

AI 활용 업무 효율화 SW

AI assisted job streamlining

한국에너지기술연구원 에너지AI·계산과학실 이제현



2024.03.28.

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정보 수집 & 개별 문서 정보 추출
scispace



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DALL.E3



데이터 분석
Data Analyst



자료 정리
draw.io





perplexity AI



chrome web store

Microsoft edge compatible

<https://www.perplexity.ai/>

정보 검색 및 공유에 특화된 AI 도구.

질문에 대한 답변 제공, 새로운 주제를 탐색하고 요약하는 데 도움을 줌.

최신 정보를 신속하게 검색할 수 있으며, 정보 출처를 투명하게 표시하여 신뢰할 수 있는 탐색과 학습을 할 수 있도록 지원함.

장점

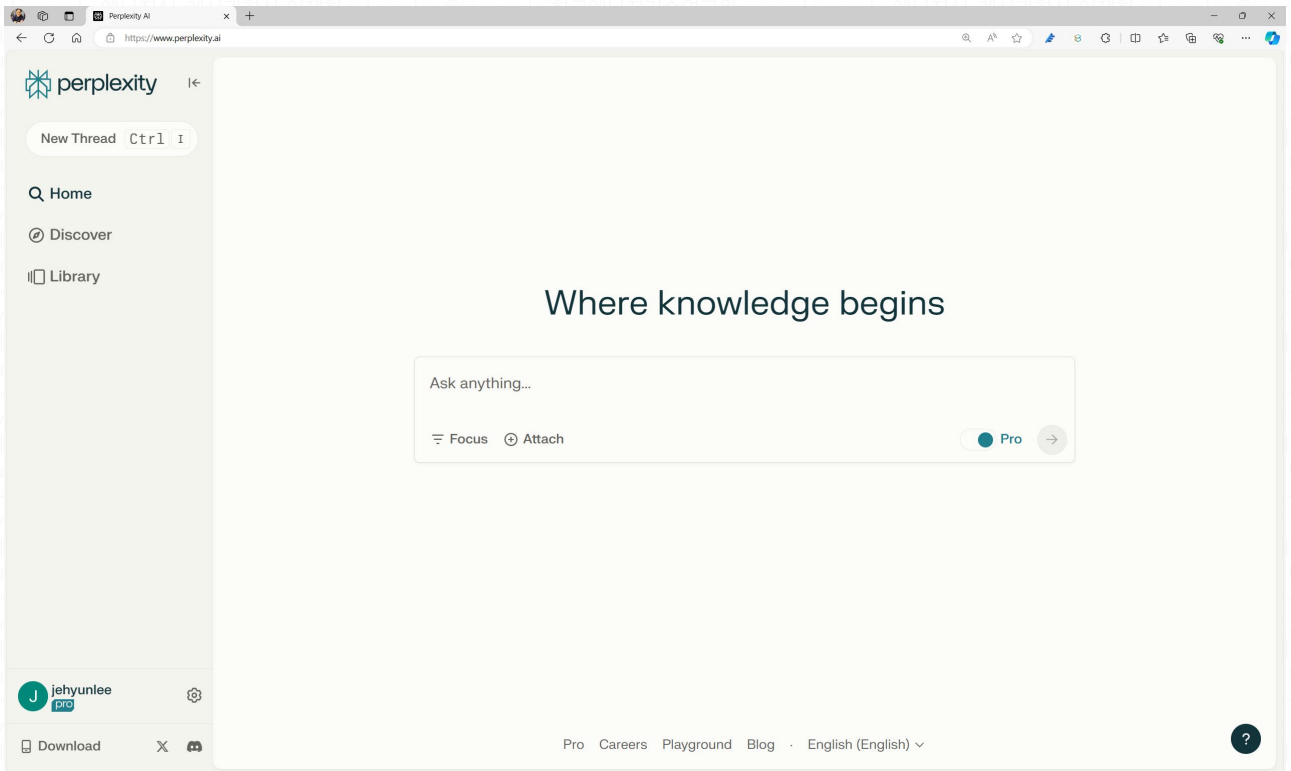
- 정확하고 빠른 실시간 검색 결과 제공, 정보 출처 표시
- 사용자가 원하는 특정 도메인(웹, 논문, YouTube, Reddit 등)에서 집중 검색
- Copilot 사용시 정확한 의도 파악을 위해 사용자에게 GPT-4 기반 추가 질문 제공

단점

- 지속 개발중으로 새로운 기능 및 UI 변경 발생으로 인한 혼란이 있을 수 있음.
- 무료 버전에서 GPT-4 기반 Copilot 사용 횟수가 4시간당 5회로 사용 제한
- 논문 검색시 semantic scholar 사용 : open access 위주로 제한됨.

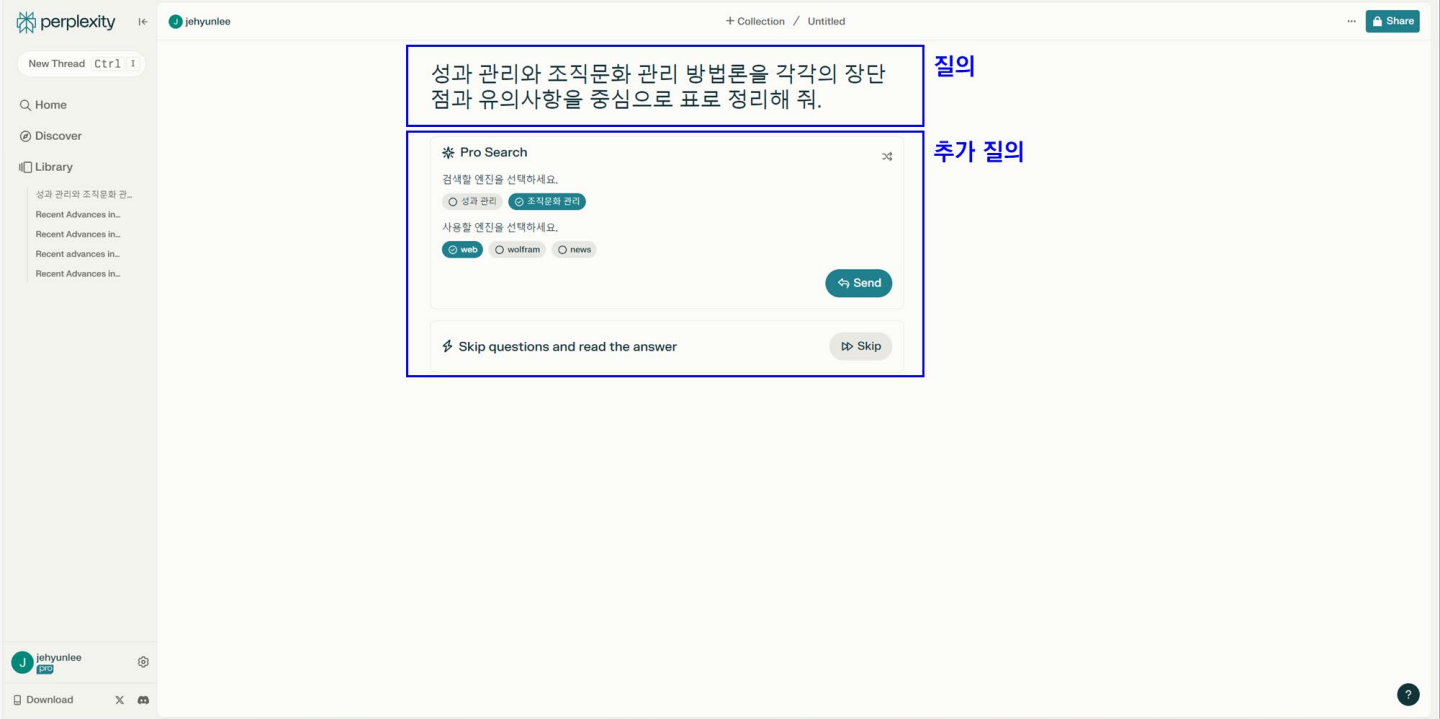
유료 optional

- 20 USD/월, 200 USD/년. 기존 유료사용자 [referral](#) 사용시 10 USD 할인
- 언어 모델 선택 가능 (Sonar, GPT-4 turbo, Claude 3 Sonnet/Opus, Mistral Large)
- 이미지 생성 기능 (Playground 2.5, DALL-E3, Stable Diffusion XL)
- API 제공 (5 USD/월 무료) : <https://docs.perplexity.ai/>





perplexity AI



질의

추가 질의



sources : web

answer : A4 1~2장 분량

관련 이미지



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학술 논문을 시각적으로 탐색하고 발견할 수 있는 온라인 도구.
연구자, 학생 등 학계 종사자들이 학술 문헌을 효율적으로 탐색하고 연구 과정을 간소화 함.
검색 논문을 중심으로 선행 연구와 파생 연구를 시스템적으로 탐색할 수 있음.

장점

- 유사 논문들을 시각적으로 표시, 최근 논문들을 빠르게 판별할 수 있음.
- 중요한 기초 연구 논문과 최신 리뷰, 학계 최첨단 논문 시스템적 추적 가능.
- API 제공 ([pypi](#), [github](#))

단점

- 직접적 인용 관계를 표시하지 않아 관계를 추적하기 어려움.
- 모바일 기기나 태블릿 앱을 제공하지 않아 사용성이 떨어질 수 있음.
- 논문 검색시 semantic scholar 사용 : open access 위주로 제한됨.

유료 optional

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- 학계 도서관 견적서 요청 필요 ([링크](#))
- 월 5개 이상 그래프 생성



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Science mapping software tools: Review, analysis, and cooperative study among tools (Cobo, 2011)



DeepFruits: A Fruit Detection System Using Deep Neural Networks (Sa, 2016)



Gender Equality and Intra-state Armed Conflict (Melander, 2005)

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 Hui-Seon Kim, Chang-Ryul Lee, J. Im, Ki-Beom Lee, T. Moehl, Arianna Marchioro, S. Moon, R. Humphry-Baker, Jun-Ho ...
 Scientific Reports 2012.
 6433 Citations, 32 References

Hydrogenated Cs2AgBiBr6 for significantly improved efficiency of lead-free inorganic double perovskite solar cell
 Zeyu Zhang, Qingde Sun, Yue Lu, Feng Lu, Xulin Mu, S. Wei, Manling Sui
 Nature Communications 2022.
 93 Citations, 64 References

A hole-conductor-free, fully printable mesoscopic perovskite solar cell with high stability
 Anyi Mei, Xiong Li, Linfeng Liu, Zhiliang Ku, Tongfa Liu, Yaoguang Rong, Mi Xu, Minglei Hu, Jiangzhao Chen, Ying Yan...
 Science 2014.
 2551 Citations, 21 References

Improved perovskite photovoltaic performance A recent entry in the solar cell race is perovskite cells, named for the structure adopted by salt made from metal halides and organic cations that absorb the light and generate charges. The charges generated have to be transferred to a metal oxide...



