychiatric effects." Kiselev 2015 "Caffeine can enhance mood, promote wakefulness and may improve athletic performance, but it is also implicated in feelings of anxiety, hyperactivity, nervousness and sleep disturbance.", "An individual's response to caffeine is dependent on their genetic make-up." Emmajane Down 2021
<input type="checkbox"/> Increased force of muscle contraction at lower frequencies of stimulation A result of caffeine's cellular mechanisms of action	"As a result of these 2 cellular mechanisms of action, caffeine causes increased lipolysis, a facilitation of central nervous system transmission, a reduction in plasma potassium during exercise, an increased force of muscle contraction at lower frequencies of stimulation, and a sparing of muscle glycogen (partially or wholly due to an increase in free fatty acid oxidation)." Tarnopolsky 1994
<input type="checkbox"/> Impairment of athletic training and performance Reduction in physical performance and ability to train effectively caused by muscle tightness, muscle cramping, and possible dehydration resulting from excessive caffeine consumption	"Excessive caffeine could impair athletic training and performance by causing muscle tightness, muscle cramping, and possibly dehydration. (2-5) How does caffeine even work?" "Side effects of excessive consumption can include sleep deprivation, nausea, cramping, anxiety, fatigue, and headaches." Kluger 2004

Discover concepts across papers

Concept	Source
<input type="checkbox"/> Wake-promoting effect Caffeine's ability to increase alertness and reduce drowsiness by inhibiting adenosine receptors.	"Caffeine increases motor behaviors and has a wake-promoting effect through its inhibition of adenosine receptors.", "Among stimulants, caffeine is the most prevalent, and there has been some research on its neuropsychiatric effects." Kiselev 2015
<input type="checkbox"/> Increased force of muscle contraction at lower frequencies of stimulation A result of caffeine's cellular mechanisms of action	
<input type="checkbox"/> Impairment of athletic training and performance Reduction in physical performance and ability to train effectively caused by muscle tightness, muscle cramping, and possible dehydration resulting from excessive caffeine consumption	"Excessive caffeine could impair athletic training and performance by causing muscle tightness, muscle cramping, and possibly dehydration. (2-5) How does caffeine even work?" "Side effects of excessive consumption can include sleep deprivation, nausea, cramping, anxiety, fatigue, and headaches." Kluger 2004

SOURCE QUOTES 1 OF 2

Caffeine is responsible for the increased nervous system arousal as well as for the direct peripheral contractile effect on the striated muscle. Caffeine increases motor behaviors and has a wake-promoting effect through its inhibition of adenosine receptors., "Among stimulants, caffeine is the most prevalent, and there has been some research on its neuropsychiatric effects. It clearly enhances alertness and performance in studies with explicit sleep deprivation, restriction, or circadian sleep schedule reversals. But, under conditions of habitual sleep the evidence indicates that



beta

Does ChatGPT lead to deskilling of students?



Sign up

Sign In



Synthesize



Copilot

Filter

Save search



Share

Summary beta

Consensus Meter beta

Not enough relevant results. Try asking a well-researched question in the format 'Does x cause y?'

e.g. Does beta alanine improve exercise performance?

Export csv

ChatGPT in the higher education environment: perspectives from the theory of high order thinking skills.

Relying too much on ChatGPT can lead to a decrease in higher-order thinking skills.

Journal of public health | F. W. Putra et al. | 4 citations | 2023



Study Snapshot

Save

Cite

Share

More results i

ChatGPT for Education and Research: Opportunities, Threats, and Strategies


ChatGPT offers opportunities for personalized feedback, increased accessibility, interactive




LIBRARY

 My Libraries

HELP

 Help centre Support

MORE

 Article Summarizer Browser ExtensionsScholarcy highlights ^

- [Audience Response Systems \(ARS\)](#) have received increasing acceptance among educators who are using technologies to enhance student involvement and active engagement in the classroom ([Duncan, 2005](#); Fies & Marshall, 2006)
- Further analysis revealed that knowledge domain, [class size](#), and the use of clicker questions, are among factors that significantly moderated the summary effect sizes observed among the studies in the [meta-analysis](#)
- We developed our criteria to determine studies to include for coding and subsequent [meta-analysis](#) based on a preliminary review of the literature on the use clicker-based technologies in classrooms
- Many view clicker-based technologies in the classrooms as instructional aid to facilitate [student engagement](#) in large classrooms ([Mayer et al, 2009](#)), but observations from these analyses suggest that such benefits dwindles as [class size](#) increases
- Our [meta-analysis](#) indicates that clicker-based technologies might produce small to medium effects on different cognitive and non-cognitive learning outcomes in classrooms where they are used, such effects were almost non-existent on recall or the retention materials among studies in our analyses
- Our findings showed that clicker effects were more pronounced on non-cognitive learning outcomes in Funnel Plot of [Standard Error](#) by Hedges' g the studies included in our [meta-analysis](#)

