

Τεχνητή Νοημοσύνη Θεωρία - Μοντέλα - Εφαρμογές

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Μέρος Ι

Φυσική Νοημοσύνη

*"Individuals **differ** from one another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Although these individual differences can be substantial, they are **never entirely consistent**: a given person's intellectual performance will **vary** on different occasions, in different domains, as judged by different criteria. Concepts of "intelligence" are attempts to **clarify** and **organize** this complex set of phenomena."*

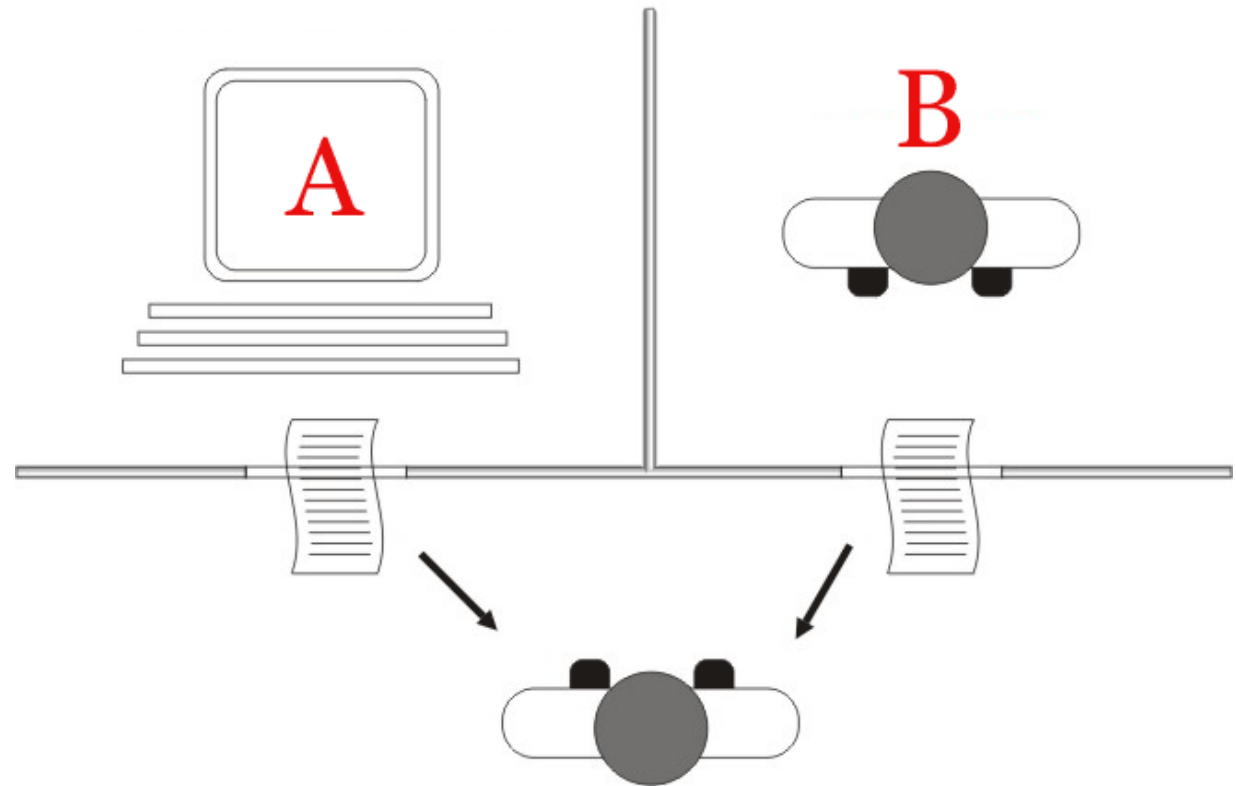
Neisser et al. (1996)

Τεχνητή Νοημοσύνη

*"Artificial intelligence is the science and engineering of making **intelligent machines**, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable"*

McCarthy (2007)

Turing Test



Voight-Kampff test



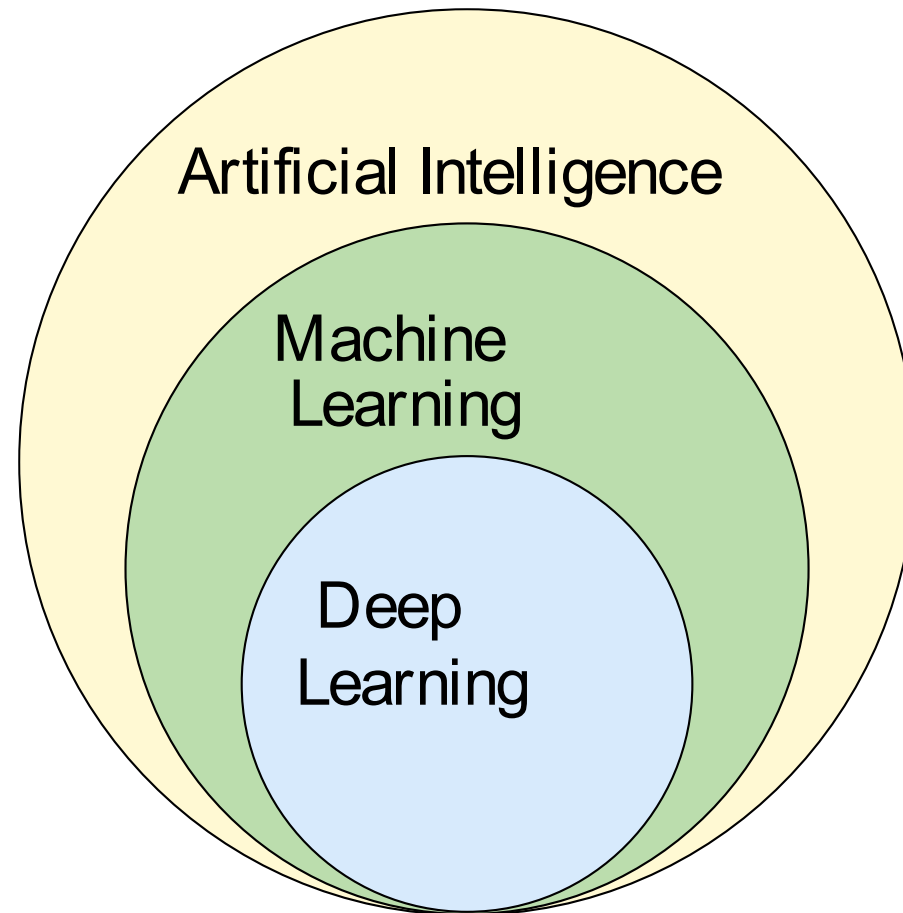
Are you a bot?

Verify you are human by completing the action below.

Verify you are human



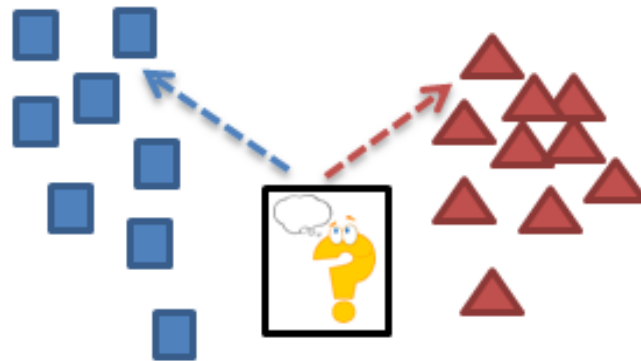
Πεδία Τεχνητής Νοημοσύνης



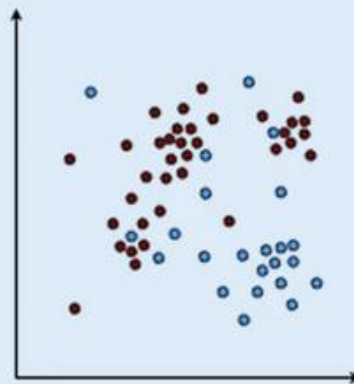
Μηχανική Μάθηση

- Κατηγορίες ΜΜ
 - Μάθηση με επίβλεψη (Supervised Learning)
 - Μάθηση χωρίς επίβλεψη (Unsupervised Learning)
 - Μάθηση με ενίσχυση (Reinforcement Learning)

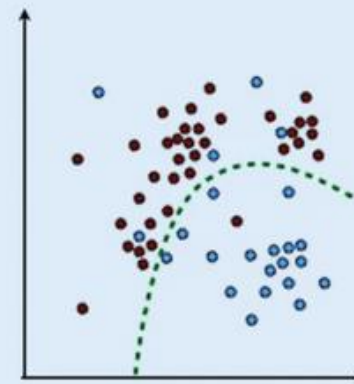
Μάθηση με Επίβλεψη --> Πρόβλεψη



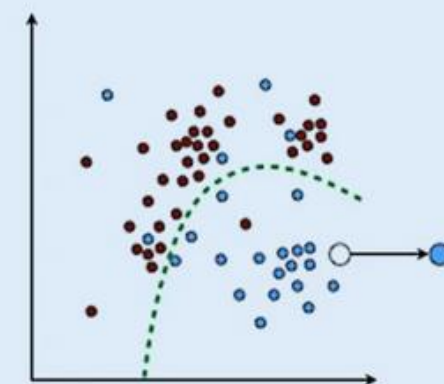
Supervised learning: each training example has a ground truth label. The model learns a decision boundary and replicates the labeling on new data.



Training data

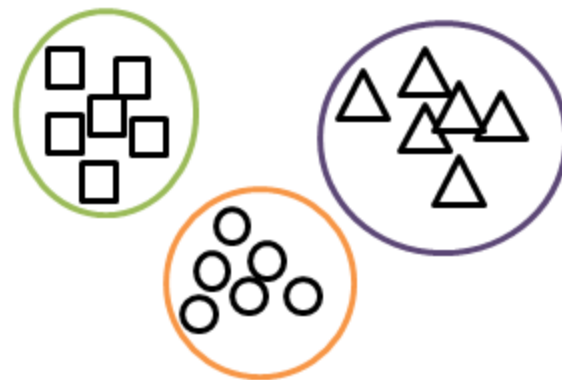


Resulting model

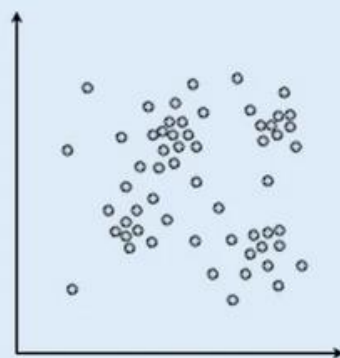


Applied to new input

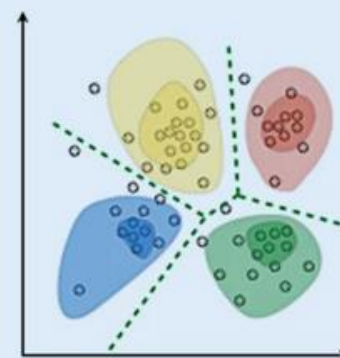
Μάθηση Χωρίς Επίβλεψη --> Αναπαράσταση



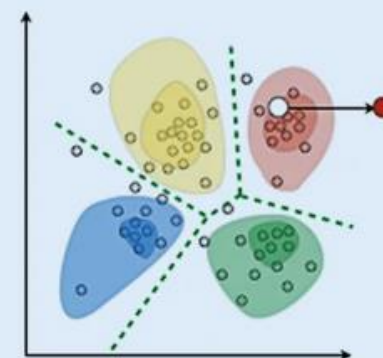
Unsupervised learning: training examples do not have ground truth labels. The model identifies structure such as clusters. New data can be assigned to clusters.