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Lead Iodide Perovskite Sensitized All-Solid-State Submicron Thin Film Mesoscopic Solar Cell with Efficiency Exceeding 9%

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Effect of crystal and powder of CH3NH3I on the CH3NH3PbI3

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논문 인용 그래프

선택 논문

검색 논문

원 크기 : 피인용수
원 밝기 : 출판년도

기준점 변경 후 새 인용 그래프 작성

Cesium-containing triple cation perovskite solar cells: improved stability, reproducibility and high efficiency (Electronic supplementary information (ESI) available. See DOI: 10.1039/c5ee03874j Click here for additional data file.
Michael Saliba + 9 authors M. Grätzel 2016, Energy & Environmental Science 3414 Citations

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Today, the best perovskite solar cells use a mixture of formamidinium and methylammonium as the monovalent cations. Adding cesium improves the compositions greatly.

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Origin paper
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Effect of crystal and powder of CH3NH3I on the CH3NH3PbI3

Prior works
These are papers that were most commonly cited by the papers in the graph.
This usually means that they are **important seminal works** for this field and it could be a good idea to get familiar with them.
Selecting a prior work will highlight all graph papers referencing it, and selecting a graph paper will highlight all referenced prior work.

Title	Last author	Year	Citations	Graph citations
A low-cost, high-efficiency solar cell based on dye-sensitized colloidal TiO2 films	M. Grätzel	1991	24669	11
Chemical management for colorful, efficient, and stable inorganic-organic hybrid nanostructured solar cells.	S. Seok	2013	3959	21
Morphological Control for High Performance, Solution-Processed Planar Heterojunction Perovskite Solar Cells	H. Snaith	2014	1788	16
Organic-inorganic hybrid materials as semiconducting channels in thin-film field-effect transistors	C. Dimitrakopoulos	1999	1667	12
All-solid-state dye-sensitized solar cells with high efficiency	M. Kanatzidis	2012	1559	13
Dynamic disorder in methylammoniumtrihalogenoplumbates (II) observed by millimeter-wave spectroscopy	D. Weber	1987	1352	9
CH3NH3PbI3 Perovskite/Fullerene Planar-Heterojunction Hybrid Solar Cells	T. Wen	2013	1295	11
Comparative study on the excitons in lead-halide-based perovskite-type crystals CH3NH3PbBr3/CH3NH3PbI3	N. Miura	2003	729	9
High-performance perovskite-polymer hybrid solar cells via electronic coupling with fullerene monolayers.	H. Snaith	2013	565	11
Enhancement of perovskite-based solar cells employing core-shell metal nanoparticles.	H. Snaith	2013	507	9

피인용수 등 기준으로 더 읽을 논문 선정

Cesium-containing triple cation perovskite solar cells: improved stability, reproducibility and high efficiency† Electronic supplementary information (ESI) available. See DOI: 10.1039/c5ee03874j Click here for additional data file.
Michael Saliba + 9 authors M. Grätzel
2016, Energy & Environmental Science
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Today's best perovskite solar cells use a mixture of formamidinium and methylammonium as the monovalent cations. Adding cesium improves the compositions greatly.

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Effect of crystal and powder of CH3NH3I on the CH3NH3PbI3

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Selecting a derived work will highlight all graph papers cited by it, and selecting a graph paper will highlight all derivative works citing it.

Title	Last author	Year	Citations	Graph references
Organic-inorganic hybrid lead halide perovskites for optoelectronic and electronic applications.	K. Zhu	2016	958	29
Organo-halide lead perovskites for photovoltaic applications	M. Nazeeruddin	2014	931	29
Under the spotlight: The organic-inorganic hybrid halide perovskite for optoelectronic applications	Huangping Zhou	2015	849	34
Perovskite-based solar cells: impact of morphology and device architecture on device performance	Y. Lam	2015	480	30
Pathways toward high-performance perovskite solar cells: review of recent advances in organo-metal halide perovskites for photovoltaic...	M. Heben	2016	203	30
Recent progress in organic-inorganic halide perovskite solar cells: mechanisms and material design	W. Daooud	2015	149	31
Recent progress in fundamental understanding of halide perovskite semiconductors	S. Priya	2019	85	29
Evolution of organometal halide solar cells	H. Segawa	2018	27	36
Solution Solar Cells Processed by Solution Nanotechnology	Keyou Yan	2019	0	29
Solution Processed High Efficiency Thin Film Solar Cells: from Copper Indium Chalcogenides to Methylammonium Lead Halides	Zhaoning Song	2016	0	32

피인용수 등 기준으로 더 읽을 논문 선정

Cesium-containing triple cation perovskite solar cells: improved stability, reproducibility and high efficiency† Electronic supplementary information (ESI) available. See DOI: 10.1039/c5ee03874j Click here for additional data file.
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Today's best perovskite solar cells use a mixture of formamidinium and methylammonium as the monovalent cations. Adding cesium improves the compositions greatly.



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연구 논문을 해석하는 데 도움을 주는 AI 코파일럿, 표절 검사기, 인용 작성기 등 다양한 기능을 포함하고 있음. GPTs와 chrome/edge extension 을 지원하여 활용성이 높음.

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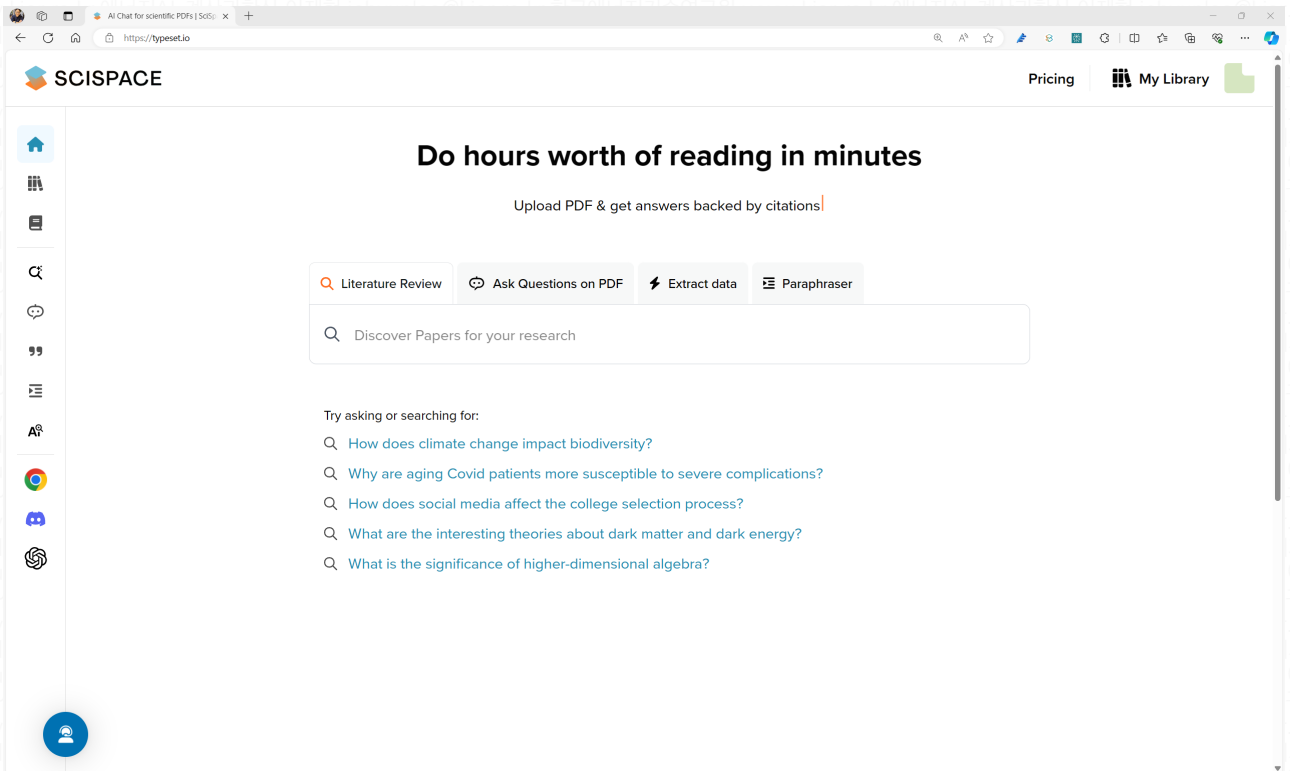
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<input type="checkbox"/> d41586-024-00779-1.pdf Last opened 26 Mar 2024, 9:53 PM	<ul style="list-style-type: none">Study explores covert racism in language models like GPT. [1]Human feedback reduces overt stereotypes but not covert racism. [2]Anti-obesity drugs show potential benefits for people with HIV. [3]	<ul style="list-style-type: none">POPULAR COLUMNSConclusionsSummarized AbstractResultsSummarized IntroductionMethods UsedLiterature SurveyLimitationsContributions
<input type="checkbox"/> d41586-023-03998-0.pdf Last opened 26 Mar 2024, 9:11 PM	<ul style="list-style-type: none">Genetic programming with large language models for creative program generation. [1] [2] [3] [4]	<input type="button" value="Copilot"/> en ^

