

Microsoft Copilot

OPCUG & PATACS

Lorrin R. Garson

May 18, 2024

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Overview

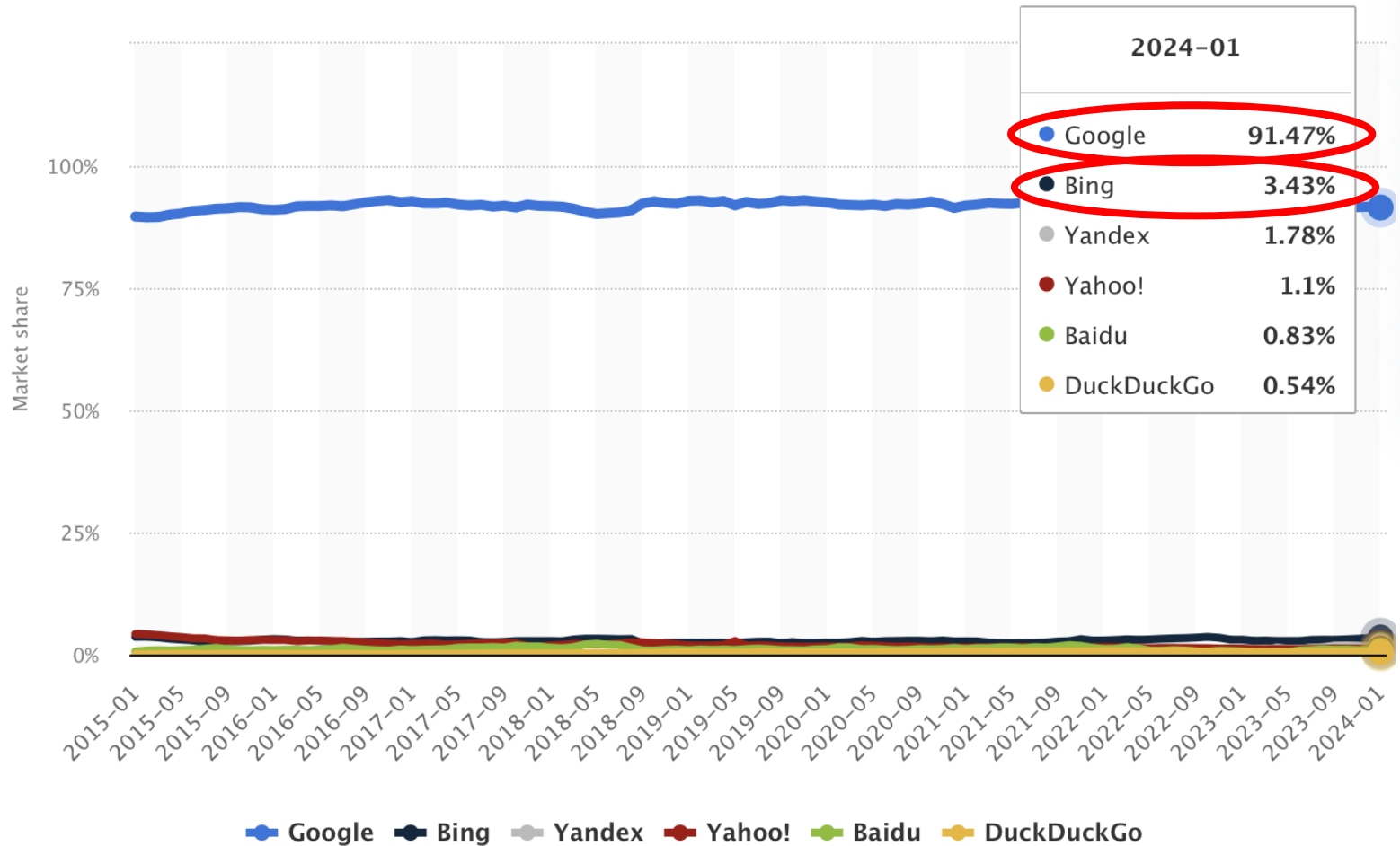
- Search engines
- Explanation of artificial intelligence
- Variants of Microsoft Copilot
- Test examples of Copilot
- An $E = mc^2$ detour
- More tests of Copilot
- Availability of AI software



Search Engine Market Share




















(Worldwide 2015-2024)

Zoomable Statistic: Select the range in the chart you want to zoom in on.



A Gaggle of Search Engines

Active link

Name	URL	Comments
Aol	 URL	One of the first
Bing	 URL	Popular
Brave	 URL	Emphasizes user privacy
DuckDuckGo	 URL	Doesn't collect or store personal information
Ecosia	 URL	Uses ad revenue for environmental purposes
Gibiru	 URL	"Uncensored private search" doesn't sell private data
Google	 URL	The gorilla in the room with 92% market share
LinkedIn	 URL	Professional networking platform
Openverse	 URL	Copyright free material
Perplexity.ai	 URL	A chatbot that links answers to cited sources (AI)
SlideShare	 URL	Search for documented slideshow presentations
Startpage	 URL	Uses metasearch approach of Google, Bing, etc.
Swisscows	 URL	Uses family-friendly semantic search engine (AI)
Wayback Machine	 URL	Free books, movies, etc
WolframAlpha	 URL	A computational knowledge engine
X	 URL	Formerly Twitter
Yahoo	 URL	Offers searching, email, news, finance, etc.
Yep	 URL	Offers user privacy by not tracking users or selling data
You	 URL	An AI powered search engine using natural language processing

What is Artificial Intelligence?

- The ability of a digital computer to perform tasks commonly associated with intelligent beings
- Tasks like?



What is Artificial Intelligence? (cont.)

- Tasks include:
 - ✓ Reasoning
 - ✓ Discovering meaning
 - ✓ Providing generalizations
 - ✓ Learning from past experiences



What is Artificial Intelligence? (cont.)

- In more practical terms:
 - ✓ Seeing and understanding visual information
 - ✓ Translating spoken and written language
 - ✓ Analyzing data
 - ✓ Making recommendations
 - ✓ Composing stories, poems and music
 - ✓ Controlling devices (e.g. robots)
 - ✓ And more...



History of AI from Microsoft Copilot—Boom & Bust

Birth of AI (1941-56):

- The invention of the programmable digital computer in the 1940s laid the groundwork for modern AI.
- Scientists began discussing the possibility of building an electronic brain.
- The field of AI research was founded during a workshop at Dartmouth College in 1956.

Early Successes (1956-1974):

- Researchers predicted that a machine as intelligent as a human would exist within a generation.
- Notable AI systems included **Theseus**, a remote-controlled mouse that could find its way out of a labyrinth and remember its course.

First AI Winter (1974-1980): Bust

- Critics and funding challenges led to a slowdown in AI research.
- The difficulty of creating human-level intelligence became evident.

Boom (1980-1987): Boom

- Interest in AI surged, but investors later became disillusioned due to unmet expectations.

Second AI Winter (1987-1993): Bust

- Funding declined, and progress stagnated.