Training data

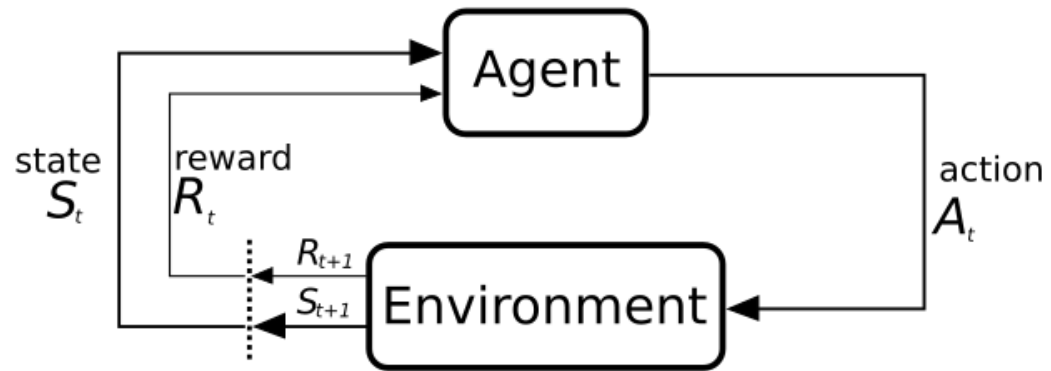


Resulting model



Applied to new input

Μάθηση με Ενίσχυση --> Επιβράβευση

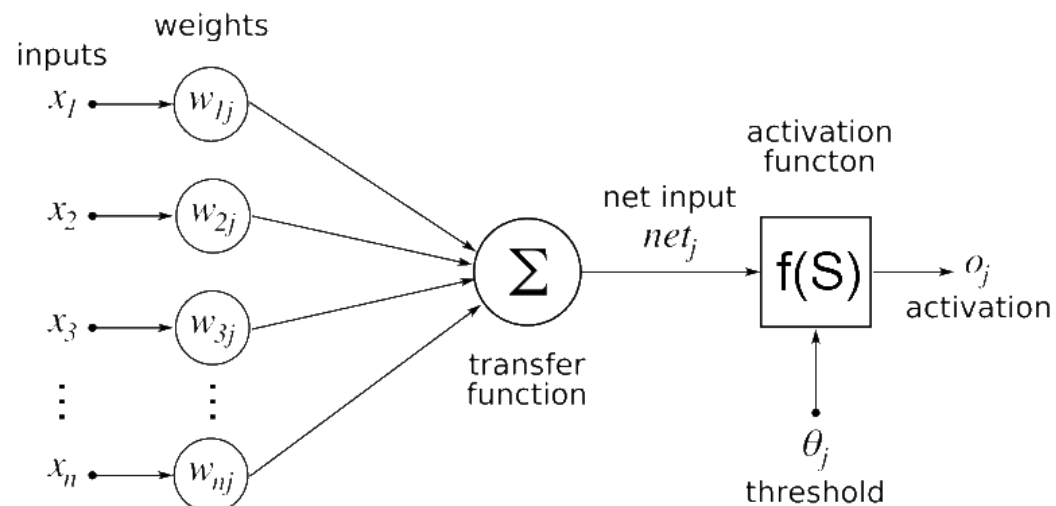
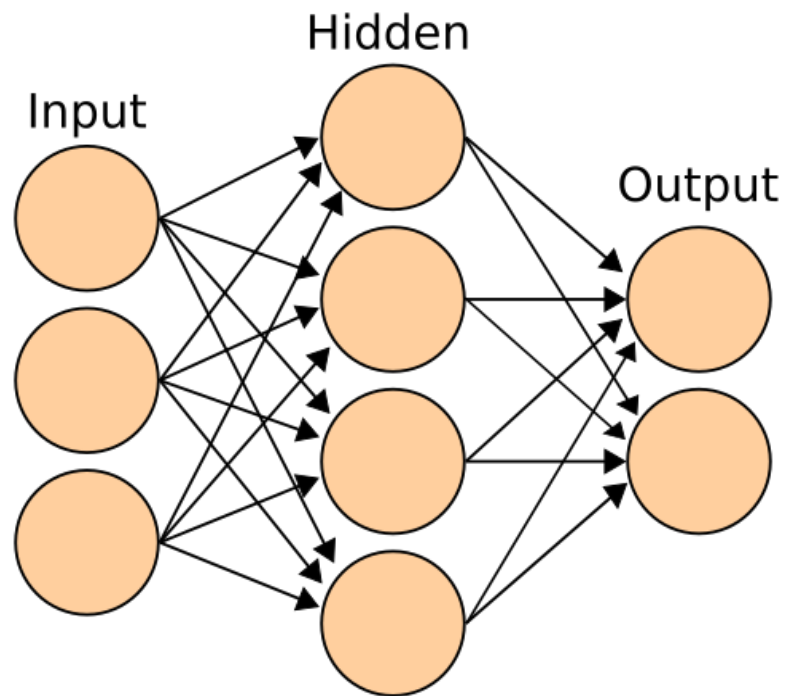


<https://www.youtube.com/watch?v=WXuK6gekU1Y>

Βαθιά Μάθηση

<https://playground.tensorflow.org>

- Τεχνητά Νευρωνικά Δίκτυα (ANN)



Foundational Models

- **Μεγάλα Γλωσσικά Μοντέλα** (Large Language Models)
 - Encoder models (π.χ. BERT)
 - Decoder models (π.χ. GPT4)
 - Encoder-Decoder models (T5)

Expert Systems and Statistical Models



1. Rules and Ontology based Systems
2. Statistical Models
3. N-Grams combined with Machine learning algorithms

The Deep Learning Revolution



1. Word2Vec, GLoVe, etc. word embeddings
2. Transfer Learning through pre-trained and fine-tuning
3. Attention Mechanism by Bahdanau et al.
4. Transformers by Vaswani et al.
5. BERT, GPT, and other models



1 1950s-1980s Syntactic and Grammar-based



1. Syntactic Structures by Noam Chomsky
2. ELIZA Chatbot
3. SHRDLU rule-based system

3 2000s-2010s Neural Models and Dense Representations

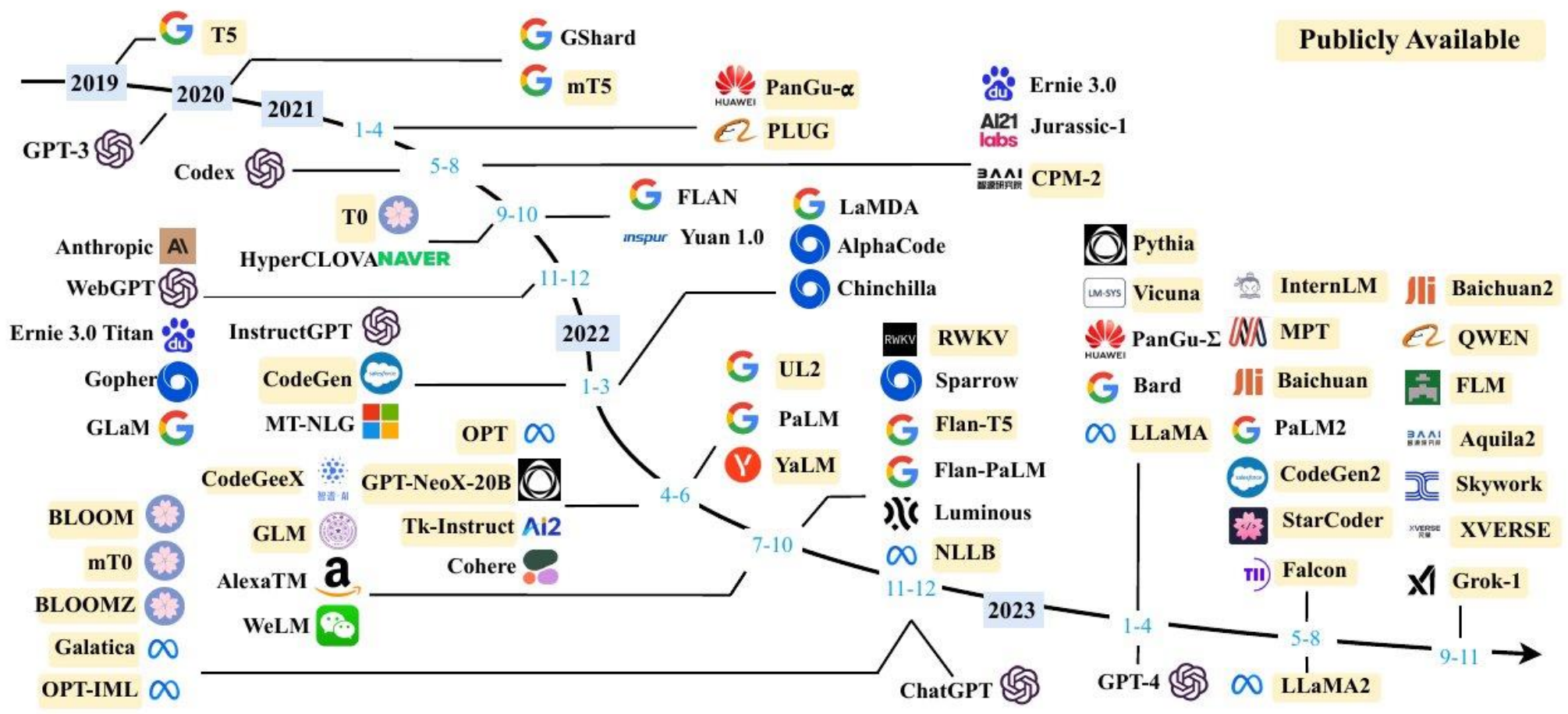


1. Bengio et al.'s Dense Vector Representation
2. Mikolov et al.'s language Models based on Recurrent Networks
3. Pre-Trained Word Embeddings

5 2020s-now Era of LLMs



1. OpenAI releases GPT-2, GPT-3.5 and GPT 4
2. RLHF for alignment towards human values such as safety, groundedness, etc.
3. Open source LLMs and frameworks



Foundational Models

- **Μοντέλα για άλλες τροπικότητες**
 - **Εικόνας** (π.χ. Dall-E, Stable Diffusion)
 - **Ήχου** (speech to text)(π.χ. Whisper, Wave2Vec)
 - **Μουσικής** (π.χ. Suno, MusicLM)
 - **Βίντεο** (π.χ. Sora, Veo)
 - **Κώδικα** (π.χ. GitHub Copilot, Codestral)
 - **Παρουσίασης** (π.χ. Gamma, Canva)