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<input type="checkbox"/> s41586-023-06792-0.pdf Last opened 26 Mar 2024, 10:38 PM	<ul style="list-style-type: none">코사이엔티스트는 자율 실험 설계 및 실행에 GPT-4 을 사용합니다. [1]효율적인 실험을 위한 LLM과 실험실 자동화의 통합. [2]	<ul style="list-style-type: none">data usedlist names of data useddata source <p>Try "Outcomes measured"</p> <p>Create</p>
<input type="checkbox"/> d41586-024-00779-1.pdf Last opened 26 Mar 2024, 9:53 PM	<ul style="list-style-type: none">연구는 GPT와 같은 언어 모델의 은밀한 인종 차별을 탐구합니다. [1]인간의 피드백은 명백한 고정관념을 감소시키지만 은밀한 인종차별은 감소시키지 않습니다. [2]항비만 약물은 HIV 감염자에게 잠재적인 이점을 제공합니다. [3]	<ul style="list-style-type: none">ConclusionsSummarized AbstractResultsSummarized IntroductionMethods UsedLiterature SurveyLimitationsContributions
<input type="checkbox"/> d41586-023-03998-0.pdf Last opened 26 Mar 2024, 9:11 PM	<ul style="list-style-type: none">창의적인 프로그래밍 생성을 위한 대규모 언어 모델을 사용한 유전자 프로그래밍. [1] [2] [3] [4]	
<input type="checkbox"/> 2310.01783.pdf	<ul style="list-style-type: none">GPT-4 같은 LLM은 연구 질문에 대한 유용한 피드	

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<input type="checkbox"/> d41586-024-00779-1.pdf Last opened 26 Mar 2024, 9:53 PM	인종 차 소시키지 이점을	<ul style="list-style-type: none">ConclusionsSummarized AbstractResultsSummarized IntroductionLiterature SurveyLimitationsContributionsPractical Implications
<input type="checkbox"/> d41586-023-03998-0.pdf Last opened 26 Mar 2024, 9:11 PM	언어 모] [4]	

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<input type="checkbox"/> s41586-023-06792-0.pdf Last opened 26 Mar 2024, 9:11 PM Ask a question on this paper	행에 통화의 통	<ul style="list-style-type: none">자율 실험 설계대규모 언어 모델 통합인터랙티브 문서 검색 활용 [1]	<ul style="list-style-type: none">data usedlist names of data useddata source <input type="text" value="Try"/> <input type="button" value="Create"/>
<input type="checkbox"/> d41586-024-00779-1.pdf Last opened 26 Mar 2024, 9:53 PM	인종 차 논시키지 니다. [2] 이점을	<ul style="list-style-type: none">AI 시스템의 피상적인 편향 제거 방법을 강조했습니다. [1]대규모 언어 모델의 은밀한 인종차별을 조사했습니다. [2]편견을 해결하기 위해 인간의 피드백을 사용하는 것의 한계를 조사했습니다. [3]인간의 피드백이 영백하고 은밀한 편견에 미치는 영향을 탐구했습니다. [4]	<ul style="list-style-type: none">ConclusionsSummarized AbstractResultsSummarized IntroductionLiterature SurveyLimitationsContributionsPractical Implications
<input type="checkbox"/> d41586-023-03998-0.pdf Last opened 26 Mar 2024, 9:11 PM	언어 모 [1] [4]	<ul style="list-style-type: none">코드 생성을 위한 대규모 언어 모델을 포함하는 유전자 프로그래밍 방법 [1]합수의 유효성을 검사하여 문제 해결 성공 여부를 결정합니다. [2]	<ul style="list-style-type: none">Copilot

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Article

Autonomous chemical research with large language models

https://doi.org/10.1038/s41586-023-06792-0 Darin A. Bolko¹, Robert MacKnight¹, Ben Klime¹ & Gabe Gomez^{1,4,5}

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Transformer-based large language models are making significant strides in various fields, such as natural language processing^{1,2}, biology^{3,4}, chemistry^{5,6} and computer programming^{7,8}. Here, we show the development and capabilities of Coscientist, an artificial intelligence system driven by GPT-4 that autonomously designs, plans and performs complex experiments by incorporating large language models empowered by tools such as internet and documentation search, code execution and experimental automation. Coscientist showcases its potential for accelerating research across six diverse tasks. Including the successful reaction optimization of palladium-catalysed cross-couplings, while exhibiting advanced capabilities for (semi-)autonomous experimental design and execution. Our findings demonstrate the versatility, efficacy and explainability of artificial intelligence systems like Coscientist in advancing research.

Large language models (LLMs), particularly transformer-based models, are experiencing rapid advancements in recent years. These models have been successfully applied to various domains, including natural language^{1,2}, biological^{3,4} and chemical research^{5,6} as well as code generation^{7,8}. Extreme scaling of models⁹, as demonstrated by OpenAI, has led to significant breakthroughs in the field¹⁰. Moreover, techniques such as reinforcement learning from human feedback¹¹ can considerably enhance the quality of generated text and the models' capability to perform diverse tasks while reasoning about their decisions¹².

On 14 March 2023, OpenAI released their most capable LLM to date, GPT-4¹³. Although specific details about the model training, sizes and data used are limited in GPT-4's technical report, OpenAI researchers have provided substantial evidence of the model's exceptional problem-solving abilities. Those include—but are not limited to—high percentiles on the SAT and BAR examinations, LeetCode challenges and contextual explanations from images, including rick jokes¹⁴. Moreover, the technical report provides an example of how the model can be used to address chemistry-related problems.

Simultaneously, substantial progress has been made toward the automation of chemical research. Examples range from the autonomous discovery¹⁵ and optimization of organic reactions¹⁶ to the development of automated flow systems^{17,18} and mobile platforms¹⁹.

The combination of laboratory automation technologies with power-

can use tools to browse the internet and relevant documentation, use robotic experimentation application programming interfaces (APIs) and leverage other LLMs for various tasks. This work has been done independently and in parallel to other works on autonomous agents^{20–22}, with ChemCrow²³ serving as another example in the chemistry domain. In this paper, we demonstrate the versatility and performance of Coscientist in six tasks: (1) planning chemical syntheses of known compounds using publicly available data; (2) efficiently searching and navigating through extensive hardware documentation; (3) using documentation to execute high-level commands in a closed laboratory; (4) precisely controlling liquid handling instruments with low-level instructions; (5) tackling complex scientific tasks that demand simultaneous use of multiple hardware modules and integration of diverse data sources; and (6) solving optimization problems requiring analyses of previously collected experimental data.

Coscientist system architecture

Coscientist acquires the necessary knowledge to solve a complex problem by interacting with multiple modules (web and documentation search, code execution) and by performing experiments. The main module (Planner) has the goal of planning, based on the user input by invoking the commands defined below. The Planner

Copilot

Korean (ko)

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Article

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Daniil A. Bolko¹, Robert MuckKnight¹, Ben Klime¹ & Gabo Gomez^{1,2,3,4,5}
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Copilot

Korean (ko)

Standard

NEW

이 논문의 근본적인 한계점을 지적해줘.

11:41 PM

논문 대상 질의 Copilot

대규모 언어 모델을 사용한 자율 화학 연구 논문의 근본적인 한계는 다음과 같습니다.

- 원천 자동화된 설정의 부족: Coscientist가 수행한 실험은 실험 설계 및 실행 측면에서 자율적이었지만, 플래이트를 수동으로 이동했기 때문에 설정이 완전히 자동화되지는 않았습니다 [1].
- 제한된 인터넷 액세스: 조사 결과 인터넷 액세스가 허용되지 않아 시스템의 정보 수집 및 특정 작업 수행 능력이 잠재적으로 제한될 수 있습니다 [1].
- 안전 문제 및 제한된 데이터/코드 공개: 안전 문제로 인해 데이터, 코드 및 프롬프트가 완전히 공개되지 않아 작업의 재현성과 투명성이 제한될 수 있습니다. 인공 지능 및 과학적 응용 분야에 대한 미국 규정이 개발된 후 정식 출시가 계획되어 있습니다 [1].
- 제한된 일반화 가능성: 이 백서는 필라델피아 코러스 커뮤니티 반응 최적화와 같은 특정 작업에 초점을 맞추고 있으며 광범위한 연구 분야에서 시스템의 기능을 충분히 입증하지 못할 수 있습니다 [2].
- 대규모 언어 모델에 대한 의존성: 이 논문은 편향, 해석 가능성 및 일반화 측면에서 한계가 있을 수 있는 GPT-4 같은 변환기 기반 대규모 언어 모델에 크게 의존합니다 [2].

Explain Abstract of this paper in 2 lines. What are the contributions of this?

+12 more

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MATH

natively without doing synonym-based query expansion, as would be done in the first approach¹⁹.

Following the second approach, all sections of the OT-2 API documentation were embedded using OpenAI's ada model. To ensure proper use of the API, an ada embedding for the Planner's query was generated, and documentation sections are selected through a distance-based vector search. This approach proved critical for providing Coscientist with information about the heater-shaker hardware module necessary for performing chemical reactions (Fig. 3b).

A greater challenge emerges when applying this approach to a more diverse robotic ecosystem, such as the ECL. Nonetheless, we can explore the effectiveness of providing information about the ECL SLL, which is currently unknown to the GPT-4 model. We conducted three separate investigations concerning the SLL: (1) prompt-to-function; (2) prompt-to-SLL; and (3) prompt-to-samples. Those investigations are detailed in Supplementary Information section 'ECL experiments'.

For investigation 1, we provide the Docs searcher with a documentation guide from ECL pertaining to all available functions for running experiments²⁰. Figure 3c summarizes an example of the user providing a simple prompt to the system, with the Planner receiving relevant ECL functions. In all cases, functions are correctly identified for the task.

Figure 3c,d continues to describe investigation 2, the prompt-to-SLL investigation. A single appropriate function is selected for the task, and the documentation is passed through a separate GPT-4 model to perform code retention and summarization. After the complete documentation has been processed, the Planner receives usage information to provide EXPERIMENT code in the SLL. For instance, we provide a simple example that requires the 'ExperimentHPLC' function. Proper use of this function requires familiarity with specific 'Models' and 'Objects' as they are defined in the SLL. Generated code was successfully executed at ECL; this is available in Supplementary Information. The sample was a caffeine standard sample. Other parameters (column, mobile phases, gradients) were determined by ECL's internal software (a high-level description is in Supplementary Information section 'HPLC experiment parameter estimation'). Results of the experiment are provided in Supplementary Information section 'Results of the HPLC experiment in the cloud lab'. One can see that the air bubble

the importance of development of automated techniques for quality control in cloud laboratories. Follow-up experiments leveraging web search to specify and/or refine additional experimental parameters (column chemistry, buffer system, gradient and so on) would be required to optimize the experimental results. Further details on this investigation are in Supplementary Information section 'Analysis of ECL documentation search results'.

A separate prompt-to-samples investigation, investigation 3, was conducted by providing a catalogue of available samples, enabling the identification of relevant stock solutions that are on ECL's shelves. To showcase this feature, we provide the Docs searcher module with all L110 Model samples from the catalogue. By simply providing a search term (for example, 'Acetonitrile'), all relevant samples are returned. This is also available in Supplementary Information.