AI (1993-2011): Boom

- Japan's visionary initiative inspired renewed interest and investment.
- However, challenges persisted.

Deep Learning and Big Data (2011-2020):

Boom

- Machine learning methods, powerful hardware, and massive data sets led to breakthroughs.
- AI applications expanded across academia and industry.

Large Language Models and the AI Era (2020-present):

Boom

- AI systems now excel in language and image recognition.
- Despite mixed real-world performance, AI continues to shape our lives.

More history of AI



What is Microsoft Copilot*?

- An AI-powered platform that provides a range of functions:
 - ✓ Answers questions — search & retrieval
 - ✓ Translates between languages
 - ✓ Creates poems & music
 - ✓ Creates drafts of documents
 - ✓ Creates pictures
 - ✓ Creates computer code
 - ✓ And more...



* Initial release February 7, 2023

Four Variants of Copilot

1. Copilot Free ← today's focus

- ✓ Basic features (most previously mentioned tasks)
- ✓ Provides links to additional information
- ✓ Produces collated information*



* Not just a list of “hits”.

Four Variants of Copilot (cont.)

2. Copilot Pro*

- ✓ \$20 /month/user
- ✓ Priority access during peak times
- ✓ Faster image creation
- ✓ Customization through Copilot GPT builder



* For businesses not for individuals.

Four Variants of Copilot (cont.)

3. Copilot for Microsoft 365*

- ✓ \$30 /month/user
- ✓ Integrated with Word, Excel, PowerPoint, Outlook and OneNote
- ✓ Integrated with Microsoft Teams
- ✓ Building custom Copilot Studio and Azure AI Studio



* For businesses not for individuals.

Four Variants of Copilot (cont.)

4. Copilot Studio*

- ✓ \$200—25,000 messages/month
- ✓ Integrates with Microsoft 365
- ✓ Create your own Copilots tailored to specific needs
- ✓ Build unique AI-powered tools
- ✓ Copilot on steroids?



* For businesses not for individuals.

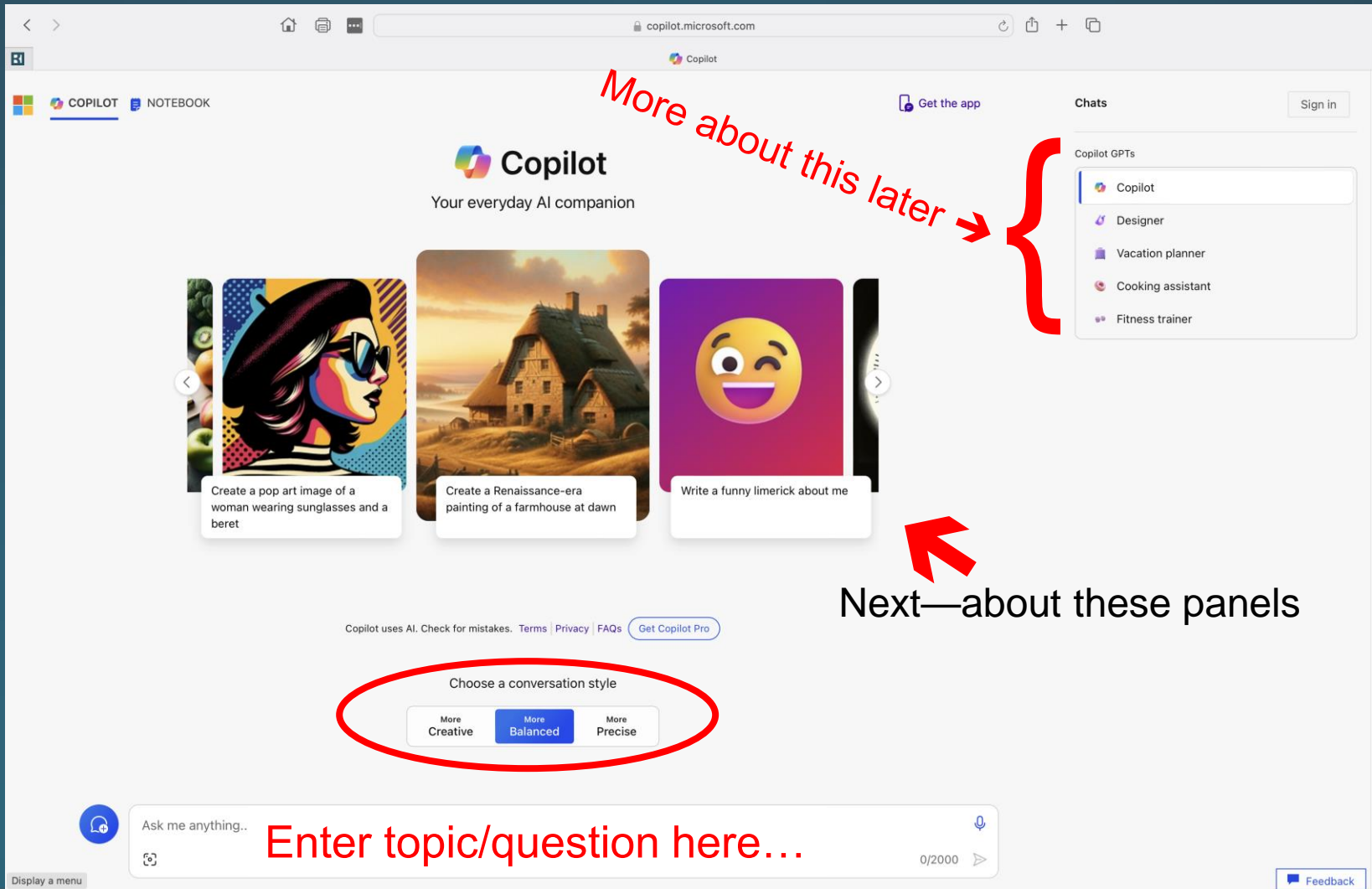
Availability of Copilot

- Computers with Windows 11
- Apple computers*
- Apple iPads
- Apple iPhones
- On the Web (see <https://copilot.microsoft.com>)



* Copilot.app has been removed from the Apple App Store

The Web Interface for Copilot*



The screenshot shows the Microsoft Copilot web interface. At the top, the URL is `copilot.microsoft.com`. The main heading is "Copilot Your everyday AI companion". Below this are three example cards: a pop art woman, a Renaissance farmhouse, and a limerick prompt. A red arrow points from the text "More about this later" to a "Chats" sidebar on the right containing "Copilot GPTs" like Designer, Vacation planner, etc. Another red arrow points from the text "Next—about these panels" to a "Choose a conversation style" section with buttons for "More Creative", "More Balanced", and "More Precise". At the bottom, a text input field is labeled "Enter topic/question here...".

* On an Apple M1 iMac computer with macOS Sonoma 14.4

The Web Interface for Copilot (cont.)

Constantly changing →

What are the top three vehicles for a family of six on a budget?

Give me a weird fact and hypothesize what it reveals about the world

Write a joke that my coworkers would find funny

I'm thinking of making a career change. Can you help me go through pros and cons?