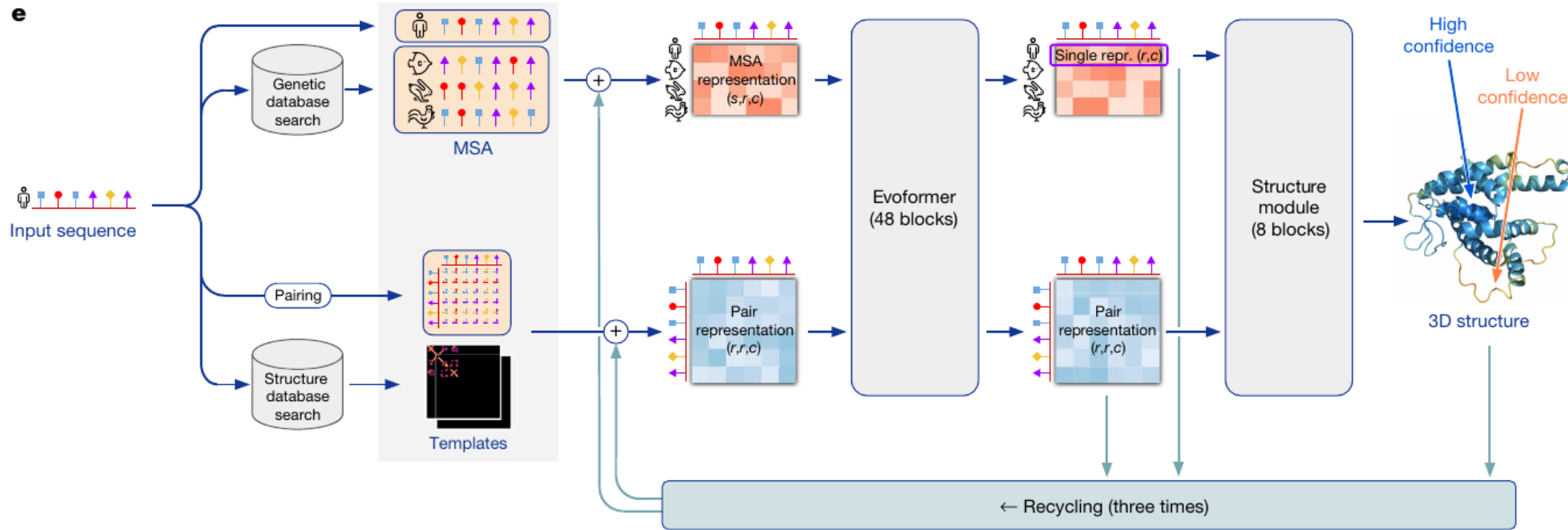
Δυνατότητες;

AlphaGo

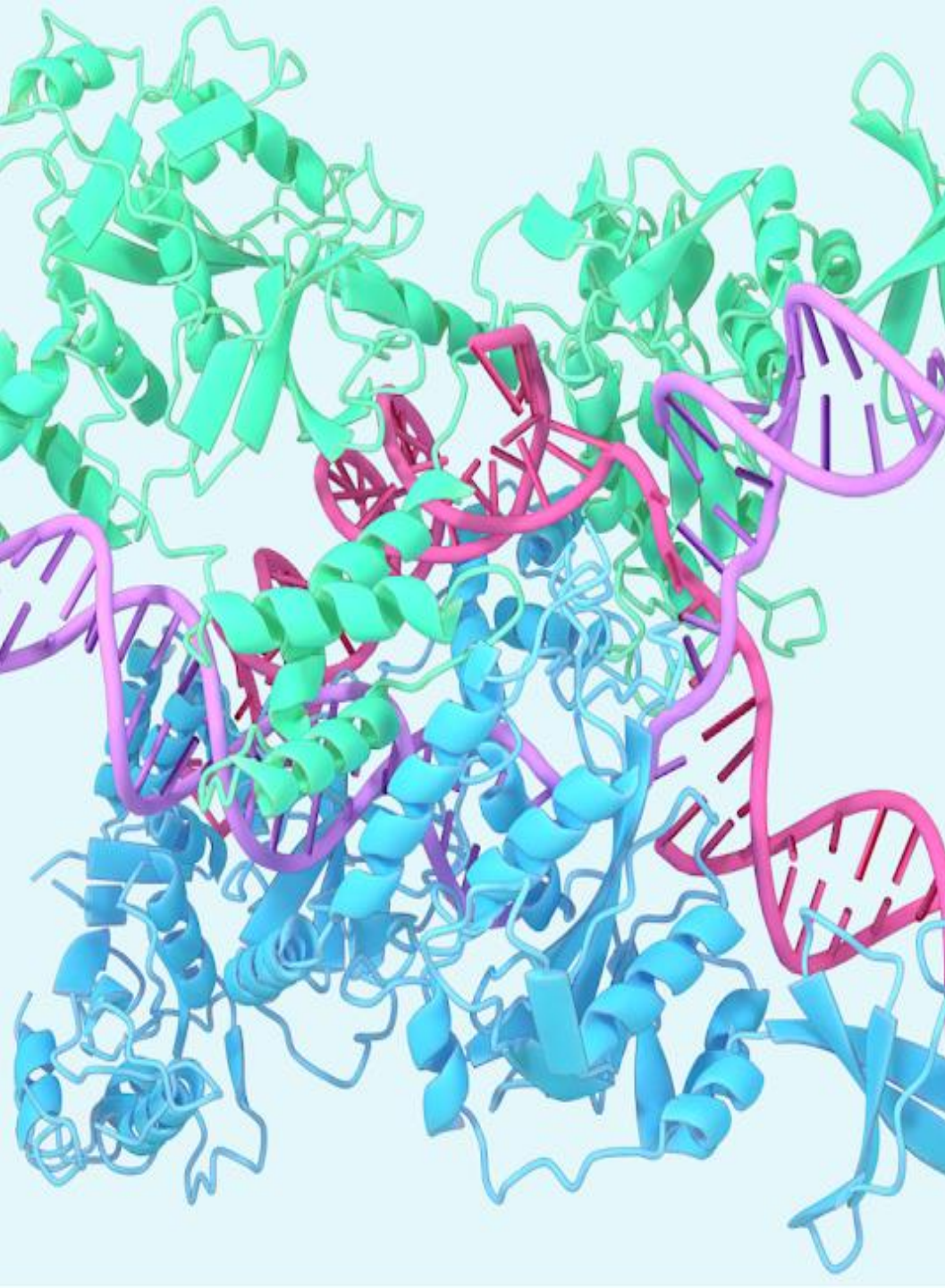


van den Driessche, G., Graepel, T., & Hassabis, D. (2017). Mastering the game of Go without human knowledge. *Nature*, 550, 19.

AlphaFold



Jumper, J., Evans, R., Pritzel, A., Green, T., Figurnov, M., Ronneberger, O., ... & Hassabis, D. (2021). Highly accurate protein structure prediction with AlphaFold. *Nature*, 596(7873), 583-589.



AlphaFold

- Προσδιορισμός της **ακολουθίας** των αμινοξέων που καθορίζουν την 3Δ ατομική δομή μιας πρωτεΐνης
- Η αποκωδικοποίηση μιας πρωτεϊνικής δομής απαιτεί **εργασία 4-5 ετών** από έναν διδακτορικό φοιτητή
- Υπάρχουν **200 εκ πρότείνες** στη φύση, θα απαιτούνταν **1 δις χρόνια** έρευνας για την αποκωδικοποίηση τους
- Το AlphaFold αποκωδικοποίησε την 3Δ δομή των πρωτεϊνών

RESEARCH ARTICLE

Performance of ChatGPT on USMLE: Potential for AI-assisted medical education using large language models

Tiffany H. Kung^{1,2}, Morgan Cheatham³, Arielle Medenilla¹, Czarina Sillios¹, Lorie De Leon¹, Camille Elepaño¹, Maria Madriaga¹, Rimeh Aggabao¹, Giezel Diaz-Candido¹, James Maningo¹, Victor Tseng^{1,4*}

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Abstract

We evaluated the performance of a large language model called ChatGPT on the United States Medical Licensing Exam (USMLE), which consists of three exams: Step 1, Step 2CK, and Step 3. ChatGPT performed at or near the passing threshold for all three exams without any specialized training or reinforcement. Additionally, ChatGPT demonstrated a high level of concordance and insight in its explanations. These results suggest that large language models may have the potential to assist with medical education, and potentially, clinical decision-making.

Author summary

Artificial intelligence (AI) systems hold great promise to improve medical care and health outcomes. As such, it is crucial to ensure that the development of clinical AI is guided by the principles of trust and explainability. Measuring AI medical knowledge in comparison to that of expert human clinicians is a critical first step in evaluating these qualities. To accomplish this, we evaluated the performance of ChatGPT, a language-based AI, on the United States Medical Licensing Exam (USMLE). The USMLE is a set of three standardized tests of expert-level knowledge, which are required for medical licensure in the United States. We found that ChatGPT performed at or near the passing threshold of 60% accuracy. Being the first to achieve this benchmark, this marks a notable milestone in AI maturation. Impressively, ChatGPT was able to achieve this result without specialized input from human trainers. Furthermore, ChatGPT displayed comprehensible reasoning and valid clinical insights, lending increased confidence to trust and explainability. Our study suggests that large language models such as ChatGPT may potentially assist human learners in a medical education setting, as a prelude to future integration into clinical decision-making.

OPEN ACCESS

Citation: Kung TH, Cheatham M, Medenilla A, Sillios C, De Leon L, Elepaño C, et al. (2023) Performance of ChatGPT on USMLE: Potential for AI-assisted medical education using large language models. *PLOS Digit Health* 2(2): e000198. <https://doi.org/10.1371/journal.pdig.000198>

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Data Availability Statement: The data analyzed in this study were obtained from USMLE sample questions sets which are publicly available. We have made the question indices, raw inputs, and raw AI outputs, and special annotations available in S1 Data.

Funding: The authors received no specific funding for this work.

Competing interests: The authors have declared that no competing interests exist.



Research



Cite this article: Katz DM, Bommarito MJ, Gao S, Arredondo P. 2024 GPT-4 passes the bar exam. *Phil. Trans. R. Soc. A* **382**: 20230254. <https://doi.org/10.1098/rsta.2023.0254>

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Accepted: 20 December 2023

One contribution of 15 to a theme issue ‘A complexity science approach to law and governance’.

Subject Areas:

artificial intelligence

Keywords:

large language models, Bar Exam, GPT-4, legal services, legal complexity, legal language

GPT-4 passes the bar exam

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In this paper, we experimentally evaluate the zero-shot performance of GPT-4 against prior generations of GPT on the entire uniform bar examination (UBE), including not only the multiple-choice multistate bar examination (MBE), but also the open-ended multistate essay exam (MEE) and multistate performance test (MPT) components. On the MBE, GPT-4 significantly outperforms both human test-takers and prior models, demonstrating a 26% increase over ChatGPT and beating humans in five of seven subject areas. On the MEE and MPT, which have not previously been evaluated by scholars, GPT-4 scores an average of 4.2/6.0 when compared with much lower scores for ChatGPT. Graded across the UBE components, in the manner in which a human test-taker would be, GPT-4 scores approximately 297 points, significantly in excess of the passing threshold



ChatGPT-4: An assessment of an upgraded artificial intelligence chatbot in the United States Medical Licensing Examination

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ABSTRACT

Purpose: ChatGPT-4 is an upgraded version of an artificial intelligence chatbot. The performance of ChatGPT-4 on the United States Medical Licensing Examination (USMLE) has not been independently characterized. We aimed to assess the performance of ChatGPT-4 at responding to USMLE Step 1, Step 2CK, and Step 3 practice questions.

Method: Practice multiple-choice questions for the USMLE Step 1, Step 2CK, and Step 3 were compiled. Of 376 available questions, 319 (85%) were analyzed by ChatGPT-4 on March 21st, 2023. Our primary outcome was the performance of ChatGPT-4 for the practice USMLE Step 1, Step 2CK, and Step 3 examinations, measured as the proportion of multiple-choice questions answered correctly. Our secondary outcomes were the mean length of questions and responses provided by ChatGPT-4.