Controlling laboratory hardware

Access to documentation enables us to provide sufficient information for Coscientist to conduct experiments in the physical world. To initiate the investigation, we chose the Openrons OT-2, an open-source liquid handler with a well-documented Python API. The 'Getting Started' page from its documentation was supplied to the Planner in the system prompt. Other pages were vectorized using the approach described above. For this investigation, we did not grant access to the internet (Fig. 4a).

We started with simple plate layout-specific experiments. Straightforward prompts in natural language, such as 'colour every other line with one colour of your choice', resulted in accurate protocols. When executed by the robot, these protocols closely resembled the requested prompt (Fig. 4b–e).

Ultimately, we aimed to assess the system's ability to integrate multiple modules simultaneously. Specifically, we provided the 'UVVIS' working mode, which can be used to pass a microplate to plate reader working in the ultraviolet-visible wavelength range. To evaluate Coscientist's capabilities to use multiple hardware tools, we designed a toy task in 3 wells of a 96-well plate, three different colours are present—red, yellow and blue. The system must determine the colours and their positions on the plate without any prior information.

전체 단어 일치

논문 대상 질의 Copilot

인터넷 액세스가 제한된 이유는 무엇입니까?

11:42 PM

논문 대상 질의 Copilot

논문 중 해당 부분

인공 지능 및 과학적 응용 분야의 안전 문제와 규제 개발의 필요성으로 인해 백서에 설명된 자율 화학 연구 시스템에서는 인터넷 액세스가 제한됩니다. 데이터, 코드 및 프롬프트가 완전히 공개되는 미국 규정 개발이 계획되어 있습니다 [1].

- 실험 중 인터넷 액세스를 제한하는 것은 시스템의 동작을 제어하고 무제한 인터넷 액세스와 관련된 잠재적 위험을 방지하기 위한 예방 조치일 수 있습니다 [1].
- 제한된 인터넷 액세스에도 불구하고 시스템은 인터넷 및 문서 검색, 코드 실행 및 실험 자동화와 같은 도구를 통해 지원되는 대규모 언어 모델을 활용하여 지식을 수집하고 복잡한 실험을 수행합니다 [2].
- 이 시스템은 필요에 따라 인터넷에서 정보를 검색할 수 있는 또 다른 대형 언어 모델인 웹 검색 모델을 통합하여 제한된 인터넷 액세스를 보완합니다 [2].
- 문서의 가용성은 시스템이 실제 세계에서 실험을 수행하는 데 필요한 충분한 정보를 제공하는 데 중요한 역할을 합니다 [1].
- 자율적으로 실험을 설계, 계획 및 수행할 수 있는 시스템의 능력은 인터넷 액세스가 제한된 상황에서도 Coscientist와 같은 인공 지능 시스템이 연구를 발전시킬 수 있는 잠재력을 보여줍니다 [2].

Explain Abstract of this paper in 2 lines. What are the contributions of this?

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MATH



DALL.E3



ChatGPT 탑재
Image Creator from Microsoft Designer
Microsoft Designer

<https://chat.openai.com/>
<https://copilot.microsoft.com/images/create>
<https://designer.microsoft.com/>

텍스트를 입력받아 이미지를 생성하는 AI모델. ChatGPT와 결합되어 사용자의 아이디어를 매우 정확한 이미지로 쉽게 변환할 수 있음. 다양한 스타일의 이미지를 생성할 수 있으며 (자료 링크), 사용자가 입력한 요청을 바탕으로 ChatGPT가 상세한 프롬프트를 자동으로 생성하여 시각화.

장점

- 다양한 종횡비를 포함하여 상세한 요청에 대한 이미지 생성
- 이미지에 텍스트와 타이포그래피를 삽입할 수 있음.
- 한국어를 비롯한 여러 언어로 프롬프팅 가능

단점

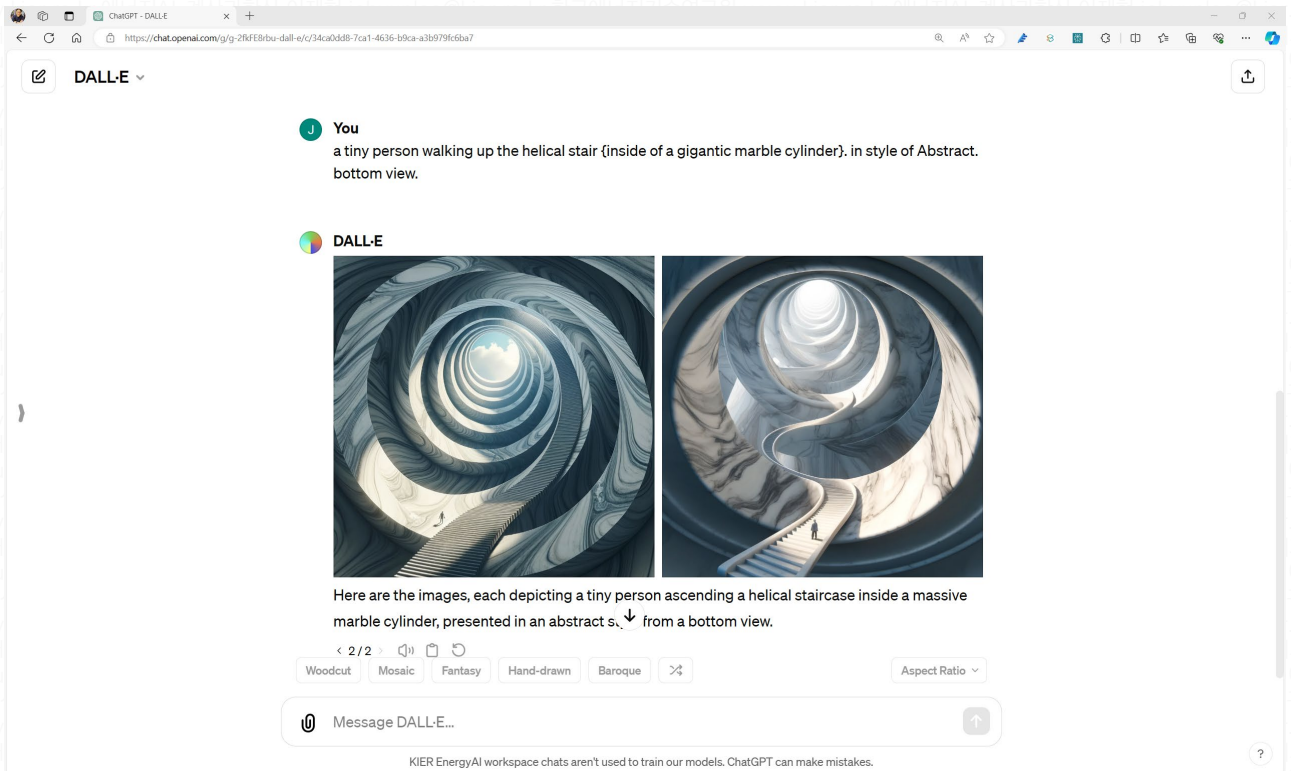
- 정량적인 표현이 어려움 (양, 수, 색 등). 텍스트 표현시 오기 발생 가능성이 있음.
- 지나치게 엄격한 검열로 인해 문제 없는 콘텐츠마저 생성되지 않는 경향이 있음.
- 동일 모델이 다양하게 배포되고 검열 정책과 요금제가 독립적으로 적용되어 혼란스러움.

유료 필수

- ChatGPT DALL.E3 유료 요금제 가입자 한정 사용 가능. API 제공 (공식문서, 요금제)
- Plus 요금제 20 USD/월 또는 Team 요금제 30 USD/월, 300 USD/년

무료

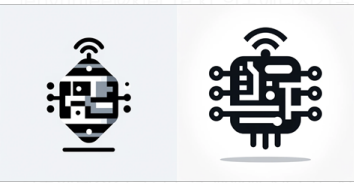
- Microsoft Copilot 포함 Image Creator from Microsoft Designer, Microsoft Designer 사용자는 무료



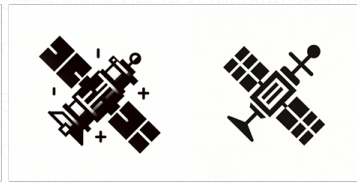


DALL.E3

simple clipart of **물체 이름**, monotone, minimalism, white background



IoT sensor



satellite



stacked paper



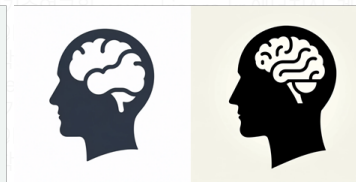
many databases



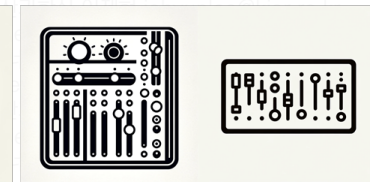
lightening with flame



database

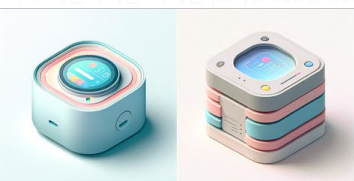


human head with a brain side view

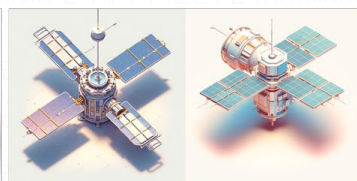


a control panel full of knobs and slide bars

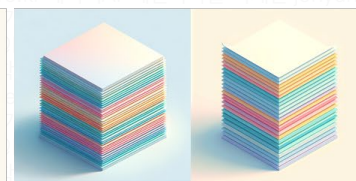
3D art of **물체 이름**, pastel, decorative, isometric, white background



IoT sensor



satellite



stacked paper



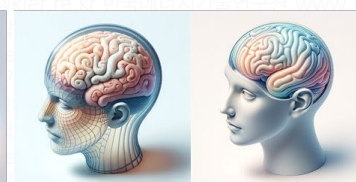
many databases



lightening with flame



database



human head with a brain



a control panel full of knobs and slide bars



"isometric of chibi Korean researchers working in laboratory, anime, white background"



"isometric of chibi Korean office workers working in office, anime, white background"



"a man {simplified} pointing fist up, 3D render, white background"



a robot, concentrated in thinking, simplified, white background"



DALL.E3



describe this image in detail, as much as you can **② 묘사 요청**

Copilot

The image you've uploaded is a cover of the "Nature: The International Weekly Journal of Science." It depicts an underwater scene with a giant clam that is open, showcasing iridescent cells and algae inside. Here are the details:

- Main Visual:** An open giant clam underwater, with iridescent cells and green algae visible inside. The clam is situated on a pinkish substrate, possibly rock or coral, and is surrounded by small orange fish and purple underwater plants.
- Lighting:** The scene is illuminated by beams of light that penetrate the water from above, highlighting parts of the clam and its surroundings.
- Cover Text:**
 - Title: "nature" in bold, white letters at the top.