Should I have a hometown wedding or a destination wedding?

Compose a love song that doubles as a proposal
Suno Terms | Privacy

What are some popular children's clothing brands?

Give me a grocery list for a seafood dinner that isn't too spicy

Should I buy a road bike or a mountain bike if I want to exercise?

← Click here



When deciding between a road bike and a mountain bike for exercise, consider your fitness goals and preferences. Here are the main differences to help you choose:

1. Cardiovascular Workout:

- **Road Bikes:** Designed for smooth pavements, road bikes allow consistent and prolonged pedaling. They provide an excellent cardiovascular workout during long-distance rides, commuting, touring, or racing.
- **Mountain Bikes:** The varied terrains and obstacles mean riders experience bursts of intense effort followed by periods of lower intensity, similar to interval training. This can benefit cardiovascular health and stamina¹.

2. Muscle Engagement:

- **Road Bikes:** Primarily engage lower body muscles (quads, hamstrings, calves, and glutes). The aerodynamic position also engages the core.
- **Mountain Bikes:** Offer a more comprehensive full-body workout. Rough terrains require active use of arms, shoulders, core, and legs for maneuvering and balance¹.

3. Flexibility and Balance:

- **Road Bikes:** Consistent terrain allows steady rhythm, focusing on pedaling technique and endurance.
- **Mountain Bikes:** Uneven paths and obstacle navigation enhance flexibility, balance, and coordination¹.

4. Intensity and Caloric Burn:

- **Road Bikes:** Steady-state cardio burns calories consistently over extended periods.
- **Mountain Bikes:** Unpredictable terrains and sudden bursts of energy lead to higher calorie burns in shorter durations, effective for weight loss and muscle building¹.

5. Bone and Joint Health:

6. Mental Health and Well-being:

- **Road Bikes:** Long rides on paved roads can be meditative, reducing stress.
- **Mountain Bikes:** Challenges of off-road biking provide a sense of adventure, boost confidence, and enhance mental well-being¹.

In summary:

- Road Bikes are better for cardio, endurance, and consistent calorie burn.
- Mountain Bikes are great for building strength, engaging the whole body, and burning calories on varied terrain²³.

Choose based on your preferences. whether you seek high-intensity workouts (road bike) or a more relaxed.

Another Query → Copilot

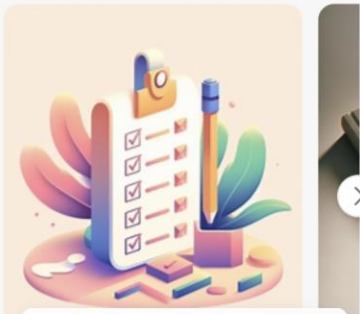
Your everyday AI companion



Create a slogan for a new social media platform that specializes in sarcasm



Paint a winter landscape with a pack of foxes admiring the aurora borealis



I'm thinking of making a career change. Can you help me go through pros and cons?

Copilot uses AI. Check for mistakes. [Terms](#) | [Privacy](#) | [FAQs](#) [Get Copilot Pro](#)

Choose a conversation style

- More Creative
- More Balanced**
- More Precise



Tell me about Microsoft Copilot



Certainly! **Microsoft Copilot** is an AI-powered productivity tool developed by Microsoft. Let me provide you with some key details:

1. Purpose and Features:

- **Boosts Productivity:** Copilot leverages the power of AI to enhance productivity.
- **Creativity:** It assists users in creating content, including poems and songs.
- **Chat Experience:** Users can interact with Copilot through a simple chat interface.

2. Availability:

- You can access Copilot via the **Microsoft Edge** or **Chrome** browsers on **Windows** and **Mac OS**.
- Sign in using your **Microsoft account** or **Entra ID**.

3. Integration:

- Copilot works alongside popular **Microsoft 365 apps**, such as Word, Excel, PowerPoint, Outlook, and Teams.
- It combines the power of **large language models (LLMs)** with your organization's data to enhance productivity within your workflow ¹ ².

4. Comparison to Cortana:

- Copilot serves as Microsoft's primary replacement for the **discontinued Cortana** ³.

5. Try It Out:

- You can explore Copilot by signing in and experiencing its capabilities ⁴ ⁵. ← **Hypertext links**

Remember, while Copilot is a powerful tool, it's essential to use it responsibly and in alignment with your organization's guidelines. 🚀

Learn more ¹ [learn.microsoft.com](#) ² [adoption.microsoft.com](#) ³ [en.wikipedia.org](#) ⁴ [copilot.microsoft.com](#) ⁵ [microsoft.com](#)



[?] [How does Copilot work?](#) [What are some examples of how to use Copilot?](#) [Can I customize the settings in Copilot?](#)



Ask me anything...



0/2000

Another Query → Copilot

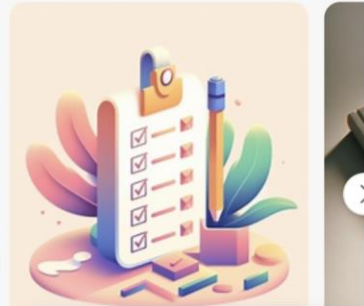
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More
Balanced

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Precise



Who is Lorrin Garson

She!

her!

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Additionally, Lorrin R. Garson has a **Goodreads** profile where she is associated with the book "The ACS Style Guide" and has received positive ratings from readers². Her expertise extends beyond scientific communication, as she has also contributed to computer science publications³.

If you're interested in scientific writing or need guidance on communicating research effectively, exploring "The ACS Style Guide" could be beneficial! 📖🔬

Learn more

1  pubs.acs.org

2  [goodreads.com](https://www.goodreads.com)

3  dblp.org



1 of 5



What is the ACS?

Can you tell me more about scientific communication?

▶▶▶▶▶ THIRD EDITION

The ACS Style Guide

Effective Communication
of Scientific Information

Anne M. Coghill
Lorrin R. Garson
Editors

Wrong!



AMERICAN CHEMICAL SOCIETY Washington, DC
OXFORD UNIVERSITY PRESS New York Oxford
2006

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This should have been the answer

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her!

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- 1 pubs.acs.org
- 2 [goodreads.com](https://www.goodreads.com)
- 3 dblp.org

- What is the ACS?
- Can you tell me more about scientific communication?

Going back...



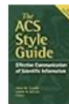
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LORRIN R. GARSON'S BOOKS

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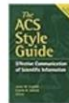


The ACS Style Guide: Effective Communication of Scientific Information

by Anne M. Coghill, Lorrin R. Garson
★★★★★

Want to Read ▾

Rate this book
★★★★★



The ACS Style Guide: Effective Communication of Scientific Information

by Anne M. Coghill, Lorrin R. Garson
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Rate this book
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The ACS Style Guide: Effective Communication of Scientific Information, 3rd Edition

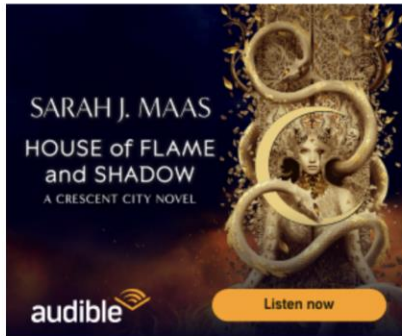
by Anne M. Coghill, Lorrin R. Garson
★★★★★ 0.00 avg rating — 0 ratings — 2 editions

Want to Read ▾

Rate this book
★★★★★

* Note: these are all the books on Goodreads for this author. To add more, click here.