Results: ChatGPT-4 responded to 319 text-based multiple-choice questions from USMLE practice test material. ChatGPT-4 answered 82 of 93 (88%) questions correctly on USMLE Step 1, 91 of 106 (86%) on Step 2CK, and 108 of 120 (90%) on Step 3. ChatGPT-4 provided explanations for all questions. ChatGPT-4 spent 30.8 ± 11.8 s on average responding to practice questions for USMLE Step 1, 23.0 ± 9.4 s per question for Step 2CK, and 23.1 ± 8.3 s per question for Step 3. The mean length of practice USMLE multiple-choice questions that were answered correctly and incorrectly by ChatGPT-4 was similar (difference = 17.48 characters, SE = 59.75, 95%CI = [-100.09, 135.04], $t = 0.29$, $p = 0.77$). The mean length of ChatGPT-4's correct responses to practice questions was significantly shorter than the mean length of incorrect responses (difference = 79.58 characters, SE = 35.42, 95%CI = [9.89, 149.28], $t = 2.25$, $p = 0.03$).

Conclusions: ChatGPT-4 answered a remarkably high proportion of practice questions correctly for USMLE examinations. ChatGPT-4 performed substantially better at USMLE practice questions than previous models of the same AI chatbot.

KEYWORDS

artificial intelligence; natural language processing; United States medical licensing examination; chatgpt-4

Introduction

ChatGPT-4 is an artificial intelligence (AI) chatbot recently developed by OpenAI. ChatGPT-4 and similar systems have the potential to lead to great infrastructural changes in science, similar to those seen with the release of the internet (Sanderson 2023). This AI chatbot recognizes virtually any context and conversates naturally with users, making it the

Practice points

- ChatGPT-4 answered 88% questions correctly on USMLE Step 1, 86% on Step 2CK, and 90% on Step 3.
- ChatGPT-4 answered a remarkably high proportion of practice questions correctly for USMLE examinations.

Προβλήματα;



Bob's wife is Amy. Bob's daughter is Cindy.
Who is Cindy to Amy?

Cindy is Amy's **daughter-in-law**.



(a) Intrinsic hallucination



Explain RLHF for LLMs.

RLHF stands for "**Rights, Limitations, Harms, and Freedoms**" and is a framework for models like LLMs (Large Language Models).



(b) Extrinsic hallucination



Ελάχιστες εταιρείες είναι σε θέση να εκπαιδεύσουν LLM

Η Meta έχει επενδύσει \$30 δις σε υποδομές εκπαίδευσης LLM

Πρόγραμμα Apollo είχε συνολικό κόστος \$28.5 δις

GPT-4 Turbo

With 128k context, fresher knowledge and the broadest set of capabilities, GPT-4 Turbo is more powerful than GPT-4 and offered at a lower price.

[Learn about GPT-4 Turbo ↗](#)

Model	Input	Output
gpt-4-turbo-2024-04-09	\$10.00 / 1M tokens	\$30.00 / 1M tokens

Vision pricing calculator

Set width px by Set height px = \$0.00255 [i](#)

Low resolution

Πολλά LLM είναι διαθέσιμα μέσω API επί πληρωμή

Ακόμα και τα "μικρά" LLM έχουν μεγάλες απαιτήσεις σε GPUs



On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?

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The Aether


ABSTRACT

The past 3 years of work in NLP have been characterized by the development and deployment of ever larger language models, especially for English. BERT, its variants, GPT-2/3, and others, most recently Switch-C, have pushed the boundaries of the possible both through architectural innovations and through sheer size. Using these pretrained models and the methodology of fine-tuning them for specific tasks, researchers have extended the state of the art on a wide array of tasks as measured by leaderboards on specific benchmarks for English. In this paper, we take a step back and ask: How big is too big? What are the possible risks associated with this technology and what paths are available for mitigating those risks? We provide recommendations including weighing the environmental and financial costs first, investing resources into curating and carefully documenting datasets rather than ingesting everything on the web, carrying out pre-development exercises evaluating how the planned approach fits into research and development goals and supports stakeholder values, and encouraging research directions beyond ever larger language models.

CCS CONCEPTS

• Computing methodologies → Natural language processing

ACM Reference Format:

Emily M. Bender, Timnit Gebru, Angelina McMillan-Major, and Shmargaret Shmitchell. 2021. On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? . In *Conference on Fairness, Accountability, and Transparency (FAccT '21)*, March 3–10, 2021, Virtual Event, Canada. ACM, New York, NY, USA, 14 pages. <https://doi.org/10.1145/3442188.3445922>

1 INTRODUCTION

One of the biggest trends in natural language processing (NLP) has been the increasing size of language models (LMs) as measured by the number of parameters and size of training data. Since 2018

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alone, we have seen the emergence of BERT and its variants [39, 70, 74, 113, 146], GPT-2 [106], T-NLG [112], GPT-3 [25], and most recently Switch-C [43], with institutions seemingly competing to produce ever larger LMs. While investigating properties of LMs and how they change with size holds scientific interest, and large LMs have shown improvements on various tasks (§2), we ask whether enough thought has been put into the potential risks associated with developing them and strategies to mitigate these risks.

We first consider environmental risks. Echoing a line of recent work outlining the environmental and financial costs of deep learning systems [129], we encourage the research community to prioritize these impacts. One way this can be done is by reporting costs and evaluating works based on the amount of resources they consume [57]. As we outline in §3, increasing the environmental and financial costs of these models doubly punishes marginalized communities that are least likely to benefit from the progress achieved by large LMs and most likely to be harmed by negative environmental consequences of its resource consumption. At the scale we are discussing (outlined in §2), the first consideration should be the environmental cost.

Just as environmental impact scales with model size, so does the difficulty of understanding what is in the training data. In §4, we discuss how large datasets based on texts from the Internet overrepresent hegemonic viewpoints and encode biases potentially damaging to marginalized populations. In collecting ever larger datasets we risk incurring documentation debt. We recommend mitigating these risks by budgeting for curation and documentation at the start of a project and only creating datasets as large as can be sufficiently documented.

As argued by Bender and Koller [14], it is important to understand the limitations of LMs and put their success in context. This not only helps reduce hype which can mislead the public and researchers themselves regarding the capabilities of these LMs, but might encourage new research directions that do not necessarily depend on having larger LMs. As we discuss in §5, LMs are not performing natural language understanding (NLU), and only have success in tasks that can be approached by manipulating linguistic form [14]. Focusing on state-of-the-art results on leaderboards without encouraging deeper exploration of the mechanism by



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*"ChatGPT is basically **high-tech plagiarism**. It's a system that accesses and astronomical amount of data and finds regularities, strings them together. Looks more or less like what somebody could have written on this topic. Basically plagiarism, just happens to be high-tech...."*

News in focus



Retractions are skyrocketing as publishers work to remove sham articles from the literature.

MORE THAN 10,000 RESEARCH PAPERS WERE RETRACTED IN 2023 — A NEW RECORD

The number of articles being retracted rose sharply this year. Integrity experts say that this is only the tip of the iceberg.

By Richard Van Noorden

The number of retractions issued for research articles in 2023 has passed 10,000 — smashing annual records — as publishers struggle to clean up a slew of sham papers and peer-review fraud. Among large research-producing nations, Saudi Arabia, Pakistan, Russia and China have the highest retraction rates over the past two decades, a *Nature* analysis has found.

The bulk of 2023's retractions were from journals owned by Hindawi, a London-based

subsidiary of the publisher Wiley (see 'A bumper year for retractions'). So far this year, Hindawi journals have pulled more than 8,000 articles, citing factors such as "concerns that the peer review process has been compromised" and "systematic manipulation of the publication and peer review process", after investigations prompted by internal editors and research-integrity sleuths who raised questions about incoherent text and irrelevant references in thousands of papers.

Most of the Hindawi retractions are from special issues: collections of articles that are often overseen by guest editors and that

have become notorious for being exploited by scammers to rapidly publish low-quality or sham papers.

Counting the costs

On 6 December, Wiley announced on an earnings call that it would stop using the Hindawi brand name altogether, having previously shuttered four Hindawi titles and, towards the end of 2022, temporarily paused the publication of special issues. Wiley will fold existing titles back into its own brand. As a result of the problems, said Matthew Kissner, Wiley's interim chief executive, the publisher

Is Having AI Generate Text Cheating?

Carlos Baquero on whether using artificial intelligence provides an unfair advantage to writers.



Carlos Baquero
On the Ethics of Writing With AIs
<https://bit.ly/3E1W1J7>
August 3, 2022

Humans were always fragile creatures, most of our success in the ecosystem was driven by the efficient use of new tools. When a new tool arrives that augments our capabilities, we often question the fairness of using it. The debate usually does not last long when the tool has clear benefits. Boats have an advantage over swimming, writing solves our memory problems, this paragraph was improved using a grammar checker, and so forth.

Text generated by AI tools, such as GPT-3 (<https://bit.ly/3e3icZQ>), has seen an impressive increase in quality, and the AI-generated text is now hard to distinguish from human-generated text. *Some people argue that using AI-generated text is cheating, as it gives the user an unfair advantage. However, others argue that AI-generated text is simply another tool that can be used to improve writing.*

with the preceding text (and in this article, all the AI-generated text is marked in *italics*). To make more confusing, the AI-generated text can be further improved with improved grammatical precision and choice of terms. As it becomes hard to distinguish what.

Blended Writing and Proofreading

We can place the question of blended writing with AIs within an acceptable approach to a method of use of our capabilities and tools for spelling and grammatical errors are now in everyday use and any ethical concerns. Never mind AI-generated text, even if accepted from an ethical standpoint, raise questions on the provenance of the text. Luckily, there is already a range of tools for plagiarism detection (for the purpose of this article, AI-generated text has been marked with bit.ly/3rrCy1U). In the case of a closed-book system with no

long output, so the plagiarism check is likely an abundance of care.

OpenAI, owner of GPT-3, does provide guidelines (<https://bit.ly/3fvsnXd>) for content co-authored with GPT-3. The gist is: Do no harm, refrain from using harmful content; clearly identify the use of AI-generated content; attribute it to your name, you are responsible for

Patterns

Opinion

Is using ChatGPT cheating, plagiarism, both, neither, or forward thinking?

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<https://doi.org/10.1016/j.patter.2023.100694>

The recent emergence of ChatGPT has led to multiple considerations and discussions regarding the use of AI. In particular, the potential exploitation in the educational realm must be considered. This article discusses the need for a robust curriculum for the inevitable wave of AI-assisted assignments. Here, Brent Anders discusses the key issues and concerns.

Given ChatGPT's revolutionary capabilities in answering virtually any question and creating any type of text, its application in education has been a topic of a major amount of inquiry. I shared the news of ChatGPT with many professors as well as other people in academia, and a majority of them went directly to expressing how students would use it for academic dishonesty. Yet, as a PhD holder, a retired Army Sergeant Major, and a life-long learner in academia for over 20 years and having taken thousands of classes (both face-to-face and online), I am always thinking like a student. This made me contemplate an ethical situation: the idea of a student being confronted by a professor, angry that AI was used.