Ask me anything... **① 이미지 업로드** 0/4000

Copilot 이미지 인식, text 인식 후 답변

The image you've uploaded is a cover of the "Nature: The International Weekly Journal of Science." It depicts an underwater scene with a giant clam that is open, showcasing iridescent cells and algae inside. Here are the details:

- Main Visual:** An open giant clam underwater, with iridescent cells and green algae visible inside. The clam is situated on a pinkish substrate, possibly rock or coral, and is surrounded by small orange fish and purple underwater plants.
- Lighting:** The scene is illuminated by beams of light that penetrate the water from above, highlighting parts of the clam and its surroundings.
- Cover Text:**
 - Title: "nature" in bold, white letters at the top.
 - Subtitle: "The International Weekly Journal of Science" beneath the main title.
 - Feature Article: "The Living Greenhouse: Iridescent cells in giant clams farm colonies of algae" with a page number reference.
- Additional Articles:**
 - Technology: "Gain more hours in a day: Engineers have designed a way to cheat Hermione's time-turner necklace" on page 42.
 - Health: "The anatomy of lack of sleep: A breakdown of how it affects the body, mind, and soul" on page 56.
 - Medicine: "Customized prescription drugs at local pharmacy near you: How researchers have designed drugs based on your DNA" on page 78.

The cover art is a blend of scientific intrigue and artistic representation, likely intended to draw the reader's attention to the symbiotic relationship between the giant clam and the algae, as well as other featured scientific advancements.

Learn more [1 nature.com](#) [2 perplexity.ai](#) [3 elicit.org](#) [4 typeset.io](#) +17 more

Ask me anything... 0/4000

describe the background image as detail as possible, neglecting text information.

이미지 업로드 후 배경 이미지에 대한 상세한 묘사 요청

GPT가 이미지를 인식하여 설명 출력

Copilot

The background of the image presents a tranquil underwater scene. It's highlighted by beams of light filtering through the water from above, which casts a serene and peaceful ambiance. The water is crystal clear, revealing small particles suspended within, likely representing plankton or other floating matter.

In the midst of this underwater setting, there's an artistic depiction of a clam positioned on a pinkish substrate, possibly a rock or coral. The clam is open, showcasing iridescent cells and strands of green algae inside, which rise upwards, surrounded by the crystal-like structures of the cells. Adjacent to the clam, there's a purple sea organism, which could be a type of coral or anemone, adding to the diversity of the marine life depicted in this peaceful underwater tableau. The overall effect is one of an ethereal underwater landscape, full of life and light.

Learn more [1 nature.com](#) [2 perplexity.ai](#) [3 elicit.org](#) [4 typeset.io](#) +17 more

Ask me anything... 0/4000

묘사한 내용에 따라 생성 요청

I'll try to create that.

"A tranquil underwater scene with light rays filtering through the..."

Designer Powered by DALL.E3

Ask me anything... 0/4000



Data Analyst



ChatGPT 탑재

Microsoft Copilot 탑재 (일부 기능)

<https://chat.openai.com/>

<https://copilot.microsoft.com/>

코딩 또는 복잡한 쿼리 없이 데이터 분석을 수행할 수 있도록 도움.

전문가, 연구자, 데이터 분석가들은 쉽게 데이터를 분석, 시각화하며 파이썬 코드를 실행하여 고급 분석을 수행할 수 있음. 파일 업로드와 라이브러리 설치 등을 지원하여 기능을 여러 방향으로 확장할 수 있으며, 문제 해결 방법과 이에 따른 설명을 단기적으로 제공함.

장점

- 코드 작성 없이 데이터 분석 가능.
- 다양한 데이터 소스 연결, 파일 관리 및 문제 해결 지원
- 데이터 시각화 및 파이썬 코드 실행 가능.

단점

- 특정 사용 시나리오에서 정확도 개선이 필요할 수 있음.
- 웹 데이터 다운로드 불가. 사람이 받아서 업로드해야 함.
- 1분 시간 제한으로 인한 복잡한 과업 처리 불가.

유료 필수

- ChatGPT DALL.E3 유료 요금제 가입자 한정 사용 가능. API 제공 ([공식문서](#))
- Plus 요금제 20 USD/월 또는 Team 요금제 30 USD/월, 300 USD/년.

무료

- Microsoft Copilot 사용자는 무료.
- ChatGPT Data Analyst 수준의 자유도는 아니지만 데이터 업로드, 시각화 등 가능

The screenshot shows a chat window with a user's request and ChatGPT's response. The user asks to create a graph of birth rates over time. ChatGPT provides a line graph titled '연도별 출생아수 추이 (1970-2022)' (Trend of Birth Rates by Year (1970-2022)). The y-axis is labeled '출생아수(백만)' (Birth rate in millions) and ranges from 0.2 to 1.6. The x-axis is labeled '연도' (Year) and ranges from 1970 to 2022. The graph shows a general downward trend from approximately 1.1 million in 1970 to about 0.25 million in 2022, with some fluctuations in the middle years.



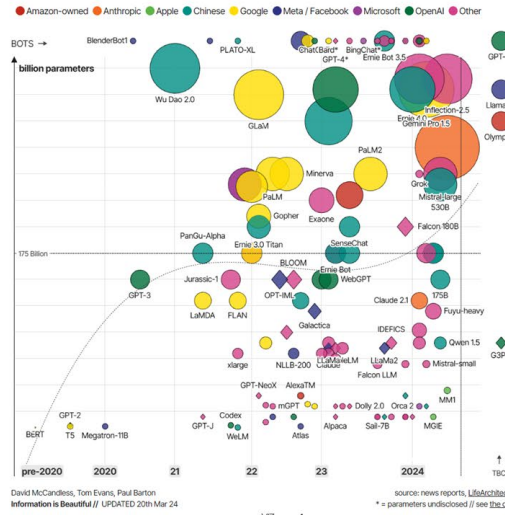
Data Analyst

information is beautiful

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The Rise and Rise of A.I. Large Language Models (LLMs) & their associated bots like ChatGPT



The rise and rise of AI-based Large Language Models (LLMs) like GPT4, LaMDA, LLaMa, PaLM and Jurassic-

<https://informationisbeautiful.net/visualizations/the-rise-of-generative-ai-large-language-models-llms-like-chatgpt/>



	A	B	C	D	E	F	G
1	see the visualisation:	https://informationisbeautiful.net/visualizations/the-rise-of-generative-ai-large-language-models-llms-like-chatgpt/					
2	last update	20th Mar 2023					
3		trained on x billion parameters date note / * = parameters undisclosed link					
4	BERT	Google	0.34	Oct 2018		https://en.wikipedia.org/wiki/BERT_(machine_learning)	
5	GPT-2	OpenAI	1.5	Feb 2019	trained on Reddit only	https://en.wikipedia.org/wiki/GPT-2	
6	TS	Google	11	Oct 2019		https://research.google/pubs/pub43459/	
7	Megatron-11B	Meta / Facebook	11	Apr 2020		https://github.com/facebookresearch/megatron	
8	BlenderBot	Meta / Facebook	9.4	Apr 2020		https://research.facebook.com/publications/blenderbot/	
9	GPT-3	OpenAI	175	May 2020		https://en.wikipedia.org/wiki/GPT-3	
10	Wu Dao 2.0	Beijing Acader	1750	Jan 2021		https://en.wikipedia.org/wiki/WuDao-2.0	
11	GPT-J	EleutherAI	6	Jun 2021		https://github.com/eleutherai/gpt-j	
12	PanGu-Alpha	Huawei	200	Apr 2021		https://arxiv.org/abs/2104.07719	
13	LaMDA	Google	137	Jun 2021		https://en.wikipedia.org/wiki/LaMDA	
14	BlenderBot2.0	Meta / Facebook	9.4	Jul 2021		https://research.facebook.com/publications/blenderbot2/	
15	Jurassic-1	Ai21	178	Aug 2021		https://www.ai21.com/blog/jurassic-1/	
16	Codex	OpenAI	12	Aug 2021	Generates programming code	https://research.openai.com/codex	
17	FLAN	Google	137	Sep 2021		https://research.google/pubs/pub43459/	
18	PLATO-XL	Baidu	11	Sep 2021	chatbot	https://research.baidu.com/en/2021/09/plato-xl	
19	WeLM	WeChat	10	Sep 2022	87% chinese language	https://research.openai.com/	
20	xlarge	Cohere	52.4	Sep 2021		https://research.cohere.com/	
21	Megatron-Turing NLG	Meta / Facebook	530	Oct 2021	Trained on "ebooks and webpages"	https://research.facebook.com/publications/megatron-turing-nlg/	
22	MT-NLG	Microsoft	530	Oct 2021		https://research.microsoft.com/en-us/projects/mt-nlg/	
23	BERT-200	Google	200	Nov 2021		https://cloud.google.com/blog/topics/developers-practitioners/bert-200/	
24	BERT-480	Google	480	Nov 2021		https://cloud.google.com/blog/topics/developers-practitioners/bert-480/	
25	Luminous	Alph Alpha	200	Nov 2021	German-language	https://www.alpha1.com/en/luminous/	
26	Ernie 3.0 Titan	Baidu	260	Dec 2021		https://ai.baidu.com/aiopen/ernie3-titan	
27	GLaM	Google	1200	Dec 2021		https://ai.google/research/pubs/pub43459/	
28	Gopher	Google Deepn	280	Dec 2021		https://www.withgoogle.com/tech/gopher/	
29	GPT-NeoX	EleutherAI	20	Feb 2022		https://www.lmsys.org/blog/2022/02/20/gpt-neox/	
30	GPT Neo	EleutherAI	2.7	Feb 2022		https://lmsys.org/blog/2022/02/20/gpt-neo/	
31	Chinchilla	DeepMind	70	Mar 2022		https://arxiv.org/abs/2203.15556	
32	CodeGen	Salesforce	16	Mar 2022	Generates programming code	https://research.salesforce.com/codegen/	
33	InCoder	Meta	6.7	Apr 2022	generates python and javascript	https://research.facebook.com/publications/incoder/	
34	mGPT	Sber	13	Apr 2022		https://research.openai.com/	
35	PaLM	Google	540	Apr 2022	60 languages	https://ai.google/research/pubs/pub43459/	
36	OPT-IML	Meta AI	175	May 2022		https://research.openai.com/	
37	Minerva	Google	540	Jun 2022		https://ai.google/research/pubs/pub43459/	
38

http://d.llm data .re .temp / spreadsheets / d / 1SEgPaYCkZFM57aGHbBqFN0IPMF2ajThvFUz2ap3bw / edit?pli=1#gid=2145151656



Data Analyst

1. 데이터 업로드 & 처음과 끝 부분 확인

ChatGPT 4

You
Information is Beautiful - The Rise of AI...
Spreadsheet

read the "LLM data" sheet, with the 3rd row as column names, you may neglect the last 4 lines. then, display the first 5 lines and last 5 lines as table.