Is this you? Let us know. If not, help out and invite Lorrin to Goodreads.



LORRIN R. GARSON'S FOLLOWERS

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Choose a conversation style

More
Creative

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Balanced

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What is the ACS Style Guide

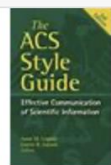
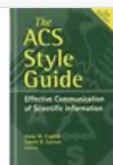
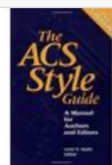
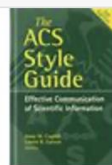
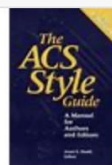
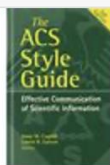
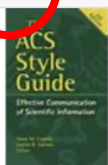
The **ACS Style Guide** is a comprehensive resource for **effective communication of scientific information within the field of chemistry**. Developed by the **American Chemical Society (ACS)**, this guide provides guidelines for writing and citing scientific papers, ensuring clarity, consistency, and accuracy in scholarly communication.

Key features of the ACS Style Guide include:

- 1. Ethical Guidelines:** It covers ethical considerations related to scientific communication, including authorship, plagiarism, and responsible conduct in research.
- 2. Scientific Papers:** The guide outlines best practices for writing scientific papers, including formatting, organization, and citation styles.
- 3. Editorial Process:** It explains the process of submitting and reviewing manuscripts for publication in scientific journals.
- 4. Writing Style and Word Usage:** The guide provides recommendations for clear and concise writing, avoiding jargon, and using appropriate terminology.
- 5. Electronic Submission of Manuscripts:** It includes guidance on submitting manuscripts through web-based systems.

The **ACS Style Guide** is a valuable tool for researchers, authors, and editors seeking to communicate scientific information effectively. For more detailed information, you can explore the [official ACS Style Guide](#) provided by the American Chemical Society ¹. 🌟

Ads ⓘ



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her!

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- 1 pubs.acs.org
- 2 [goodreads.com](https://www.goodreads.com)
- 3 dblp.org



1 of 5

DBLP = A bibliographic consortium of five German institutions

- [What is the ACS?](#)
- [Can you tell me more about scientific communication?](#)

Going back...

[-] 1990 - 1999

[-] Refine list

1997

[j8] Richard Entlich, Lorrin Garson, Michael Lesk, Lorraine Normore, Jan Olsen, Stuart Weibel: **Making a Digital Library: The Contents of the CORE Project.** ACM Trans. Inf. Syst. 15(2): 103-123 (1997)

1995

[j7] Richard Entlich, Lorrin Garson, Michael Lesk, Lorraine Normore, Jan Olsen, Stuart Weibel: **Making a Digital Library: The Chemistry Online Retrieval Experiment.** Commun. ACM 38(4): 54 (1995)

1990

[j6] Marianne C. Brogan, Lorrin Garson: **Requirements for and challenges associated with submission of machine-readable manuscripts.** J. Chem. Inf. Comput. Sci. 30(3): 271-277 (1990)

[-] 1980 - 1989

1989

[j5] Jeffrey D. Spring, John T. Keys, Lorrin Garson: **Development and implementation of Peer Review Plus: a computer-based tracking system for editorial offices.** J. Chem. Inf. Comput. Sci. 29(4): 261-266 (1989)

1984

[j4] Lorrin Garson, Jeanne G. Howard: **Electronic publishing: potential benefits and problems for authors, publishers, and libraries.** J. Chem. Inf. Comput. Sci. 24(3): 119-123 (1984)

[j3] Seldon W. Terrant, Lorrin Garson, Stanley M. Cohen, Barbara E. Meyers: **Online searching: full text of American Chemical Society primary journals.** J. Chem. Inf. Comput. Sci. 24(4): 230-235 (1984)

1980

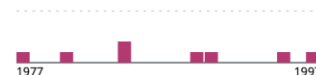
[j2] Stanley M. Cohen, [C. A. Schermer](#), Lorrin Garson: **Experimental Program for Online Access to ACS Primary Documents.** J. Chem. Inf. Comput. Sci. 20(4): 247-252 (1980)

[-] 1970 - 1979

1977

[j1] Seldon W. Terrant, Lorrin Garson: **Evaluation of a Dual Journal Concept.** J. Chem. Inf. Comput. Sci. 17(2): 61-67 (1977)

showing all 8 records



refine by search term

refine by type

Journal Articles (only)

refine by coauthor

- Michael E. Lesk (2)
- Seldon W. Terrant (2)
- Richard Entlich (2)
- Stanley M. Cohen (2)
- Jan Olsen (2)
- Lorraine Normore (2)
- Stuart Weibel (2)
- Jeanne G. Howard (1)
- Marianne C. Brogan (1)
- C. A. Schermer (1)
- 3 more options

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refine by venue

- J. Chem. Inf. Model. (6)
- Commun. ACM (1)
- TOIS (1)

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Publications prior to 1977 are missing

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👍 👎 📄 ⬇️ 🔊 1 of 5



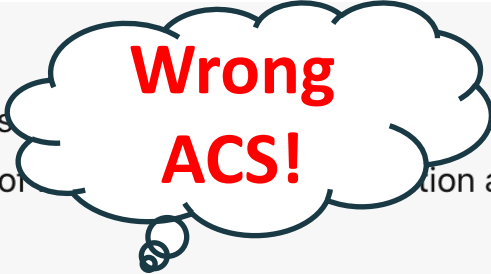
- ?
- What is the ACS?
- Can you tell me more about scientific communication?

Going back...



Copilot

The **American Community Survey (ACS)** is conducted by the **United States Census Bureau**. It serves as a vital source of information about the nation and its people. Here are some key points about the ACS:



1. **Purpose:** The ACS helps **local officials, community leaders, and businesses** understand the changes occurring in their communities. It provides detailed data on **population and housing** characteristics.
2. **Frequency:** The ACS is conducted **annually** and collects information from a nationally representative sample of households.
3. **Data Collection:** Households receive invitations to participate via the internet. Respondents can provide information through various methods, including **online, phone, or email**.
4. **Data Releases:** New ACS data are released every year in the form of **estimates**, presented in a variety of tables, tools, and analytical reports.
5. **Federal Funding:** Information from the ACS informs how **trillions of dollars** in federal funds are distributed each year. It plays a crucial role in resource allocation and planning.

For more details, you can explore the [official ACS page](#) on the Census Bureau's website ¹ ². If you're curious about specific data or want to learn about community insights, the ACS provides valuable resources and stories related to demographics, housing, and employment ¹.