First, let's realize that most universities have an academic dishonesty portion of a student code of conduct policy that goes something like this:

What could the student say to make his or her defense? Something like:
"No professor, I am not cheating at all. AI like ChatGPT is now freely available to everyone, so why would anyone say that using it is an 'unfair academic advantage'? An AI is not 'another person'; it is software, a tool. So why would I need to attribute anything to it?"

I know that "a student must do their own work," and I did do the work. Once I was given the assignment, I thought about it and *remembered* what program I should use that would be best for the task (the ChatGPT AI). I *understood* how to properly go through the process and *applied* my knowledge in using the program effectively. I then *analyzed* the result of the AI and *evaluated* whether the AI results fully met the overall rubric requirement. I finalized my finished *created* product and turned it in. So, this was a great assignment in

Another idea would be to define cheating as text such as "cheating" when it is specifically written by an instructor for a given assignment. It would give more authority to the instructor who doesn't want to be associated with a specific assignment. In the assignment's instructions, I highly recommend limiting or banning of AI use in academia must realize the reality. Advanced AI is freely available to all. More than ever, needs to be met. By AI literacy, we mean:

- (1) Awareness that AI exists
- (2) Ability to use AI



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Use of ChatGPT in academia: Academic integrity hangs in the balance

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ABSTRACT

In today's academic world, some academicians, researchers and students have begun employing Artificial Intelligence (AI) language models, e.g., ChatGPT, in completing a variety of academic tasks, including generating ideas, summarising literature, and essay writing. However, the use of ChatGPT in academic settings is a controversial issue, leading to a severe concern about academic integrity and AI-assisted cheating, while scholarly communities still lack clear principles on using such innovation in academia. Accordingly, this study aims to understand the motivations driving academicians and researchers to use ChatGPT in their work, and specifically the role of academic integrity in making up adoption behavior. Based on 702 responses retrieved from users of ResearchGate and Academia.edu, we found that ChatGPT usage is positively shaped by time-saving feature, e-word of mouth, academic self-efficacy, academic self-esteem, and perceived stress. In contrast, peer influence and academic integrity had a negative effect on usage. Intriguingly, academic integrity-moderated interactions of time-saving, self-esteem and perceived stress on ChatGPT usage are found to be significantly positive. Therefore, we suggest that stakeholders, including academic institutions, publishers and AI language models' programmers, should work together to specify necessary guidelines for the ethical use of AI chatbots in academic work and research.

1. Introduction

As a variant of GPT-3 (Generative Pre-trained Transformer 3), ChatGPT is an extensive language model launched by Open Artificial Intelligence (OpenAI) in November 2022, has become one of the most crucial and unprecedented real-world AI platforms to date [1,2]. It specifically uses conversational chatbots to rapidly generate human-like

academic sphere [8,9]. One of the potential opportunities for such a revolutionary platform is to assist scientists and researchers in generating ideas and overcoming writer's block [3] and as a system to automate time-consuming and repetitive content production tasks [10]. However, there are critical challenges with using ChatGPT in academia: the possibility of plagiarism and academic dishonesty [11]; [8]. AI essay-writing platforms assist researchers and students in generating

Chatting and cheating: Ensuring academic integrity in the era of ChatGPT

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ABSTRACT

The use of artificial intelligence in academia is a hot topic in the education field. ChatGPT is an AI tool that offers a range of benefits, including increased student engagement, collaboration, and accessibility. However, it also raises concerns regarding academic honesty and plagiarism. This paper examines the opportunities and challenges of using ChatGPT in higher education, and discusses the potential risks and rewards of these tools. The paper also considers the difficulties of detecting and preventing academic dishonesty, and suggests strategies that universities can adopt to ensure ethical and responsible use of these tools. These strategies include developing policies and procedures, providing training and support, and using various methods to detect and prevent cheating. The paper concludes that while the use of AI in higher education presents both opportunities and challenges, universities can effectively address these concerns by taking a proactive and ethical approach to the use of these tools.

KEYWORD

Machine-generated plagiarism; detection

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Introduction

What is ChatGPT and when did it emerge?

ChatGPT is a variant of the GPT-3 (Generative Pre-trained Transformer 3, Brown

A New Era of Plagiarism the Danger of Cheating Using AI

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Abstract—Recent development in AI algorithms has benefited many industries, but they also brought some problems to fairness in academic evaluation. Plagiarism is one of them, and little research has been put into it. This paper examines AI tools that can be used to plagiarize and preliminary findings using existing plagiarism detection algorithms. We found that tools commonly used to detect plagiarism in the academic field are vulnerable to attacks by these AI-based tools.

I. INTRODUCTION

Many industries have benefited from the recent development of AI. Some of them positively impact our society, few applications are seen to abuse the technology. In the education domain, it is observed that many tools utilizing recent development of machine learning have emerged, and some of them are particularly risky in promoting plagiarism. Tools of these kinds cast shadows on whether we could still ensure fairness in evaluating students' learning outcomes. Instructors need to know how to make their teaching strategy more effective through these evaluations, and this is especially important in the age of remote or online education.

Some widely used methods used to evaluate students' learning outcomes are exams and homework assignments, including projects and essays, and some types of them are specifically vulnerable to the subject of plagiarism. Take coding for example. Recent developments in extensive auto-code completion could fill in the actual code with a few comments or a function

fail to detect misappropriation mainstream methods used in combating AI tools, although plagiarism industry have put it

The rest of this paper is organized as follows: Section II discusses algorithms common products; Section III briefly introduces an AI model that could be abused as a new tool available in N AI products could help students. Section V introduces another 2022 that could be used for plagiarism. Section VI states the conclusions and findings.

II. ALGORITHMS TO

Plagiarism detection has been a domain for many years, whether a student has plagiarized coding assignments are read by companies. Plagiarism-detection examine text's syntactic, semantic. They are measured by n-gram distance, binomial score, K-in Levenshtein Score, etc. Sim detecting plagiarism in code

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OPEN FORUM

How to cheat on your final paper: Assigning AI for student writing

Paul Fyfe 

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Abstract

This paper shares results from a pedagogical experiment that assigns undergraduates to “cheat” on a final class essay by requiring their use of text-generating AI software. For this assignment, students harvested content from an installation of GPT-2, then wove that content into their final essay. At the end, students offered a “revealed” version of the essay as well as their own reflections on the experiment. In this assignment, students were specifically asked to confront the oncoming availability of AI as a writing tool. What are the ethics of using AI this way? What counts as plagiarism? What are the conditions, if any, we should place on AI assistance for student writing? And how might working with AI change the way we think about writing, authenticity, and creativity? While students (and sometimes GPT-2) offered thoughtful reflections on these initial questions, actually composing with GPT-2 opened their perspectives more broadly on the ethics and practice of writing with AI. In this paper, I share how students experienced those issues, connect their insights to broader conversations in the humanities about writing and communication, and explain their relevance for the ethical use and evaluation of language models.

Keywords Language models · Plagiarism · AI literacy · Writing · Pedagogy · Ethics

“The question then becomes, whose writing is this; who can take ownership? *The answer to this question is not easy to decide and seems to be more complicated than the question of whether it is true or false. I don't exactly have the right to claim ownership of it, but I will argue that all writers borrow ideas and style from others.*” (undergraduate student with GPT-2 italicized)

This paper shares results from a pedagogical experiment that assigns undergraduates to “cheat” on a final class essay by requiring their use of text-generating AI software. For this assignment, students harvested content from an installation of GPT-2, then wove that content into their final essay. At the end, students offered a “revealed” version of the essay as well as their own reflections on the experiment. In this assignment, students were specifically asked to confront the oncoming availability of AI as a writing tool. What are the ethics of using AI this way? What counts as plagiarism? What are the conditions, if any, we should place on AI assistance for student writing? And how might working with AI change the way we think about writing, authenticity, and creativity? While students (and sometimes GPT-2) offered thoughtful reflections on these initial questions, actually composing with GPT-2 opened their perspectives more broadly on the ethics and practice of writing with AI. In this paper, I share how students experienced those issues, connect their insights to broader conversations in the humanities about writing and communication, and explain their relevance for the ethical use and evaluation of language models.

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Η συζήτηση μοιάζει να είναι σύγχρονη...
...είναι όμως;

Μέρος II



Πολιτισμική Ιστορική Θεωρία

Κοινωνική Αλληλεπίδραση





Διαμεσολάβηση



Εργαλεία

- Ο Vygotsky πρότεινε την αναλογία **φυσικών** εργαλείων με τα **πολιτισμικά** (τεχνητά) εργαλεία
- Στο πλαίσιο της ψυχολογικής δραστηριότητας, το σύμβολο έχει λειτουργία **αντίστοιχη** με αυτή του εργαλείου στην εργασία



字

Ψυχολογικά Εργαλεία



*«γλώσσα· διάφορα συστήματα
αρίθμησης· μνημονικές τεχνικές·
αλγεβρικά συμβολικά συστήματα·
έργα τέχνης· γραφή·
σχήματα· διαγράμματα· χάρτες και
μηχανικά σχέδια· όλα τα είδη των
συμβατικών σημείων»*

Vygotsky (1981a/1960, σ. 137)

*“Το παιδί αρχίζει να αντιλαμβάνεται τον κόσμο όχι μόνο μέσω των ματιών του αλλά επίσης μέσω της **γλώσσας**”*

Vygotsky (1978, p. 32)



*«Η κατάκτηση ενός ψυχολογικού εργαλείου (...) ανυψώνει πάντα τη συγκεκριμένη λειτουργία σε ένα ανώτερο στάδιο, **επαυξάνει** και **διευρύνει** τη δραστηριότητα της και **επαναδιαμορφώνει** τη δομή και το μηχανισμό της»*

Vygotsky (1981a/1960, σ. 139)



- Αλλαγές από την ενσωμάτωση ψυχολογικού εργαλείου
 - εισάγει νέες λειτουργίες, οι οποίες σχετίζονται με τον έλεγχο του ίδιου του εργαλείου
 - καθιστά **ανενεργές** υφιστάμενες λειτουργίες, το έργο των οποίων επιτελεί το εργαλείο
 - **αλλάζει πτυχές** των εμπλεκόμενων νοητικών διαδικασιών, αντικαθιστώντας ορισμένες λειτουργίες με άλλες

Vygotsky (1981b/1960)



- Χαρακτηριστικά μετασχηματισμού
 - Μια φυσική (βιολογική) ψυχολογική λειτουργία **μετασχηματίζεται** σε πολιτισμική λειτουργία
 - Μια πολιτισμική (τεχνητή) ψυχολογική λειτουργία **υπερβαίνει** τα φυσικά όρια του οργανισμού



Πλεονεκτήματα Γλώσσας

- Διπλός κόσμος
- Εμπρόθετη δράση
- Εσωτερική δράση
- Μεταφορά πληροφοριών

Διπλός Κόσμος

- Οι άνθρωποι είναι σε θέση να **χειρίζονται αντικείμενα που**
 - βρίσκονται στο οπτικό τους πεδίο
 - δε βρίσκονται στο οπτικό τους πεδίο



Εμπρόθετη δράση

- Οι άνθρωποι είναι σε θέση
 - Να **αναφέρονται** σε αντικείμενα που δε βρίσκονται στο οπτικό τους πεδίο
 - Να **ελέγχουν** την αντίληψη και τη μνήμη τους
 - Να **ελέγχουν** τις ενέργειες τους



Εσωτερική δράση

- Οι άνθρωποι είναι ικανοί για **νοητική δράση** χωρίς να υπάρχουν τα αντικείμενα στο οπτικό τους πεδίο
 - Μπορούν να εμπλακούν νοητικά σε δοκιμή και πλάνη
 - Μπορούν να εκτελέσουν νοητικούς συλλογισμούς





Μεταφορά πληροφοριών

- Η ανθρώπινη εμπειρία και γνώση **κωδικοποιείται** στη γλώσσα
- Η γλώσσα είναι το κύριο μέσο με το οποίο αυτή η πληροφορία **μεταδίδεται** από τη μια γενιά στην άλλη

Cheating?!