< 2 / 2 >

ChatGPT
Here are the first and last five entries from the "LLM data" sheet:

First 5 Lines:

Name	Owner	Trained on x Billion Parameters	Date	Note / * = Parameters Undisclosed	Link
BERT	Google	0.34	Oct 2018	N/A	Link
GPT-2	OpenAI	1.50	Feb 2019	Trained on Reddit only	Link
T5	Google	11.00	Oct 2019	N/A	Link
Megatron-11B	Meta / Facebook	11.00	Apr 2020	N/A	Link
BlenderBot1	Meta / Facebook	9.40	Apr 2020	N/A	Link

Last 5 Lines:

Name	Owner	Trained on x Billion Parameters	Date	Note / * = Parameters Undisclosed	Link
530B	ByteDance	530.0	Feb 2024	N/A	Link
Mistral-large	Mistral AI	540.0	Feb 2024	MMLU = 81.2	Link
MM1	Apple	30.0	Mar 2024	N/A	Link
Infection-	Infection	1200.0	Mar	MMLU = 85.5	Link

Message ChatGPT...

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.

2. 관심 데이터 선별 (모델명, 개발사, 파라미터수, 공개일)

- GPT-5 등 불확실 데이터 삭제
- 개발사 수 확인 (61개)

ChatGPT 4

You
make a subset dataset. keep all rows and columns = ["Name", "Owner", "Trained on x Billion Parameters", "Date"]. The column name "Trained on x Billion Parameters" should be replaced with "parameters". provide me download link of the subset as .xlsx file.

ChatGPT
The subset of the dataset has been created and saved as an Excel file. You can download it using the following link:
[Download the subset dataset \(-\)](#)

You
Remove the rows from the subset of which "date" is "Unknown", and keep it in memory as "df_llm".

ChatGPT
Rows with the "date" marked as "Unknown" have been removed from the subset. The updated dataset is now stored in memory as 'df_llm'. (-)

You
count and list the unique names of "owner"

ChatGPT
There are 61 unique owners listed in the dataset. Here they are:

- Google
- OpenAI
- Meta / Facebook
- Beijing Academy of AI
- EleutherAI
- Huawei
- AI21
- Baidu
- WeChat

Message ChatGPT...

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.



Data Analyst

1. 데이터 업로드 & 처음과 끝 부분 확인
2. 관심 데이터 선별 (모델명, 개발사, 파라미터수, 공개일)
 - GPT-5 등 불확실 데이터 삭제
 - 개발사 수 확인 (61개)
 - 개발사 선별, 중복 이름 처리 및 저장
 - 결과 확인 (8개)

ChatGPT 4

You: 61 is too many. remove "" from the "name". refine the data with the "owner", by including only follows: ["Google", "OpenAI", "Meta / Facebook", "Microsoft", "Google Deepmind", "DeepMind", "Meta", "Meta AI", "Anthropic", "LG", "Open AI / Microsoft", "Microsoft / OpenAI", "Facebook", "Mistral AI", "Twitter"].

"Google Deepmind" and "DeepMind" should be replaced with "Google". "Meta AI", "Meta / Facebook" and "Facebook" should be replaced with "Meta". The owner of "WebGPT" should be replaced with "OpenAI". The owner of "BingChat" should be replaced with "Microsoft"

after processing, keep the data as "df_lmip" and provide me the download link as "df_lmip.xlsx"

ChatGPT: The data has been processed according to your instructions and saved as "df_lmip.xlsx". You can download it using the following link: [Download df_lmip.xlsx \(-\)](#)

You: count and list the unique names of "owner"

ChatGPT: After refining the dataset, there are now 8 unique owners:

1. Google
2. OpenAI
3. Meta
4. Microsoft
5. Anthropic
6. LG
7. Mistral AI
8. Twitter

This refined list focuses on a smaller set of key players in the large language model space. (-)

Message ChatGPT...

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.

1. 데이터 업로드 & 처음과 끝 부분 확인
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 - 개발사 선별, 중복 이름 처리 및 저장
 - 결과 확인 (8개)
3. 개발사별 색 지정 : 웹 검색 결과 활용
 1. 유사 색일 경우 다른 색 지정, 결과 확인 (hex code)

ChatGPT 4

You: choose the right colors for the owners. Using web browsing, search the logos of the owners, and determine representing colors.

ChatGPT: The OpenAI logo, as of 2017, is characterized by its simple, black text-based design. This implies that black would be a representative color for OpenAI. For the other companies, their logos typically include:

- Google: Known for its multi-colored logo featuring blue, red, yellow, and green.
- Meta (previously Facebook): Meta's branding often uses a bright blue color.
- Microsoft: Their logo is a combination of blue, green, yellow, and red squares.
- Anthropic: As a relatively new AI company, their logo color is not as well-known as the others.
- LG: LG's logo is typically red.
- Mistral AI: A lesser-known company in AI, their logo color is not widely recognized.
- Twitter: Twitter is known for its light blue bird logo.

For the most accurate representation of Anthropic and Mistral AI, you might consider looking up their logos directly.

You: Check if there are any similar colors. If any, replace them with the distinguished ones. Finally all hues should be distanced by 30 degree. If the color searching is done, list them with the owner name as *(name): (color in hex code)

ChatGPT: I'll determine the representative colors in hex codes for the listed companies, ensuring that each color is distinct and separated by at least 30 degrees in hue. This will be an approximation based on the typical colors used in their logos:

1. Google: Google's logo uses a combination of primary and secondary colors. To represent this diversity, I'll choose one of these colors, such as blue (#4285F4).
2. OpenAI: As their logo is typically black, a good representation would be black (#000000).

Message ChatGPT...

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.



Data Analyst

1. 데이터 업로드 & 처음과 끝 부분 확인
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 - 결과 확인 (8개)
3. 개발사별 색 지정 : 웹 검색 결과 활용
 1. 유사 색일 경우 다른 색 지정, 결과 확인 (hex code)
 2. 부적절 색 교체 (OpenAI : black → gray)
 3. 선정 결과 확인 (color table)

ChatGPT 4

You: "black" is not a suitable color for company; replace it with "gray" for OpenAI.

ChatGPT: Certainly, replacing black with gray for OpenAI is a good choice to maintain distinction while ensuring a suitable color representation. Here's the revised list with OpenAI now represented by gray:

- Google: #4285F4 (Blue)
- OpenAI: #808080 (Gray)
- Meta: #4267B2 (Blue)
- Microsoft: #0078D7 (Blue)
- Anthropic: #800080 (Purple)
- LG: #A50034 (Red)
- Mistral AI: #008080 (Teal)
- Twitter: #1DA1F2 (Light Blue)

These colors are now well-differentiated and suitable for representing each company.

You: can you show the colors as a table with owner names?

ChatGPT:

Owner	Color
Google	#4285F4
OpenAI	#808080
Meta	#4267B2
Microsoft	#0078D7
Anthropic	#800080
LG	#A50034
Mistral AI	#008080
Twitter	#1DA1F2

Here's a table displaying the owners along with their corresponding colors:

Message ChatGPT...

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.

1. 데이터 업로드 & 처음과 끝 부분 확인
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 - 결과 확인 (8개)
3. 개발사별 색 지정 : 웹 검색 결과 활용
 - 유사 색일 경우 다른 색 지정, 결과 확인 (hex code)
 - 부적절 색 교체 (OpenAI : black → gray)
 - 선정 결과 확인 (color table)
 - 구분이 어려운 색 재지정 (hue 차이 20도 이상), 결과 확인

ChatGPT 4

You: it is hard to distinguish Google, Meta, Microsoft and Twitter. apply alternatives (of those hue should be different larger than 20 degree) and show the table again.

ChatGPT: To ensure the colors for Google, Meta, Microsoft, and Twitter are distinct and separated by more than 20 degrees in hue, I will select alternative colors for each:

1. Google: I'll choose Green (#34A853) for Google to avoid confusion with the others.
2. Meta: Keeping Meta's blue (#4267B2) as it is unique among the alternatives.
3. Microsoft: For Microsoft, I'll use Red (#F25022) to differentiate from the blue tones.
4. Twitter: Twitter will be represented by a unique color, Sky Blue (#1DA1F2), which is different from Meta's blue.