Learn more

¹ [census.gov](https://www.census.gov)

² [census.gov](https://www.census.gov)

³ en.wikipedia.org

[+3 more](#)



● 2 of 5



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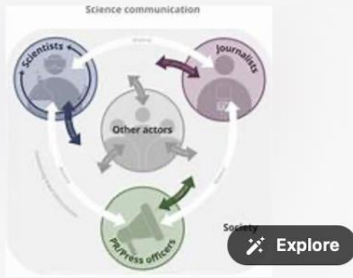
1 of 5



What is the ACS?

Can you tell me more about scientific communication?

Going back...



Somewhat reasonable description, but...

Certainly! **Scientific communication** encompasses a wide range of activities that connect science with society. Here are some key points:

Missing

Reference to the established record of science information—i.e., peer-reviewed science journals

ic findings.

e's attitudes and behaviors.

problems.

ublic, policymakers, and industry stakeholders.

udience values and interests.

politicization of science.

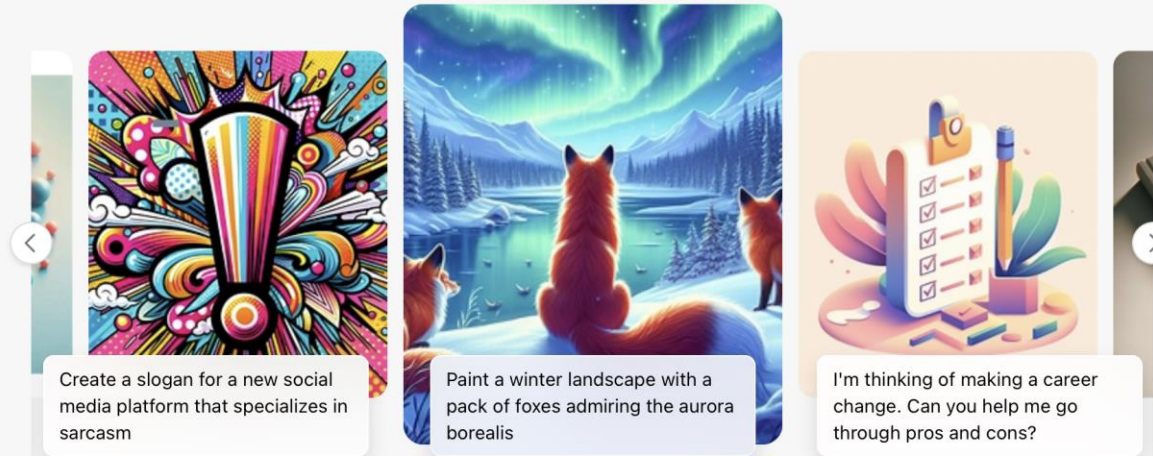
g.

- Researchers now express interest in engaging the public through social media and events.
- Research funders expect broader impacts beyond academic journals.

In summary, scientific communication involves interpreting scientific developments and discussing issues with a scientific or technical dimension, bridging gaps between stakeholders, and making science accessible to all

Another Query → Copilot

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Copilot uses AI. Check for mistakes. [Terms](#) | [Privacy](#) | [FAQs](#) [Get Copilot Pro](#)

Choose a conversation style

More
Creative

More
Balanced

More
Precise



Translate to German, are you going to the opera house, Hans? Are you going to have a beer too?

✓ Analyzing the image: Privacy blur hides faces from Copilot



Gehst du in die Oper, Hans? Wirst du ein Bier trinken? 🍺 1

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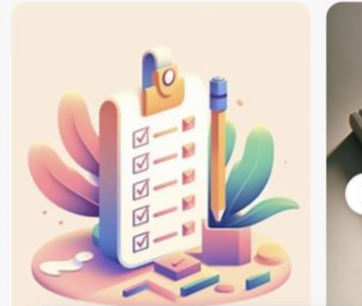
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Create a slogan for a new social media platform that specializes in sarcasm



Paint a winter landscape with a pack of foxes admiring the aurora borealis



I'm thinking of making a career change. Can you help me go through pros and cons?

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Write a joke about a chemist



0/4000



Certainly! Here's a chemistry joke for you:

Why did the bear dissolve in water? Because it was a polar bear! 🐻 ❄️

And here's another one:

Feel free to ask for more chemistry jokes—I've got a whole periodic table of them! 😄

Learn more

1 upjoke.com

2 bing.com

3 rd.com

4 Co. thoughtco.com

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+5 more



● 1 of 30



Yes, please tell me another chemistry joke.

No thanks, that's enough for now.

What is the periodic table?

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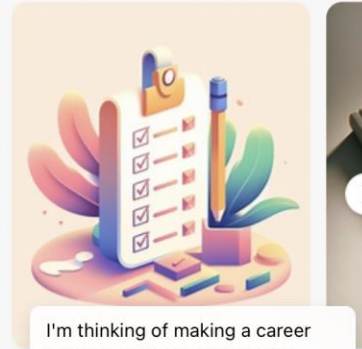
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Describe vitamin D3 including its chemical structure

Certainly! **Vitamin D3**, also known as **cholecalciferol**, is a fat-soluble secosteroid with important roles in our body. Let's delve into its details:

1. Chemical Structure:

- **Formula:** The chemical formula for cholecalciferol is $C_{27}H_{44}O$ ¹.
- **Structure:** Cholecalciferol is derived from **7-dehydrocholesterol** (**UV-B radiation** from sunlight or UV-B lamps to form vitamin D3
- **Molecular Structure:** Here's the structural representation of chol

```
(+)-vitamin D3
(1S,3Z)-3-((2E)-2-[(1R,3aS,7aR)-1-[(1R)-1,5-Dimethylhex
methylidencyclohexanol
```

↑ IUPAC name

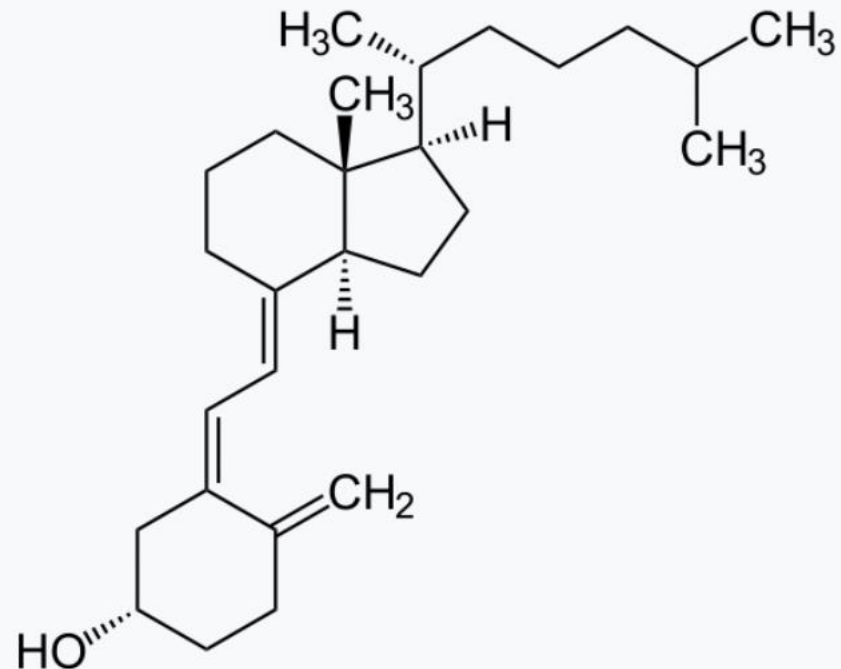
2. Activation and Metabolism:

- Cholecalciferol is converted in the **liver** to **calcifediol (25-hydrox**
- Further hydroxylation occurs in the **kidneys and immune system** (**dihydroxycholecalciferol**).
- Calcitriol plays a crucial role in **regulating calcium and phosphat** inflammation reduction ².