- Το ερώτημα της ενίσχυσης / επαύξησης της νόησης με τη χρήση εργαλείων AI / GenAI είναι θεμελιωδώς **εσφαλμένο**
 - Η γλώσσα που χρησιμοποιούμε μας **δίνεται** από τους κοινωνικούς άλλους, δεν είναι αποτέλεσμα δικής μας επινόησης
 - Η γλώσσα έχει ιδιότητες (σύστημα συμβόλων και αναπαραστάσεων) που **υπερβαίνουν** τον εαυτό

Η φυσική γλώσσα αποτελεί την
πρωτοτυπική περίπτωση
“κλοπής”

?

Ποια είναι η δική σας θέση;

Νέοι τρόποι
αλληλεπίδρασης
με "κείμενο"

Σωκράτης: “και όποιος πάλι παραδέχεται, πως από τα γραμμένα θα βγει τίποτε καθαρό και βέβαιο, θα είναι πολύ απλοϊκός.... αφού νομίζει πως οι γραμμένοι λόγοι είναι κάτι πιο πολύ από το να ξαναθυμίζουν τα πράγματα που λένε τα γραφτά σ’ εκείνον που τα ξέρει....” (σ. 555)

✠ φίλος ✠ Η ✠ πικα

Ὁ φίλος φίλος ποίδη καὶ ἀποθήρη· παρὰ μισίου ὄσσε
λου· πορῶομαι δὲ πρὸ ἀπὸ πρίωτο μὲ ζωτῆ χό
διήρι τω χρόνῳ μεθῆμερ οσθζ βωθιμού· τῶιδ
ρωιωτῆ δόμῃ οσθ αἰου μὲρ κωι κατῶ τῶσ ὁδὸς
παίτου· φησὶ γὰρ αἰωπωτῆρ οσθ ἄμα τῶ μὲρ
γὰρ ὄσθ ἰρβ μὲ γα· ἀπὸ βλυσίασ ἠω ὄσθ οἰ μὲρ
ἕρα τῆ βρτῆ δὲ τῆ πρῆσὶ οἰ μὲρ τοῦ ὄλυμπε οἰ μὲρ
ὄω δὴ ἠω ἠδ γα τριη· ἠδ ἠλορ ὁ τῶ μὲρ λό γοσ μ
πᾶσα ἄσσοισχολῆ πρὸ οἰ μὲρ αἰούσ μ· τί δα ὄυ
δαρο μὲρ αἰωχολίασ ἠω βρ τῆρ ο μὲρ πρᾶ γμα τῶ
μισίου δ γα τριη ἠω αἰούσ μ· πορῶομαι δὲ ἠδ γο
ἠω βρ τῆσ· πρὸ οἰ μὲρ οσθ αἰούσ μ· ὄ γα τῶ μὲρ
τρί μὲρ μὲρ οἰ μὲρ δὲ ὄ μὲρ πρῶ τῶ μὲρ οσθ μὲρ
σῆσ μ· πρῶ μὲρ οἰ μὲρ τῶ μὲρ οσθ μὲρ οἰ μὲρ οσθ
τοῦτο καὶ μὲρ οἰ μὲρ τῶ μὲρ ἠδ γα γὰρ ὄσθ αἰούσ μ
ρῶ μὲρ ὄ γο μὲρ οσθ· ἄσθ γρᾶ τῆ μὲρ ὄσθ αἰούσ μ
οἰ καὶ πρᾶ τῶ μὲρ οἰ μὲρ τῶ μὲρ οσθ καὶ ὄσθ μὲρ
πολλοῖσ ἠω μὲρ ἠ γὰρ ἠ μὲρ οἰ καὶ δὴ μὲρ φθ
γῶσ ὄσθ οσθ βω τῆ μὲρ οἰ μὲρ αἰούσ μ· ὄσθ αἰούσ μ
ρί πρῶ μὲρ μὲρ γὰρ ἠδ γο καὶ κατῶ ἠ ρὸ δὴ μὲρ πρῶ μὲρ
ἀπὸ τῆσ· ὄ μὲρ οσθ ἀπὸ γα φθῶ· πρῶ μὲρ ἠδ γο
τῶσ· ὄσθ μὲρ ἠω λυσίασ τῶ μὲρ πολλῶ χροῖ μὲρ
δὲ μὲρ οσθ ὄ μὲρ τῶ μὲρ γρᾶ τῆ μὲρ τῶ μὲρ ἠδ γο
μὲρ οσθ ἀπὸ τῶ μὲρ οσθ μὲρ οἰ μὲρ οσθ μὲρ οσθ μὲρ οσθ
γὰρ μὲρ οἰ μὲρ οσθ μὲρ οσθ μὲρ οσθ μὲρ οσθ μὲρ οσθ

Σωκράτης: “Γιατί αυτό δα το κακό, Φαίδρε, έχει το γράψιμο και μοιάζει μα την αλήθεια με τη ζωγραφική. Κι αυτής δα τα έργα στέκονται μπροστά σου με πολλή σοβαροφάνεια. Το ίδιο κάνουν λοιπόν και οι γραμμένοι λόγοι: **πας δηλαδή να πιστέψεις πως αυτοί έχουνε νόηση και μιλάνε, αν όμως τους ρωτήσεις κάτι για κείνα που λένε, γιατί θέλεις να το καταλάβεις, δηλώνουν μονάχα ένα πράγμα, το ίδιο πάντοτε.**” (σ. 554)

✠ Φαίδροσ ✠ Ἡ ✠ πικ
 (Ὁ) φίλος φαίδρε ποίδη καὶ ἀπόθευ· παρὰ μυσίου ὠ
 λου· παρὰ μαιδῆ· πρὸ ἀπὲρ ἰπυτομὶ ζωτῆ
 διέρι· ταυ χρομόρμιου θήμῆρ· οσ· εἰς ἑσο· θίρ· οὔ· τὰ
 ροι· πῶ· θόμῆρ· οσ· αἰου μῆρ· οἰ· κατὰ τὰσ· ὁδ· οἰ
 παίτου· φησι γὰρ· αἰω· πῶ· τῆρ· οἰ· ἄ· μαι· τῶ· μῆ
 γὰρ ὠ· εἰ· ρῆ· μῆ· γ· ἄ· πῶ· ρ· λυ· σί· α· σ· ἦ· ω· ὡ· σ· θο· ἰ· λυ· ρ
 ἰ· ρ· αἰ· τῆ· ῥ· ἡ· δ· ε· τῆ· ἰ· π· ἡ· σί· ο· ρ· τοῦ· ὀ· λυ· μ· πῶ· ἰ· οὔ· οἰ· λυ·
 ὠ· ὠ· δ· ἦ· ἦ· ἡ· δ· γ· αἰ· τ· ρ· ἰ· κῆ· ἦ· δ· ἦ· λ· ο· ῥ· ὅ· τῆ· τῶ· μ· ἰ· ὀ· γ· ω· ρ· ἦ·
 πῶ· ἄ· σ· ἄ· σ· οἰ· σ· χ· ο· λῆ· π· ρ· οἰ· ὀ· ρ· ἰ· τῆ· αἰ· οὔ· ἄ· γ· μ·
 δ· α· ρ· ο· μῆ· καὶ· ἀ· σ· χ· ο· λῆ· α· σ· ἦ· ὑ· πῆ· ρ· τῆ· ρ· ο· μ· π· ρ· ἄ· γ· μ· αἰ· τῶ·
 μ· σί· οὔ· δ· ἰ· αἰ· τ· ρ· ἰ· κῆ· ἡ· ἄ· λ· οὔ· σ· αἰ·
 π· ρ· ὀ· ἀ· γ· ῥ· ἡ· δ· ἦ·
 λ· β· γ·
 ρ· αἰ· τῆ· π· ρ· ο· σῆ· ἰ· οὔ· σ· αἰ· ἄ· γ· ῥ· οἰ· ἦ· ἄ· λ· οὔ· ἡ· ὀ· γ· ἄ· ρ· τῶ· ἰ·
 τῆ· ρ· ἰ· οὔ· μῆ· ρ· οἰ· λ· οἰ· δῆ· ὀ· ρ· ἡ· τῆ· ρ· αἰ· τῶ· ρ· ἰ· β· ρ· αἰ· τῆ· οὔ· σ·
 σί· α· σ· πῶ· τῆ· ρ· ὠ· μῆ· ρ· ὀ· ἰ· τῆ· ρ· αἰ· τῶ· μ· ἰ· αἰ· μῶ· ρ· οὔ· χ· λ· ῥ· ῶ· θ·
 τῶ· ἰ· οὔ· τῆ· αἰ· λ· οὔ· ῥ· οἰ· τῆ· αἰ· λ· οὔ· ἡ·
 λ· β· γ· ἄ· γ· ἄ· ρ· ὡ· σ· χ· α· ρ· ἰ· αἰ· τῆ·
 ρ· ὠ· ρ· τῆ· ὡ· γ· ὡ· ρ· μ· αἰ· οὔ· ἄ· θ· ἡ· γ· ρ· αἰ· τῆ· ῥ· ὡ· σ· χ· ρῆ· τῆ·
 οἰ· καὶ· π· ρ· ἄ· τῶ· τῆ· ρ· οἰ· ἦ· ρ· ῥ· ῥ· ῥ· ῥ· οἰ· καὶ· ὀ· σῆ· μ· εἰ· δ·
 π· ο· λ· λ· οἰ· σ· ἦ· γ· ὡ· μῆ· γ· ἄ· ρ· ὡ· ἄ· ρ· ῥ· οἰ· καὶ· δ· ἦ· μ· ο· σ· φ· ῥ·
 γ· ὡ· ὠ· οὔ· τῶ· σ· ἑ· π· ἰ· τῆ· θ· ὠ· μῆ· καὶ· αἰ· οὔ· σ· αἰ· ὡ· ἄ· θ· ἡ·
 ρῆ· ἰ· π· α· σ· τῶ· μῆ· γ· αἰ· τῆ· ρ· ῥ· ῥ· ῥ· οἰ· καὶ· ἰ· αἰ· τῶ· ἦ· ρ· ὀ· δ· ῥ· ἰ· οὔ· μ· π· ρ· ο·
 ἄ· τῆ· ἡ· ἰ· οὔ· ὀ· μῆ· σ· οὔ· ἀ· π· ο· λ· ῥ· ἡ· φ· ῥ· ὡ·
 πῶ· σ· λ· β· γ·
 τῆ· ῥ· ὡ· ὀ· ἰ· αἰ· μῆ· ἄ· λ· οὔ· σ· αἰ· τῆ· ῥ· ὡ· π· ο· λ· λ· ὠ· ἡ· χ· ρ· ὀ· μ· αἰ· οὔ·
 δ· ἡ· ρ· ὀ· τῆ· αἰ· τῶ· σ· ὡ· ρ· τῶ· μῆ· γ· ρ· ἄ· ρ· μ· τῶ· ἰ· αἰ· τῆ· ρ· ῥ·
 μ· ο· ρ· ὡ· σ· αἰ· ρ· ἄ· ζ· ἰ· αἰ· τῆ· ρ· οὔ·
 π· ο· λ· λ· οἰ· γ· ῥ· ῥ· ῥ· ῥ· ῥ·
 γ· ἄ· ρ· μ· αἰ· οὔ· ἡ· μ· οἰ· π· ο· λ· ὠ· χ· ρ· ὠ· σ· ἰ· οὔ· μ· γ· ῥ· ῥ· ῥ· ῥ· ῥ· ῥ· ῥ· ῥ·
 ὡ· ὡ·