Here's the table with the updated color choices:

Owner	Color
Google	#34A853
OpenAI	#808080
Meta	#4267B2
Microsoft	#F25022
Anthropic	#800080
LG	#A50034
Mistral AI	#008080
Twitter	#1DA1F2

Here's the updated table with distinct colors for each company:

- Google: Green (#34A853)
- OpenAI: Gray (#808080)
- Meta: Blue (#4267B2)
- Microsoft: Red (#F25022)
- Anthropic: Purple (#800080)
- LG: Red (#A50034)
- Mistral AI: Teal (#008080)
- Twitter: Sky Blue (#1DA1F2)

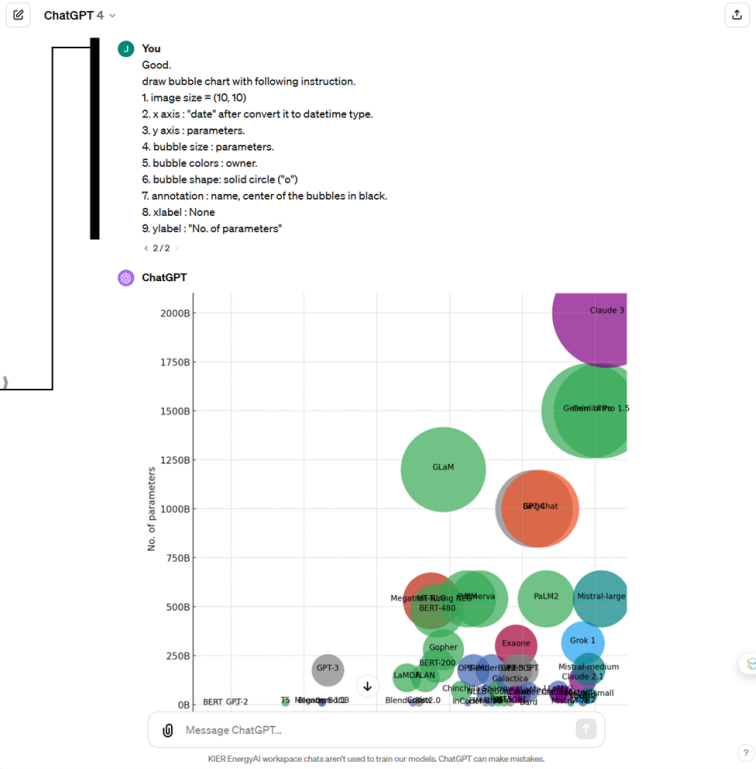
Message ChatGPT...

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.



Data Analyst

1. 데이터 업로드 & 처음과 끝 부분 확인
2. 관심 데이터 선별 (모델명, 개발사, 파라미터수, 공개일)
 - GPT-5 등 불확실 데이터 삭제
 - 개발사 수 확인 (61개)
 - 개발사 선별, 중복 이름 처리 및 저장
 - 결과 확인 (8개)
3. 개발사별 색 지정 : 웹 검색 결과 활용
 - 유사 색일 경우 다른 색 지정, 결과 확인 (hex code)
 - 부적절 색 교체 (OpenAI : black → gray)
 - 선정 결과 확인 (color table)
 - 구분이 어려운 색 재지정 (hue 차이 20도 이상), 결과 확인
4. 데이터 시각화 (bubble chart)



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4. 데이터 시각화 (bubble chart)
 - Text 겹침 해소 시도 : 실패했으나 라이브러리 추천





Data Analyst

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 - Text 겹침 해소 시도 : 실패했으나 라이브러리 추천
 - Text 겹침 해소 재시도 : **라이브러리 업로드**
 - 이미지 크기, 범위 수정. 범례 추가

ChatGPT 4

You

adjustText-1.1-py3-none-any.whl
File

1. try to reduce overlap using adjustText after installation of this library.
2. I wish the figure size larger, (20 × 10).
3. set max. xlim as 2025
4. set max. ylim as 2300B
5. add legend on upper left corner of the Axes. small rectangle boxes filled with company color accompanied with company names should be represented, for unique values.

2 / 2

Here's the updated bubble chart with the requested modifications:

- The figure size is now larger (20 × 10).
- The x-axis (date) has been set with a maximum limit up to the year 2025.
- The y-axis (number of parameters) has been set with a maximum limit of 2300B.
- Text labels have been adjusted using 'adjustText' to reduce overlap.
- A legend has been added in the upper left corner, displaying unique company colors with their names.

This chart provides a clearer, more spacious visualization of the large language models, their release dates, and the number of parameters, while clearly representing each company.

Message ChatGPT...

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.

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 - Text 겹침 해소 재시도 : 라이브러리 업로드
 - 이미지 크기, 범위 수정. 범례 추가
 - x, y 축 및 범례 텍스트 크기 변경 (50% 증대)
5. 데이터 보완 (Naver HyperClovax)
 - 웹 검색 데이터 수집, 기존 데이터에 추가

ChatGPT 4

You

enlarge the text size of the xticklabels, yticklabels, ylabel and legend by 50%. The marker on the legend should be enlarged by 50% also. provide me the download link.

ChatGPT

The bubble chart has been updated with enlarged text sizes for the x-tick labels, y-tick labels, ylabel, and legend, as well as enlarged markers in the legend. You can download the updated chart using the following link:

[Download the Modified Bubble Chart Image \[-\]](#)

You

Search for the information on "Naver HyperClovax" on web. Add it to the "df_llmcp" with proper coloring to represent Naver as well as distinguished with others. save it to "df_llmcpn.xlsx", and show the colors as a table with owner names.

ChatGPT

Error analyzing

Naver, the South Korean internet search company, has launched a generative AI tool called HyperCLOVA X. This large language model offers services akin to a ChatGPT-like AI chatbot, named CLOVA X, and a generative AI-based search engine called Cue, which is integrated into Naver's existing search engine. HyperCLOVA X, an upgraded version of Naver's HyperCLOVA, has been initiated for creators and enterprise customers. While HyperCLOVA reportedly has more than 204 billion parameters, the specific parameter count for HyperCLOVA X hasn't been disclosed [1].

To add HyperCLOVA X to the "df_llmcp" dataset and assign a distinct color for Naver, I will first choose an appropriate color that is both representative of Naver and distinct from the existing colors used for other companies. Then, I'll add the data about HyperCLOVA X to the dataset and save it as "df_llmcpn.xlsx". Let's proceed with these steps.

The data for HyperCLOVA X has been added to the dataset with Naver represented by a distinct deep

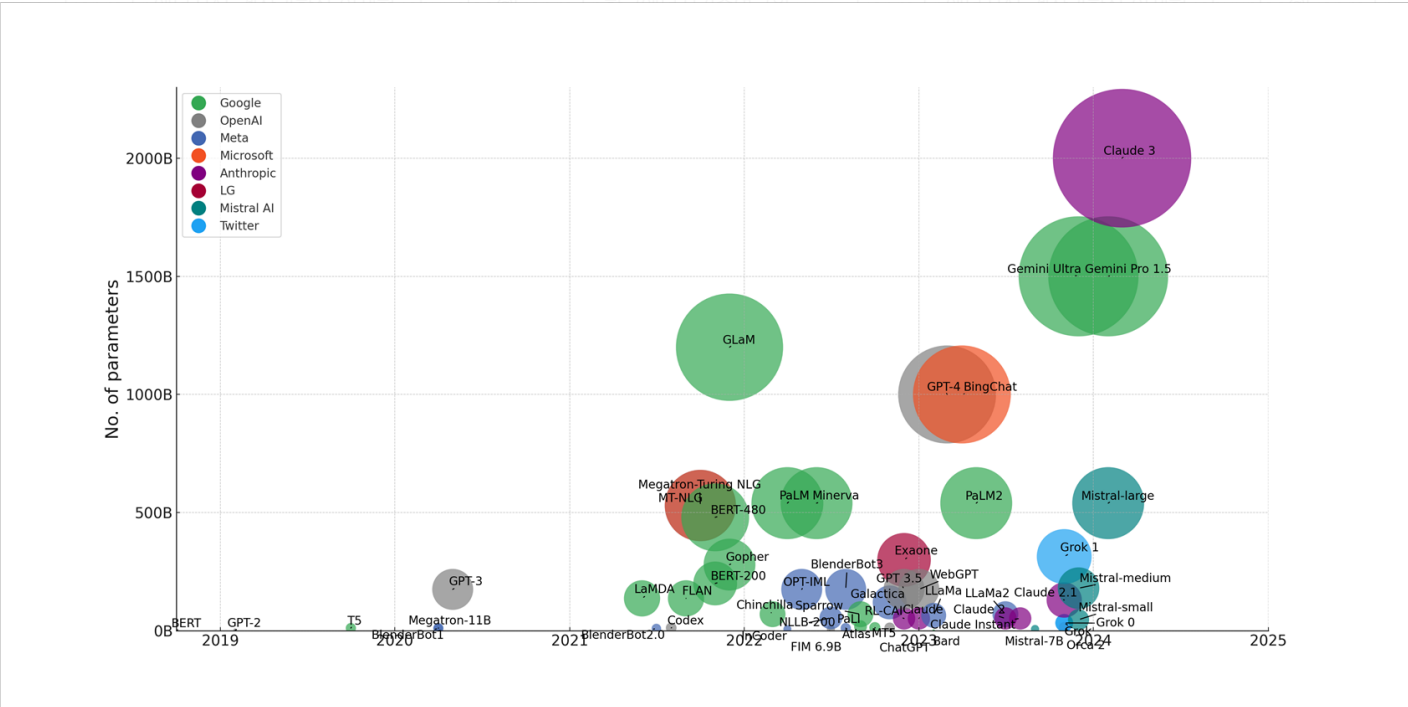
Message ChatGPT...

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Data Analyst

중간 결과물 확인



- 데이터 업로드 & 처음과 끝 부분 확인
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 - 결과 파일 다운로드 (excel 형식)

ChatGPT 4

1 You enlarge the text size of the xticklabels, yticklabels, ylabel and legend by 50%. The marker on the legend should be enlarged by 50% also. provide me the download link.

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[Download the Modified Bubble Chart Image \[-\]](#)

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4 ChatGPT Error analyzing

5 Naver, the South Korean internet search company, has launched a generative AI tool called HyperCLOVA X. This large language model offers services akin to a ChatGPT-like AI chatbot, named CLOVA X, and a generative AI-based search engine called Cue, which is integrated into Naver's existing search engine. HyperCLOVA X, an upgraded version of the previous HyperCLOVA, has been initiated for creators and enterprise customers. While HyperCLOVA reportedly has more than 204 billion parameters, the specific parameter count for HyperCLOVA X hasn't been disclosed [1].

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Message ChatGPT...

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 - 웹 검색 활용 Naver 데이터 색 지정
 - 결과 파일 다운로드 (excel 형식)
- 데이터 시각화 재실행
- 최종 이미지 파일 다운로드

ChatGPT 4

You draw bubble chart with same condition but updated data

Here's the updated bubble chart incorporating the data for HyperCLOVA X from Naver:

- The figure size, text sizes, and marker sizes remain consistent with the previous chart.
- The chart now includes the information for HyperCLOVA X, represented by Naver in a distinct deep green color.
- The x-axis and y-axis limits, as well as the formatting, remain the same as before.