3. Natural Sources:

- The primary natural source of vitamin D is **sun exposure**, where c
- Dietary intake and supplements also provide cholecalciferol.
- Fatty fish, fortified milk, and UV-exposed mushrooms contribute to

Remember, vitamin D3 is essential for **calcium homeostasis**, bone health rickets in children ². 🍌 🥚 🗝



Cholecalciferol (D₃)



Ask me anything...



0/2000



Menu

Chemical nomenclature



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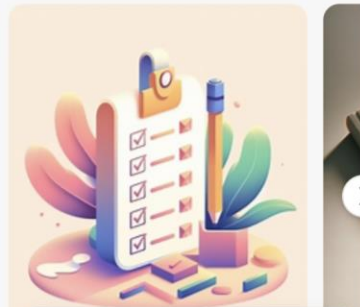
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Write a poem about the ocean in a storm



Copilot

Certainly! Here's a stormy ocean poem for you:

****Tempest Tides****

Amidst the tempest's wrath, the ocean roars,
Its waves, like vengeful giants, clash and soar.
The sky weeps tears of salt, its rage unbound,
As lightning splits the heavens with a sound.

****First Stanza****

The sea, once tranquil blue, now churns and seethes,
Its depths a maelstrom where lost souls find no ease.
The gulls, once carefree, seek refuge in flight,
Their wings buffeted by winds that howl through the night.

...there are six more stanzas

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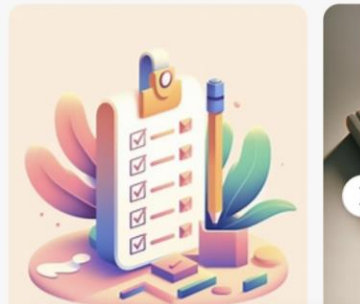
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Compare the poems of Emily Dickerson and Walt Whitman

Certainly! **Emily Dickinson** and **Walt Whitman**, both prominent American poets, exhibit distinct styles and perspectives in their poetry. Let's explore some of the key differences and similarities between their works:

1. Nature and Science:

- **Whitman** emphasizes personal experience with nature over a scientific approach. In his poem "When I Heard the Learn'd Astronomer," the speaker rejects analytical lectures and finds solace in gazing at the stars ¹.
- **Dickinson**, in contrast, suggests that connecting with God through nature is more profound than formal religious ceremonies. Her poem "Some keep the Sabbath going to Church" expresses this idea ¹.

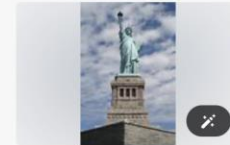


2. Language and Style:

- **Whitman** employs straightforward language and poetic devices to convey his message. For instance, the repetition of "when" in the first quatrain of "When I Heard the Learn'd Astronomer" emphasizes the speaker's preference for intuitive understanding of nature ¹.
- **Dickinson**, known for her internal viewpoint, uses concise language. Her poems are often shorter but carry deeper meanings. She focuses on the individual's relationship with the universe and the divine ² ³.

3. American Dream:

- **Whitman** explores various perspectives of the American dream in his poems. In "Crossing Brooklyn Ferry," he tells five stories, each reflecting a different viewpoint. His work is expansive and inclusive ⁴.
- **Dickinson**, on the other hand, doesn't focus on specific stories. Her poems delve into personal experiences and emotions, often with a more introspective tone ⁴.



4. Civil War Influence:

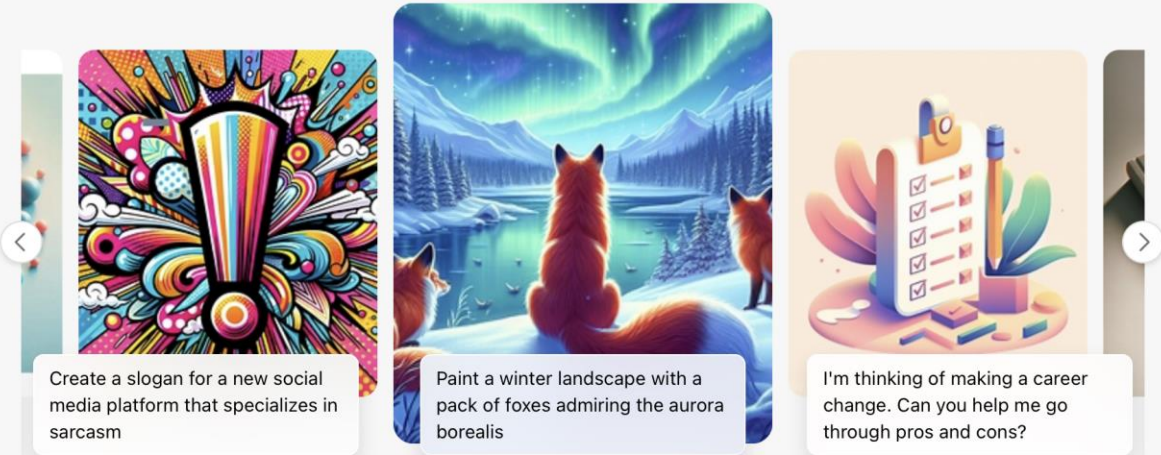
- Both poets lived during the American Civil War, which significantly impacted their work.
- **Whitman** volunteered as a nurse during the war and wrote poems that reflected the human cost and suffering. His collection "Drum-Taps" captures the war's impact on individuals ⁵.
- **Dickinson**, while not directly addressing the war, explored themes of mortality, loss, and spirituality. Her poems often grapple with existential questions and inner struggles ⁵.



In summary, while both poets share a reverence for nature, their approaches, styles, and thematic focuses diverge. Whitman celebrates the collective human experience, while Dickinson delves into the individual psyche and the mysteries of existence.

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Three AI-generated images are shown in a carousel. The first image is a vibrant, abstract, colorful design with a central funnel-like shape. The second image is a winter landscape with a pack of foxes admiring the aurora borealis. The third image is a checklist with a plant and a pencil.