Scholarcy summary ▾

Sign Up

Log In

Assistant by scite - Your AI-P x +

scite.ai/assistant?utm_source=google&utm_medium=cpc&utm_campaign=brand&utm_term=scite&gclid=CjwKCAiA-P-rBhBEEiwAQEXhH_5zjkSVjVu86QTFqV... Update abschließen

assistant by scite Beta Install extension! Product Discover Pricing Blog Sign in Sign Up

I need help with this paper: <http://dx.doi.org/10.1016/j.compedu.2015.11.013>

Regenerate response

The use of audience response systems (ARS), also known as clicker-based technologies, has been a subject of interest in educational research. conducted a meta-analysis to investigate the effects of audience response systems on cognition and affect (Hunsu et al., 2016). The study provides valuable insights into the impact of ARS on student learning outcomes and emotional engagement. The findings suggest that the use of ARS is associated with improved cognitive performance and enhanced affective responses among students. This indicates that the integration of clicker-based technologies in educational settings can positively influence both the cognitive and emotional aspects of learning. Therefore, educators and instructional designers can consider incorporating audience response systems as a pedagogical tool to enhance student learning experiences.

^ View searches run to ground this response

^ View publications consulted

[1] (2016). A meta-analysis of the effects of audience response systems (clicker-based technologies) on cognition and affect. computers & education, 94, 102-119. <https://doi.org/10.1016/j.compedu.2015.11.013>

How dependable is this paper?

0 free prompt(s) left. [Start your free trial](#) to get unlimited prompts.

The paper "A meta-analysis of the effects of audience response systems (clicker-based technologies) on cognition and affect" by is a dependable source for understanding the impact of audience response systems (ARS) on student learning outcomes and emotional engagement. The study provides valuable insights into the effects of ARS on cognition and affect, indicating that the use of clicker-based technologies is associated with improved cognitive performance and enhanced affective responses among students. This suggests that integrating audience response systems in educational settings can positively influence both the cognitive and emotional aspects of learning. The meta-analysis conducted by provides a comprehensive and rigorous examination of the effects of ARS, making it a reliable source for educators and instructional designers to consider when exploring the p

What do you need help with?

^ View searches run to ground this response

References

Reference #1

"...A meta-analysis of the effects of audience response systems (clicker-based technologies) on cognition and affect..."

^ See full context

Section: Abstract

A meta-analysis of the effects of audience response systems (clicker-based technologies) on cognition and affect

[Nathaniel J. Hunsu](#)¹, [Olusola Adesope](#)², [Dan Bayly](#)³ 2016

[Computers & Education](#)

190 | 9 | 178 | 2

[View full text](#) [Add to dashboard](#) [Cite](#)

Research Rabbit
researchrabbitapp.com/home

Filter Custom

Abstracts Comments

Select None Select All

Digitale Hochschulverwaltung

Burlacu ... Sárbu 2021

Digital Public Administration for Sustainable Development

European Journal of Sustainable Development

Dinkelaker ... Wolff 2020

Die digital unterstützte Präsenzuniversität

Lemcke ... Lucke 2021

Akzeptanz und Effekte der Digitalisierung in der Hochschulverwaltung

Praxis Der Wirtschaftsinformatik

Prelims

Management and Administration of Higher Education Institutions at Times of Change

+ Add Papers

4 Selected Papers

Remove from: Digitale Hochschulverwaltung

Add to Other Collection

EXPLORE PAPERS

Similar Work 115

Earlier Work

Later Work

EXPLORE PEOPLE

These Authors 13

Suggested Authors 13

EXPLORE OTHER CONTENT

Linked Content

EXPORT PAPERS

BibTeX RIS CSV

PUBLIC COLLECTION

SHAREABLE LINK Copy

COLLABORATORS Edit

EMAIL UPDATES

Similar Work

Filter Relevance

Abstracts Comments

Profiroiu ... Rădulescu 2020

Challenges of Sustainable Urban Development in the Context of Population Growth

European Journal of Sustainable Development

Radulescu ... Bran 2020

Entrepreneurial Education in the Context of the Imperative Development of Sustainable Business

European Journal of Sustainable Development

Sarbu ... Diaconu 2021

Sustainable Urban Development in the Context of Globalization and the Health Crisis Caused by the Covid-19 Pandemic

Năstase ... Cristescu 2020

Perspectives regarding the organizational culture within the Romanian textile industry