Σωκράτης: “Και όταν μια φορά γραφτεί, κυλιέται παντού κάθε λόγος, όμοια και σε εκείνους που τον νιώθουν, όπως και σε εκείνους πάλι που καθόλου δεν τους ταιριάζει, και δεν ξέρει ο ίδιος να λέγει για ποιους είναι και για ποιους δεν είναι. Και όταν τον κακομεταχειρίζονται και τον κακολογούν άδικα, πάντα έχει ανάγκη από τον πατέρα του για βοηθό, γιατί ο ίδιος δεν μπορεί ούτε ν’ αμυνθεί ούτε να βοηθήσει τον εαυτό του”
(σ. 554)

✠ φίλος ✠ Ἡ ✠ πικ
Ὁ φίλος φάιδρος ποιεῖ δὲ καὶ ἀποθέμει· παρὰ μισοῦ οὐ
λου· παρὰ μισοῦ δὲ παρὰ ἀποθέμει· παρὰ μισοῦ δὲ
διὰ τὴν ταχρόμορον καὶ θύμῳ οὐ βῆθε θιμῶν· τὰ
ρῶν παρὰ μισοῦ οὐ αἰου μὲν καὶ αὐτῶν τῶν ὁδῶν
παίτου· φησὶ γὰρ αἰω παρὰ μισοῦ αὐτῶν μὲν
γὰρ ὡς εἶπερ μὲν γὰρ ἀπὸ λυσίας ἡ ὡς εἶπερ
λεῖται ἐν τῇ δὲ τῆν καὶ οἰον τοῦ ὄλου μισοῦ οἰον
ὡς δὲ ἡ καὶ ἡ διατριμῆ· ἡ δὲ ἡ ὁ δὲ τῶν λόγων
πᾶσα ἡ σοιστοχολῆ παρὰ οἰον αἰου γ· τί δὲ ὁ
δαρὸν καὶ ἀσχολῆ ὡς εἶπερ τῶν παρὰ μισοῦ
μισοῦ οἰον διατριμῆ αἰου οἰου· παρὰ μισοῦ δὲ ἡ
βρατα παρὰ μισοῦ οἰου αἰου ἡ αἰου ὁ γὰρ τῶν
τρίων μὲν οἰου δὲ ὁ μισοῦ παρὰ μισοῦ οἰου
σῆσῳ· παρὰ μισοῦ οἰου παρὰ μισοῦ οἰου οἰου
τοῦτο καὶ μισοῦ οἰου· ἡ γὰρ γὰρ ὡς εἶπερ οἰου
ρῶν τῆ· ὡς εἶπερ οἰου· ἡ γὰρ γὰρ τῆ οἰου οἰου
οἰου καὶ παρὰ μισοῦ οἰου ἡ οἰου καὶ ὡς εἶπερ οἰου
πολλοῖσιν ἡ καὶ ἡ γὰρ ὡς εἶπερ οἰου καὶ ἡ οἰου
γῶν οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου
ρίσῳ οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου
αἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου
τα· οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου
δὲ οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου
μορῶσιν οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου
γὰρ μισοῦ οἰου οἰου οἰου οἰου οἰου οἰου οἰου οἰου



Διάλογος

- Ο "διάλογος" που επιδοκιμάζει ο Πλάτωνας
 - Δεν προσφέρεται από το γραπτό κείμενο
 - Παρέχεται από την GenAI

+

•

○

Διεύρυνση

- Ο "διάλογος" αυτός δεν περιορίζεται στο κείμενο
- Επεκτείνεται δυνητικά και σε άλλες τροπικότητες
 - Εικόνα
 - Βίντεο
 - Ήχο
 - Κώδικα



Noam Chomsky - Advances in AI: ChatGPT | Human Brain



can you summarize the following text for me? "Noam Chomsky - Advances in AI: ChatGPT | Human Brain - YouTube

<https://www.youtube.com/watch?v=-NMR5JXp37k>

...

Show drafts



Absolutely! Here's a summary of the transcript focusing on Noam Chomsky's views on recent AI advancements and their relationship to understanding human language:

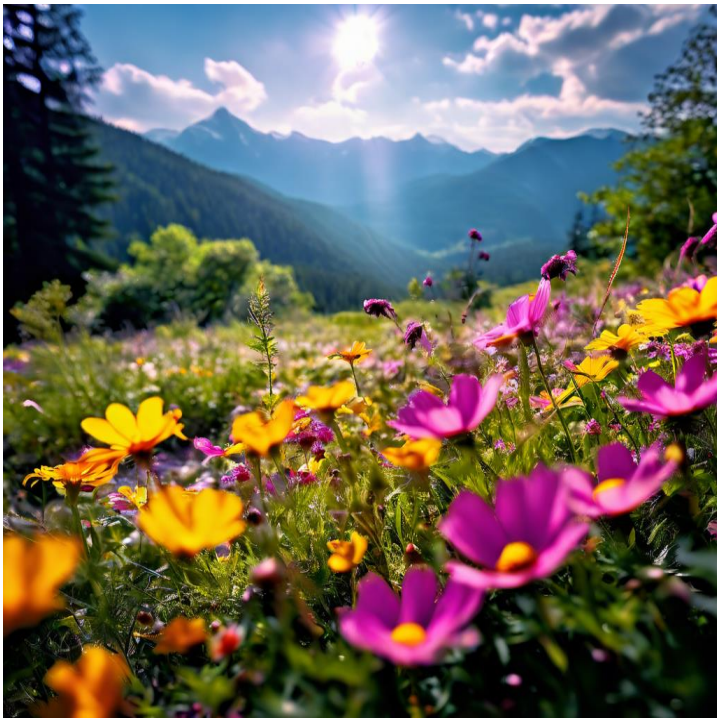
Chomsky's Key Points

- **AI and language processing:** While AI tools like Google Translate might be helpful, they offer no insights into the actual nature of human language and thought processes.
- **Limitations of studying the brain:** Understanding the human brain is extremely difficult. We know little about its language-related constraints, in part because ethical considerations prevent experimentation like those performed on animals.
- **The brain's language centers:** Research confirms that the brain has specialized areas for language. These areas become active when processing languages that follow structural rules found in real languages. This suggests our brains are fundamentally wired to acquire and use language in a specific way.

In summary, Chomsky believes that while AI might advance in practical areas, it offers little understanding of the unique complexities of human language and the brain structures that support it.

?

Ποια είναι η δική σας θέση;



Copilot

✓ Analyzing the image: Privacy blur hides faces from Copilot

Certainly! The image you've shared depicts a vibrant and colorful field of wildflowers set against a backdrop of majestic mountains and a bright sky. Let me describe it in more detail:

1. **Foreground:**

- The scene is dominated by blooming wildflowers in various shades, primarily yellow and purple.
- These flowers create a lively and picturesque display, their petals catching the sunlight.
- Different flower types contribute to the rich diversity of colors and shapes.

2. **Middle Ground:**

- Green trees and foliage add contrast to the vibrant blossoms.
- The foliage provides a sense of depth and balance to the composition.

3. **Background:**

- The mountains rise dramatically in the distance.
- Sun rays pierce through the sky, illuminating the landscape.
- The overall mood of the image is serene and awe-inspiring, inviting admiration for the natural beauty captured.

It's a scene that evokes tranquility and appreciation for the wonders of nature. 🌻🌍

Is there anything else you'd like to know or explore? 😊

Μέρος III

NotebookLM

The screenshot displays the NotebookLM interface. On the left, a sidebar shows the notebook title 'NotebookLM' and a list of sources, including 'Umberto Eco - Role of...'. The main area is titled 'Role of the reader - U. Eco' and contains several notes. The first note is titled 'Table of Contents: A Deep Dive into Open and Closed Texts' and includes a section 'I. Umberto Eco: The Role of the Reader' with an introduction. The second note is titled 'The Open Work: Exploring the Role of the Reader in Umberto Eco' and includes a 'Quiz' section with instructions. The interface also features a chat interface at the bottom with a text input field and a 'View Chat' button. A footer note states: 'NotebookLM can make mistakes, so double-check it.'

<https://notebooklm.google.com>

NotebookLM

- Προσωπικός Βοηθός ΤΝ
- Ροή εργασίας
 - Μεταφόρτωση πηγών
 - Προτάσεις - Ιδέες - Οδηγοί
 - Ερωτήσεις- Απαντήσεις
 - Απαντήσεις με βάση το κείμενο (RAG-based text generation)
 - Δημιουργία Podcast



Hands On #1

- Σύνδεση σε NotebookLM
- Μεταφόρτωση άρθρου
- Μελέτη άρθρου

Hugging Face

- Διαδικτυακό αποθετήριο
 - Μοντέλων
 - Δεδομένων
 - Χώρων

<https://huggingface.co>



Computer Vision

- Depth Estimation
- Image Classification
- Object Detection
- Image Segmentation
- Text-to-Image
- Image-to-Text
- Image-to-Image
- Image-to-Video
- Unconditional Image Generation
- Video Classification
- Text-to-Video
- Zero-Shot Image Classification
- Mask Generation
- Zero-Shot Object Detection
- Text-to-3D
- Image-to-3D
- Image Feature Extraction
- Keypoint Detection

Natural Language Processing

- Text Classification
- Token Classification
- Table Question Answering
- Question Answering
- Zero-Shot Classification
- Translation
- Summarization
- Feature Extraction
- Text Generation
- Text2Text Generation
- Fill-Mask
- Sentence Similarity