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Give me a list of papers Albert Einstein published in Annalen der Physik

Certainly! **Albert Einstein** made significant contributions to the scientific community through his groundbreaking papers. Let's explore some of his notable works published in **Annalen der Physik**:



1. **On the Electrodynamics of Moving Bodies** (1905): In this paper, Einstein introduced the theory of **special relativity**, which revolutionized our understanding of space, time, and motion ¹ ².
2. **On a Heuristic Point of View about the Creation and Conversion of Light** (1905): This paper laid the foundation for the concept of **photons** and the **photoelectric effect**, for which Einstein was later awarded the **Nobel Prize in Physics** ¹ ².
3. **On the Movement of Small Particles Suspended in a Stationary Liquid Demanded by the Molecular-Kinetic Theory of Heat** (1905): Einstein's work on **Brownian motion** provided evidence for the existence of atoms and molecules, supporting the kinetic theory of heat ¹ ².
4. **Does the Inertia of a Body Depend Upon Its Energy Content?** (1905): In this paper, Einstein revealed the relationship between energy and mass, which eventually led to the famous mass-energy equivalence formula **$E = mc^2$** ³.



These papers represent Einstein's remarkable contributions to modern physics and continue to shape our understanding of the universe. For a comprehensive overview of his work, you can explore the collection of his papers published in **Annalen der Physik** from 1901 to 1922 ².

Remember, scientific progress often emerges from the collaborative efforts of many brilliant minds, and Einstein's work exemplifies the power of curiosity, inquiry, and civil courage in advancing our knowledge of the natural world ⁴.

Learn more ¹ [w en.wikipedia.org](https://en.wikipedia.org) ² oac.cdlib.org ³ [EDN edn.com](https://edn.com) ⁴ einstein-annalen.mpiwg-berlin.mpg.de ⁵ [w en.wikipedia.org](https://en.wikipedia.org)

👍 👎 📄 ⬇️ 📄 🔊 ● 1 of 30

[? What is the theory of general relativity?](#) [How did Einstein's work on Brownian motion support the kinetic theory of heat?](#)

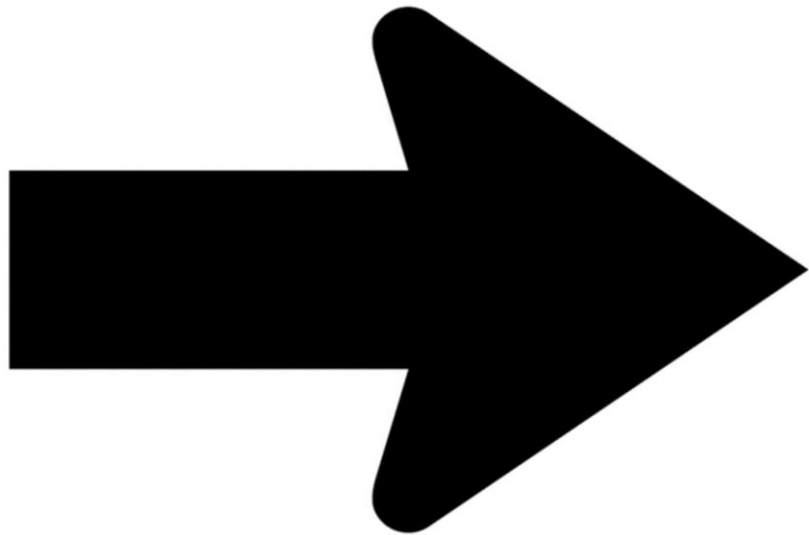


Ask me anything...



0/2000 ➤

DETOUR



$E = mc^2$

Does the Inertia of a Body Depend Upon Its Energy Content

13. *Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig?* *von A. Einstein.*



Die Resultate einer jüngst in diesen Annalen von mir publizierten elektrodynamischen Untersuchung¹⁾ führen zu einer sehr interessanten Folgerung, die hier abgeleitet werden soll.

Ich legte dort die Maxwell-Hertz'schen Gleichungen für den leeren Raum nebst dem Maxwell'schen Ausdruck für die elektromagnetische Energie des Raumes zugrunde und außerdem das Prinzip:

Die Gesetze, nach denen sich die Zustände der physikalischen Systeme ändern, sind unabhängig davon, auf welches von zwei relativ zueinander in gleichförmiger Parallel-Translationsbewegung befindlichen Koordinatensystemen diese Zustandsänderungen bezogen werden (Relativitätsprinzip).

Gestützt auf diese Grundlagen²⁾ leitete ich unter anderem das nachfolgende Resultat ab (l. c. § 8):

Ein System von ebenen Lichtwellen besitze, auf das Koordinatensystem (x, y, z) bezogen, die Energie l ; die Strahlrichtung (Wellennormale) bilde den Winkel φ mit der x -Achse des Systems. Führt man ein neues, gegen das System (x, y, z) in gleichförmiger Paralleltranslation begriffenes Koordinatensystem (ξ, η, ζ) ein, dessen Ursprung sich mit der Geschwindigkeit v längs der x -Achse bewegt, so besitzt die genannte Lichtmenge — im System (ξ, η, ζ) gemessen — die Energie:

$$l^* = l \frac{1 - \frac{v}{V} \cos \varphi}{\sqrt{1 - \left(\frac{v}{V}\right)^2}},$$

wobei V die Lichtgeschwindigkeit bedeutet. Von diesem Re-

where V means the speed of light

$$V = c$$

1) A. Einstein, Ann. d. Phys. 17. p. 891. 1905.

2) Das dort benutzte Prinzip der Konstanz der Lichtgeschwindigkeit ist natürlich in den Maxwell'schen Gleichungen enthalten.

Es befinde sich nun im System (x, y, z) ein ruhender Körper, dessen Energie — auf das System (x, y, z) bezogen — E_0 sei. Relativ zu dem wie oben mit der Geschwindigkeit v bewegten System (ξ, η, ζ) sei die Energie des Körpers H_0 .

Dieser Körper sende in einer mit der x -Achse den Winkel φ bildenden Richtung ebene Lichtwellen von der Energie $L/2$ (relativ zu (x, y, z) gemessen) und gleichzeitig eine gleich große Lichtmenge nach der entgegengesetzten Richtung. Hierbei bleibt der Körper in Ruhe in bezug auf das System (x, y, z) . Für diesen Vorgang muß das Energieprinzip gelten und zwar (nach dem Prinzip der Relativität) in bezug auf beide Koordinatensysteme. Nennen wir E_1 bez. H_1 die Energie des Körpers nach der Lichtaussendung relativ zum System (x, y, z) bez. (ξ, η, ζ) gemessen, so erhalten wir mit Benutzung der oben angegebenen Relation:

$$E_0 = E_1 + \left[\frac{L}{2} + \frac{L}{2} \right],$$

$$H_0 = H_1 + \left[\frac{L}{2} \frac{1 - \frac{v}{V} \cos \varphi}{\sqrt{1 - \left(\frac{v}{V}\right)^2}} + \frac{L}{2} \frac{1 + \frac{v}{V} \cos \varphi}{\sqrt{1 - \left(\frac{v}{V}\right)^2}} \right]$$

$$= H_1 + \frac{L}{\sqrt{1 - \left(\frac{v}{V}\right)^2}}.$$

Durch Subtraktion erhält man aus diesen Gleichungen:

$$(H_0 - E_0) - (H_1 - E_1) = L \left\{ \frac{1}{\sqrt{1 - \left(\frac{v}{V}\right)^2}} - 1 \right\}.$$