This chart provides an extended overview of the large language models, now including Naver's contribution, with distinct visual representations for each company. (-)

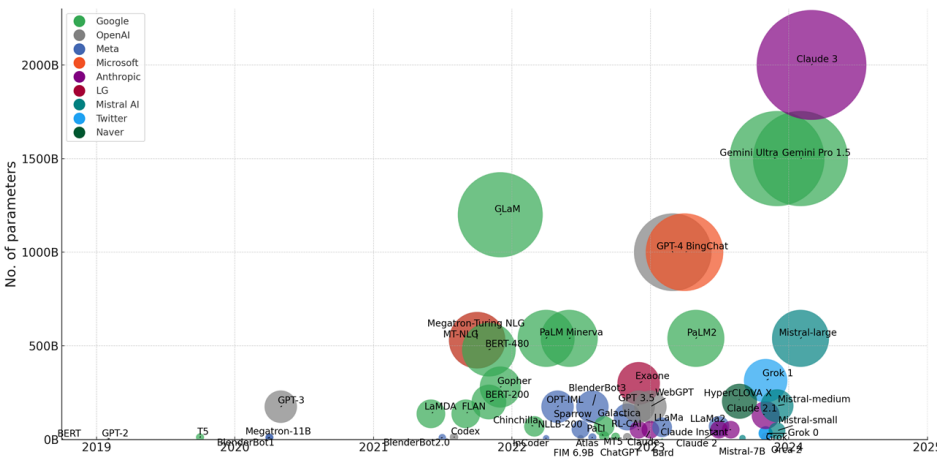
You provide me the download link of the image

ChatGPT: The updated bubble chart image has been saved and is available for download. You can access it using the following link:

Message ChatGPT..

KIER EnergyAI workspace chats aren't used to train our models. ChatGPT can make mistakes.

- 최종 그래프 및 데이터



Excel spreadsheet showing data for AI models. Columns include name, owner, parameters, date, and color.

name	owner	parameters	date	color
WebGPT	OpenAI	175	2023-01-01 00:00:00	#808080
Claude	Anthropic	52	2023-01-01 00:00:00	#808080
LLaMa	Meta	65	2023-02-01 00:00:00	#426782
Bard	Google	0.7	2023-02-01 00:00:00	#34A853
GPT-4	OpenAI	1000	2023-03-01 00:00:00	#808080
BingChat	Microsoft	1000	2023-04-01 00:00:00	#F25022
PaLM2	Google	540	2023-05-01 00:00:00	#34A853
LLaMa2	Meta	70	2023-07-01 00:00:00	#426782
Claude 2	Anthropic	52	2023-07-01 00:00:00	#808080
Claude Instant	Anthropic	52	2023-08-01 00:00:00	#808080
Mistral-7B	Mistral AI	7	2023-09-01 00:00:00	#008080
Orca 2	Microsoft	13	2023-11-01 00:00:00	#F25022
Grok	Twitter	33	2023-11-01 00:00:00	#1DA1F2
Grok 0	Twitter	33	2023-11-01 00:00:00	#1DA1F2
Claude 2.1	Anthropic	130	2023-11-01 00:00:00	#808080
Grok 1	Twitter	314	2023-11-01 00:00:00	#1DA1F2
Mistral-small	Mistral AI	46.7	2023-12-01 00:00:00	#008080
Mistral-medium	Mistral AI	180	2023-12-01 00:00:00	#008080
Mistral-large	Mistral AI	1500	2023-12-01 00:00:00	#34A853
Gemini Ultra	Google	1500	2024-02-01 00:00:00	#808080
Mistral-large	Mistral AI	540	2024-02-01 00:00:00	#008080
Gemini Pro 1.5	Google	1500	2024-02-01 00:00:00	#34A853
Claude 3	Anthropic	2000	2024-03-01 00:00:00	#808080
HyperCLOVA X	Naver	204	2023-08-24 00:00:00	#005730



<https://app.diagrams.net/>, <https://draw.io>

다양한 유형의 다이어그램을 쉽고 효과적으로 작성할 수 있는 다이어그램 소프트웨어. 플로우 차트, 조직도, UML 다이어그램, 네트워크 맵 등을 포함하여 많은 종류의 다이어그램을 제작할 수 있으며, 다양한 스토리지 플랫폼과 오프라인 데스크탑 앱과 통합되어 있음.

장점

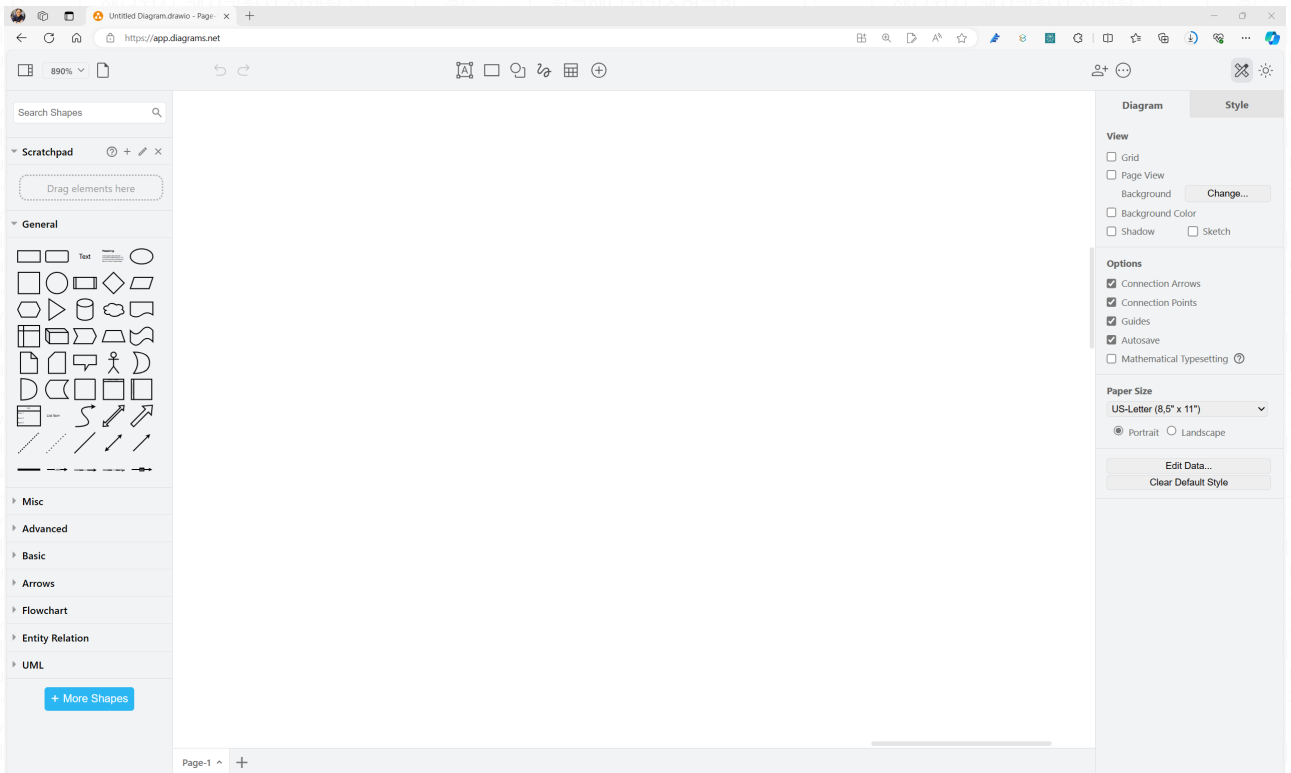
- 다양한 유형의 다이어그램 생성 가능
- 여러 플랫폼과의 통합 지원.
- 대부분의 경우 무료.

단점

- 복잡한 다이어그램 작성시 연습이 많이 필요함.
- 특정 고급 기능에 대한 지원이 부족할 수 있음.

유료 optional

- Jira와 Confluence용 유료 버전을 제공하며 협업을 위한 다이어그램 작성 도구로 사용.
- 사용자 수에 따라 11-100명은 1 USD/人, 251-1000명은 0.13 USD/人으로 책정. ([유료 요금제 정보 링크](#))





The screenshot displays the mindmapdraw.io interface. At the top, there's a search bar and a 'Scratchpad' section with a 'Drag elements here' area. Below this is a 'General' toolbar with various shapes and tools. The main workspace contains a mind map with several nodes, each with a blue box highlighting a specific concept:

- 도형** (Shapes): Located at the top left, pointing to a node containing various geometric shapes.
- 데이터 모델링 : ChatGPT Data Analysis** (Data Modeling): Located in the upper middle, pointing to a node with a diagram of data flow.
- 개별 논문 이해 : SCISPACE** (Individual Paper Understanding): Located in the middle, pointing to a node with a diagram of a research paper structure.
- 참고문헌 탐색 : connectedpapers** (Reference Search): Located in the middle right, pointing to a node with a network diagram of papers.
- 전체적인 흐름 : perplexity** (Overall Flow): Located in the lower middle, pointing to a node with a complex flow diagram.
- 도형 속성** (Shape Properties): Located at the bottom right, pointing to a node with a diagram of a shape's properties.

At the bottom, there's a 'Diagram' style panel with various options like 'View', 'Page View', 'Background Color', and 'Options'.

Search Shapes

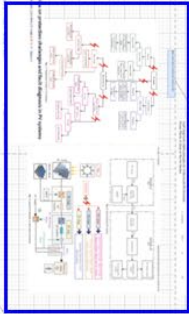
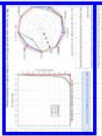
Scratchpad ? + / X

Drag elements here

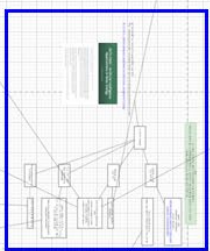
General

- Misc
- Advanced
- Basic
- Arrows
- Flowchart
- Entity Relation
- UML

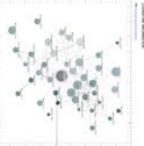
+ More Shapes



개별 논문 이해 : SCISPACE



전체적인 흐름 : perplexity



도형

도형 속성

Diagram Style

View

- Grid
- Page View
- Background
- Background Color
- Shadow
- Sketch

Options

- Connection Arrows
- Connection Points
- Guides
- Autosave

Paper Size

A4 (210 mm X 297 mm)

Portrait Landscape

Edit Data... Clear Default Style

mindmapdraw.io

File Edit View Arrange Extras Help

20%

Share