Industria Textila

Orzan ... Orzan 2020

The effects of online marketing on financial performance in the textile industry

Industria Textila

Mogos ... Troaca 2021

Climate Change and Health Protection in European Union

European Journal of Sustainable Development

Belostecnic ... Oancea-Negescu 2021

Teleworking—An Economic and Social

Connections

Click to Hide

Connections between your collection and 50 papers

Graph Type Network Timeline

Labels First Author Last Author

Zoom Out
Fit All
Zoom In

Settings

Help

Survey

Follow

Donate

Technical preview

Your AI pair programmer

```
fetch_pic.js  push_to_git.py  JS d3_scale.js  JS fetch_stock.js  JS material_ui.js

1  const fetchNASAPictureOfTheDay = () => {
2    return fetch('https://api.nasa.gov/planetary/apod?api_key=DEMO_KEY', {
3      method: 'GET',
4      headers: {
5        'Content-Type': 'application/json',
6      },
7    })
8    .then(response => response.json())
9    .then(json => {
10     return json;
11   });
12 }
```

 Copilot





Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duis dolore te feugait nulla facilisi. Lorem ipsum dolor sit amet, consetetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam. Quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duis dolore te feugait nulla facilisi. Nam liber tempor cum soluta nobis eleifend option congue nihil imperdiet doming id quod mazim placerat facer possim assum. Lorem ipsum dolor sit amet, consetetur adipiscing elit. **Jenseits von textgenerativer KI.** Sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, At accusam aliquyam diam diam dolore dolores duo eirmod eos erat, et nonummy sed tempor et invidunt justo labore Stet clita ea et gubergren, kasd magna no rebum. sanctus sea sed takimata ut vero voluptua. est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est lorem ipsudem. Bildquelle: <https://unsplash.com/de/fotos/lxlo92w-X7c>



modern hotel, editorial style photo, front view,
contemporary, The hotel pool area, Stone, Glass,
Wood, Luxurious Finish, Neutral, Hotel Brand, Natural
Light with Warm Tones, Seaside Resort, Beachfront,
Sunset, Relaxing, Modernism, Minimalist -ar 16:9



Colossyan 

What's new



4 New Avatars
Shoulder view
Image cropping
...and more!



ABBT Institute of
Biotechnology

RWTHAACHEN
UNIVERSITY



Öcher Streuselbrotchen

Prime Voice AI

The most realistic Text to Speech and Voice Cloning software. ElevenLabs brings the most compelling, rich and lifelike voices to creators and publishers seeking the ultimate tools for storytelling.

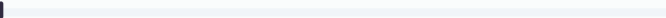
Click on a language to generate in a random text: English German Polish Spanish Italian French Portuguese

Hindi

Eleven lets you voice any length of text in top quality, all while automatically matching what is being said with how it's being said. The model works best on longer texts, so type in at least a few sentences.