Multimodal

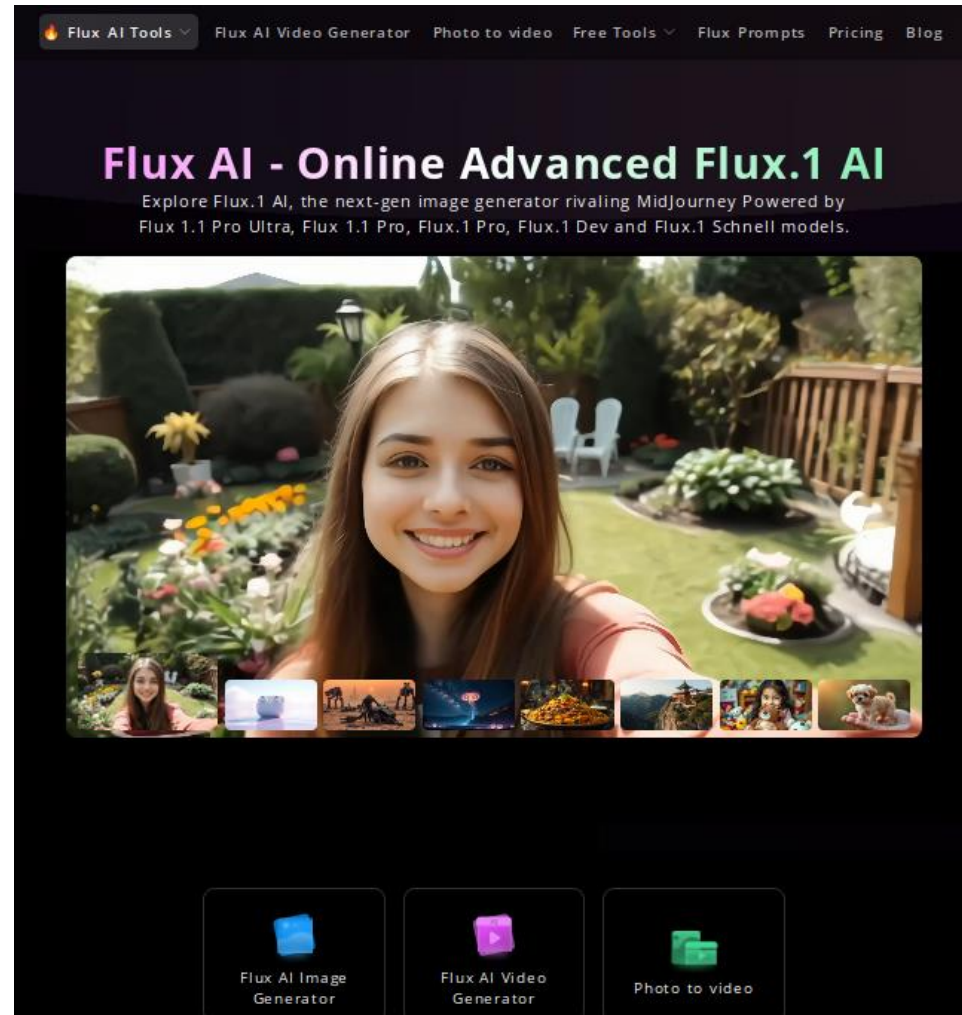
- Audio-Text-to-Text
- Image-Text-to-Text
- Visual Question Answering
- Document Question Answering
- Video-Text-to-Text
- Any-to-Any



Χρήση Μοντέλων από Hugging Face

- Σύνδεση στο υπολογιστικό νέφος της Google
- Φόρτωση Σεναρίου για μοντέλο Flux (Αντιγραφή Κώδικα)
- Εκτέλεση Κώδικα
 - Καταχώρηση περιγραφής της εικόνας
 - Αποθήκευση εικόνας

Flux: Large Vision Model



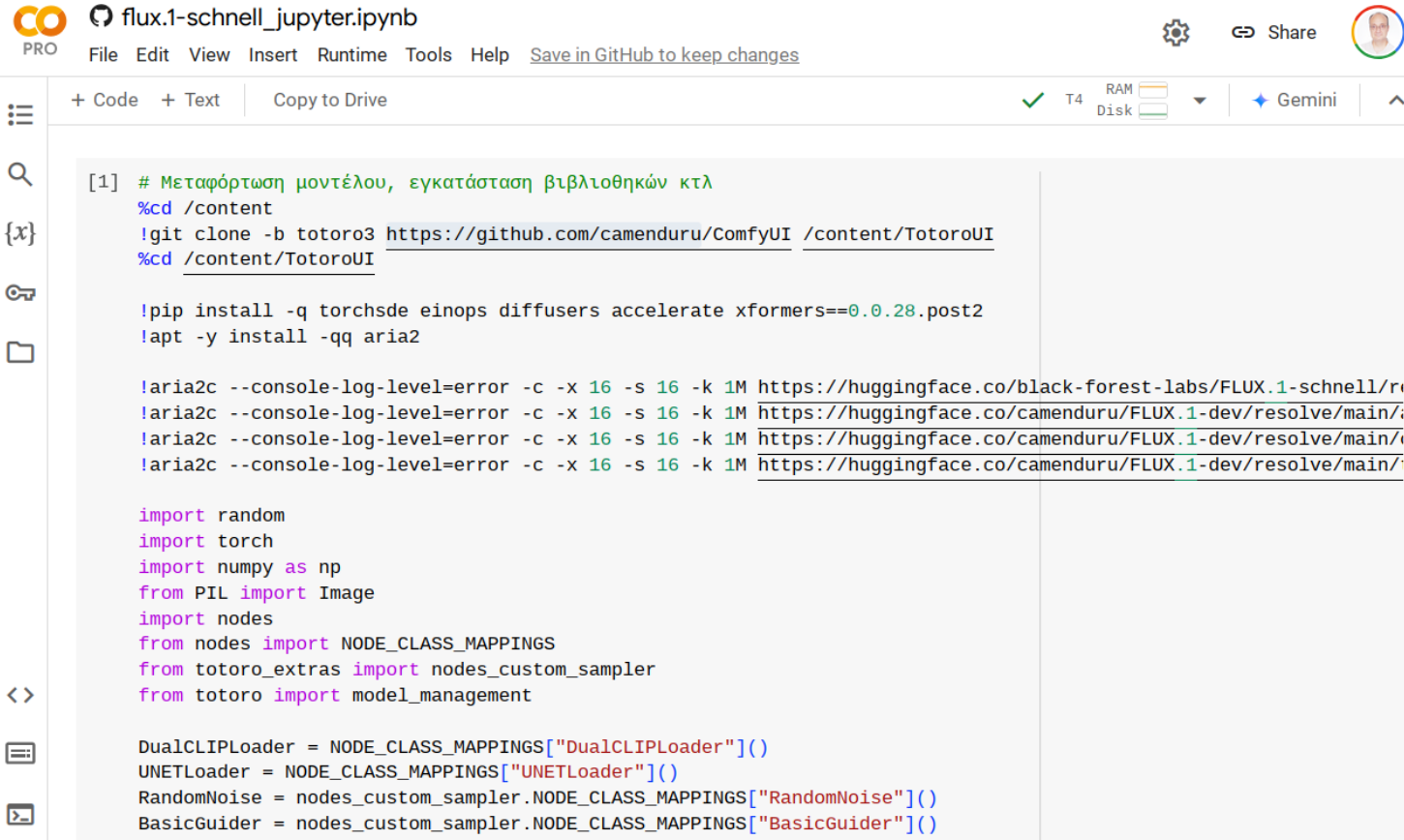
The screenshot shows the Flux AI website homepage. At the top, there is a navigation bar with the following items: Flux AI Tools (with a dropdown arrow), Flux AI Video Generator, Photo to video, Free Tools (with a dropdown arrow), Flux Prompts, Pricing, and Blog. The main heading is "Flux AI - Online Advanced Flux.1 AI" in a pink and green font. Below the heading is a sub-heading: "Explore Flux.1 AI, the next-gen image generator rivaling MidJourney Powered by Flux 1.1 Pro Ultra, Flux 1.1 Pro, Flux.1 Pro, Flux.1 Dev and Flux.1 Schnell models." The central part of the page features a large, vibrant image of a young woman with long brown hair smiling in a garden. Below this image is a horizontal strip of eight smaller thumbnail images showing various AI-generated scenes. At the bottom of the page, there are three dark buttons with icons and text: "Flux AI Image Generator" (with a blue icon), "Flux AI Video Generator" (with a purple icon), and "Photo to video" (with a green icon).



Hands On #2

- Σύνδεση σε Google Colab
- Φόρτωση σεναρίου Flux
- Εκτέλεση κώδικα

Flux – Google Colab



flux.1-schnell_jupyter.ipynb

PRO File Edit View Insert Runtime Tools Help [Save in GitHub to keep changes](#)

+ Code + Text Copy to Drive

T4 RAM Disk Gemini

```
[1] # Μεταφόρτωση μοντέλου, εγκατάσταση βιβλιοθηκών κτλ
%cd /content
!git clone -b totoro3 https://github.com/camenduru/ComfyUI /content/TotoroUI
%cd /content/TotoroUI

!pip install -q torchsde einops diffusers accelerate xformers==0.0.28.post2
!apt -y install -qq aria2

!aria2c --console-log-level=error -c -x 16 -s 16 -k 1M https://huggingface.co/black-forest-labs/FLUX.1-schnell/
!aria2c --console-log-level=error -c -x 16 -s 16 -k 1M https://huggingface.co/camenduru/FLUX.1-dev/resolve/main/
!aria2c --console-log-level=error -c -x 16 -s 16 -k 1M https://huggingface.co/camenduru/FLUX.1-dev/resolve/main/
!aria2c --console-log-level=error -c -x 16 -s 16 -k 1M https://huggingface.co/camenduru/FLUX.1-dev/resolve/main/

import random
import torch
import numpy as np
from PIL import Image
import nodes
from nodes import NODE_CLASS_MAPPINGS
from totoro_extras import nodes_custom_sampler
from totoro import model_management

DualCLIPLoader = NODE_CLASS_MAPPINGS["DualCLIPLoader"]()
UNETLoader = NODE_CLASS_MAPPINGS["UNETLoader"]()
RandomNoise = nodes_custom_sampler.NODE_CLASS_MAPPINGS["RandomNoise"]()
BasicGuider = nodes_custom_sampler.NODE_CLASS_MAPPINGS["BasicGuider"]()
```



Hands On #3

- Σύνδεση σε Google Colab
- Φόρτωση σεναρίου
- Εκτέλεση κώδικα



- Μεγάλο γλωσσικό μοντέλο
 - Ανοικτού κώδικα / βαρών
 - 75+ γλώσσες
 - Pipelines: Tokenization, POS tagging, Dependency Parsing, NER, Entity Linking, Sentence segmentation, Similarity
 - Ενσωματώσεις λέξεων
 - Κειμενική ομοιότητα
 - Ταχύτητα
 - Αξιοπιστία

<https://spacy.io>

spaCy@ Google Colab



spaCy_DEMO_4PMS.ipynb

File Edit View Insert Runtime Tools Help Saving...

RAM Disk Gemini

[] Start coding or generate with AI.

Το σενάριο αυτό φορτώνει το ΜΓΜ της spaCy για τα Ελληνικά και δίνει μερικά παραδείγματα χρήσης του στην πράξη

```
#Google drive mount
from google.colab import drive
drive.mount('/content/drive')
```

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).

```
[2] # install spacy 3.0.6 and greek large model
!pip install -U pip setuptools wheel
!pip install -U spacy
# download large Greek model
!python -m spacy download el_core_news_lg
```

Requirement already satisfied: pip in /usr/local/lib/python3.10/dist-packages (24.3.1)
Requirement already satisfied: setuptools in /usr/local/lib/python3.10/dist-packages (75.6.0)
Requirement already satisfied: wheel in /usr/local/lib/python3.10/dist-packages (0.45.1)
Requirement already satisfied: spacy in /usr/local/lib/python3.10/dist-packages (3.7.5)
Collecting spacy
Using cached spacy-3.8.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (27 kB)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in /usr/local/lib/python3.10/dist-packages (from spacy) (3.0.11)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from spacy) (1.0.1)

0s completed at 2:36 PM

<https://colab.research.google.com>

Επίλογος

- Ερευνητικές Προοπτικές
- Αλφαριθμητισμός σε νέα εργαλεία, ροές εργασίας, διεπαφές
- Ενίσχυση / Αντικατάσταση Νοητικών Δεξιοτήτων
- Γνώσεις / δεξιότητες που έχουν τη μεγαλύτερη μορφωτική αξία
- Διαδικασία διδασκαλίας
- Διαδικασία μάθησης
-