— premade/Adam ▾

0 / 333

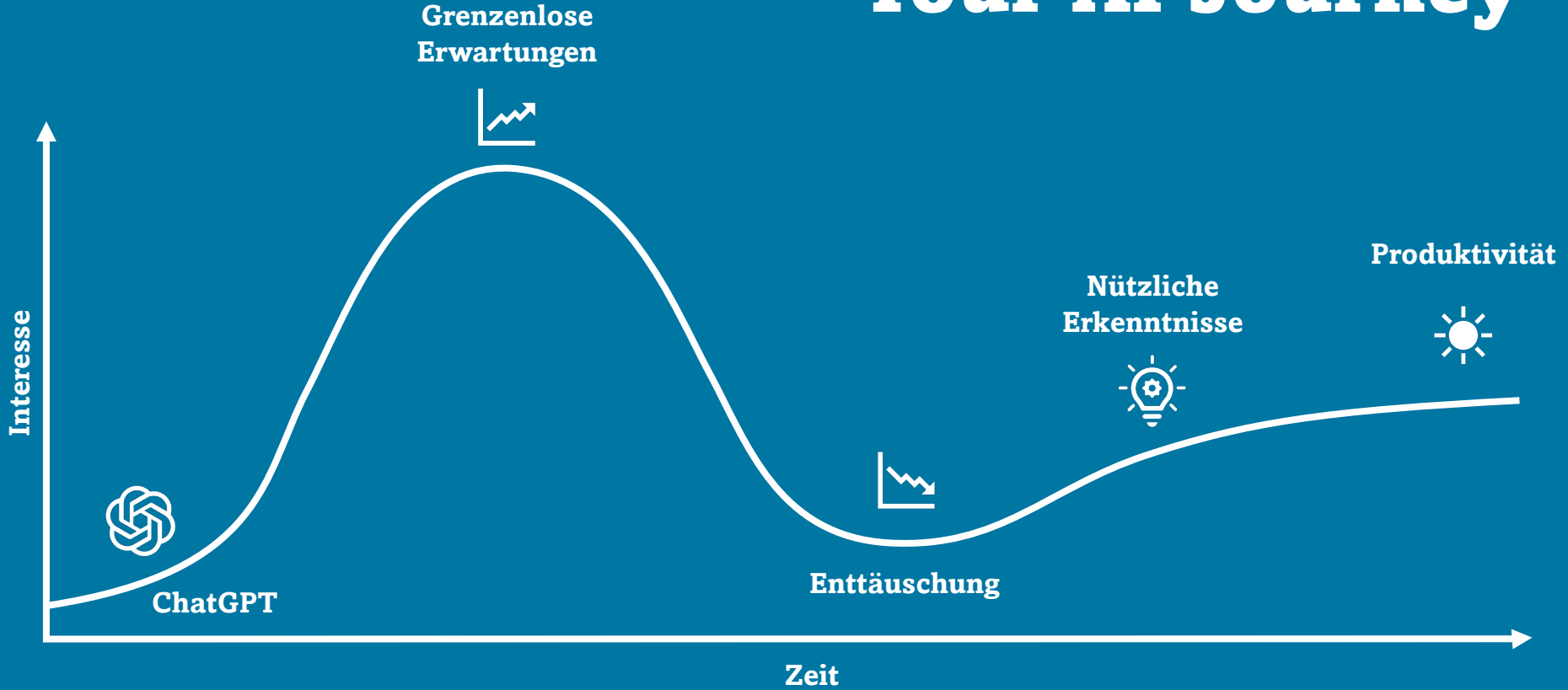


Get Started Free →

Grow Your Audience by Expanding into Audio

Generate top-quality spoken audio in any voice, style and language with the most advanced Text to Speech tool ever. Our AI model renders human intonation and inflections with unprecedented fidelity and it adjusts delivery based on context.

Your AI Journey



LET'S DO THIS

Informieren

Ausprobieren

Evaluieren

Partizipieren



Rechtsfragen

Weitere Rechtsgebiete

- Urheberrecht und Verwertungsrechte
- Persönlichkeitsrechte
- Datenschutzrecht
- Prüfungsrecht
- Arbeits- und Dienstrecht



REGELN, RECHTSFRAGEN, POLICIES

Prüfungsrecht

- Wie kann bei Studierenden Eigenständigkeit gewährleistet werden?
- Wie kann unzulässige Nutzung von KI während Prüfungen kontrolliert werden?
- Kann der unzulässige Einsatz von KI im Nachhinein nachgewiesen werden?
- Gibt es Regelungen zur Deklaration / Kennzeichnung in Prüfungsarbeiten?
- Darf KI zur Generierung von Prüfungsfragen oder -aufgaben eingesetzt werden?
- Dürfen Prüfungen mit KI-Systemen korrigiert werden?



REGELN, RECHTSFRAGEN, POLICIES

Urheberrecht

- Inwiefern berühren die Trainingsdaten von KI das Urheberrecht von Dritten?
- Wem gehören Urheberrecht und Verwertungsrechte an KI-generierten Medien?
- Kann eine KI Inhalte erzeugen, die urheberrechtlich geschütztes Material enthalten?
- Darf urheberrechtlich geschütztes Material in ein KI-System eingegeben werden?
- Darf ein KI-System dazu genutzt werden, Medien „im Stil von XY“ zu erzeugen?
- Welche Maßnahmen müssen getroffen werden, um die Nutzung von KI möglichst rechtssicher zu machen?



REGELN, RECHTSFRAGEN, POLICIES

Persönlichkeitsrecht

- Dürfen Bilder, Videos, Audiomaterial oder sensible Daten von Dritten in ein KI-System eingegeben werden?
- Darf ich Personenaufnahmen, Audiomaterial oder andere sensible Daten von Dritten mit einem KI-System imitieren?
- Könnte der Zugang zu KI-Systemen zu Ungleichheiten oder Diskriminierung auf Seiten der Studierenden führen?



REGELN, RECHTSFRAGEN, POLICIES

Datenschutzrecht

- Wie wird der Schutz meiner Login-Daten bei der Nutzung gewährleistet?
- Wie ist es um den Schutz der übersendeten Inhalte („Prompts“) bestellt?
- Wie sind datenschutzrechtliche Fragen bei KI-Systemen zu bewerten, die extern beschafft bzw. nicht durch die Hochschule bereitgestellt werden?
- Darf ich personenbezogene Daten anderer Personen mit KI-Systemen teilen?
- Können Prozesse der Mitbestimmung modifiziert werden, dass nicht jede Institution dieselben (zeitaufwändigen) Verfahren durchlaufen muss?



REGELN, RECHTSFRAGEN, POLICIES

Arbeits-, Dienst- und Haftungsrecht

- Welche Vorschriften existieren zur Nutzung von KI-Systemen im Arbeitsverhältnis?
- Darf ich KI-Systeme zur Erledigung meiner Dienstaufgaben verwenden?
- Darf ich KI-Systeme zur Entscheidungsfindung einsetzen?
- Wer haftet, wenn die Nutzung von KI-Erzeugnissen Schäden verursacht?