Die beiden in diesem Ausdruck auftretenden Differenzen von der Form $H - E$ haben einfache physikalische Bedeutungen. H und E sind Energiewerte desselben Körpers, bezogen auf zwei relativ zueinander bewegte Koordinatensysteme, wobei der Körper in dem einen System (System (x, y, z)) ruht. Es ist also klar, daß die Differenz $H - E$ sich von der kinetischen Energie K des Körpers in bezug auf das andere System (System (ξ, η, ζ)) nur durch eine additive Konstante C unterscheiden kann, welche von der Wahl der willkürlichen addi-

tiven Konstanten der Energien H und E abhängt. Wir können also setzen:

$$H_0 - E_0 = K_0 + C,$$

$$H_1 - E_1 = K_1 + C,$$

da C sich während der Lichtaussendung nicht ändert. Wir erhalten also:

$$K_0 - K_1 = L \left\{ \frac{1}{\sqrt{1 - \left(\frac{v}{V}\right)^2}} - 1 \right\}.$$

Die kinetische Energie des Körpers in bezug auf (ξ, η, ζ) nimmt infolge der Lichtaussendung ab, und zwar um einen von den Qualitäten des Körpers unabhängigen Betrag. Die Differenz $K_0 - K_1$ hängt ferner von der Geschwindigkeit ebenso ab wie die kinetische Energie des Elektrons (l. c. § 10).

Unter Vernachlässigung von Größen vierter und höherer Ordnung können wir setzen:

$$K_0 - K_1 = \frac{L}{V^2} \frac{v^2}{2}.$$

Aus dieser Gleichung folgt unmittelbar:

Gibt ein Körper die Energie L in Form von Strahlung ab, so verkleinert sich seine Masse um L/V^2 . Hierbei ist es

If a body releases the energy L in the form of radiation, its mass decreases by L/V^2 .

inhalt; ändert sich die Energie um L , so ändert sich die Masse in demselben Sinne um $L/9 \cdot 10^{20}$, wenn die Energie in Erg und die Masse in Grammen gemessen wird.

Es ist nicht ausgeschlossen, daß bei Körpern, deren Energieinhalt in hohem Maße veränderlich ist (z. B. bei den Radiumsalzen), eine Prüfung der Theorie gelingen wird.

Wenn die Theorie den Tatsachen entspricht, so überträgt die Strahlung Trägheit zwischen den emittierenden und absorbierenden Körpern.

Bern, September 1905.

(Eingegangen 27. September 1905.)

$$m = \frac{L}{V^2}$$

$$E = L$$

$$c = V$$

$$m = \frac{E}{c^2}$$

$$E = mc^2$$

More information about $E = mc^2$





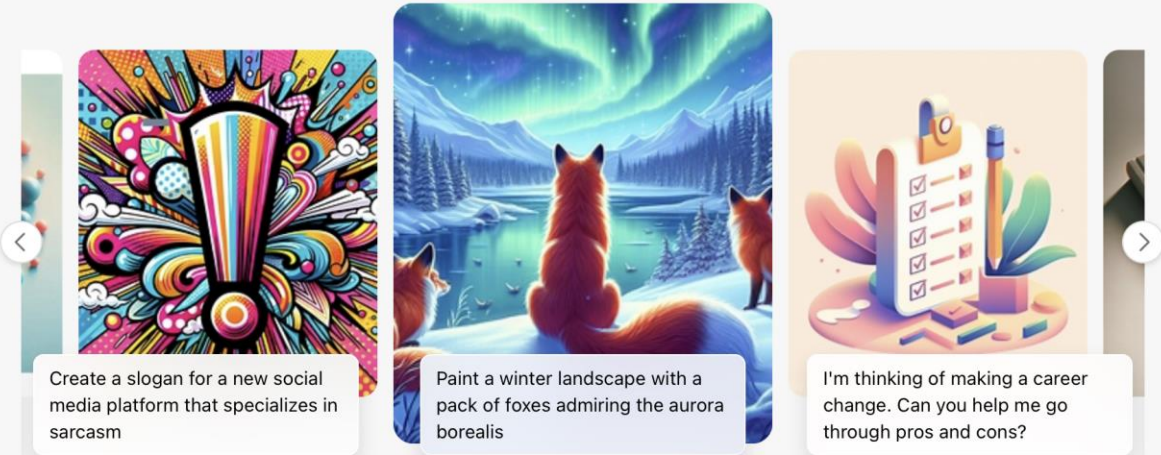
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$E = mc^2$

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The image shows three example prompts and their corresponding AI-generated images. Each prompt is in a white box at the bottom of a card, and the image is above it. The cards are arranged horizontally with left and right navigation arrows.

- Card 1:** Prompt: "Create a slogan for a new social media platform that specializes in sarcasm". Image: A vibrant, colorful, abstract illustration featuring a large, multi-colored exclamation mark in the center, surrounded by various shapes, patterns, and colors.
- Card 2:** Prompt: "Paint a winter landscape with a pack of foxes admiring the aurora borealis". Image: A digital painting of a winter landscape with snow-covered mountains, a frozen lake, and a pack of foxes sitting on the snow, looking up at a vibrant green aurora borealis in the night sky.
- Card 3:** Prompt: "I'm thinking of making a career change. Can you help me go through pros and cons?". Image: A stylized illustration of a clipboard with a checklist, a pen, and a small plant, symbolizing productivity and decision-making.

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Write a paper about DNA



0/4000 

Certainly! Let's delve into the fascinating world of **DNA** (deoxyribonucleic acid). DNA is an **organic chemical** with a complex molecular structure found in all prokaryotic and eukaryotic cells. Here are some key points to consider when writing a paper about DNA:

1. Introduction:

- Begin by explaining what DNA is and its fundamental role in living organisms.
- Mention its discovery and the scientists involved, including **James Watson**, **Francis Crick**, and **Rosalind Franklin**.

2. Structure of DNA:

- Describe the iconic **double-helix structure** discovered by Watson and Crick in 1953.
- Explain how two DNA strands are wound around each other, forming a spiral.
- Highlight the nucleotide bases: **adenine (A)**, **thymine (T)**, **cytosine (C)**, and **guanine (G)**.

3. Function and Importance:

- Elaborate on DNA's role as the **genetic blueprint** for all inherited traits.
- Discuss how it encodes information for **protein synthesis**, cell division, and growth.
- Explore its significance in **evolution**, heredity, and adaptation.

4. DNA Replication:

- Explain the process of **DNA replication**, where a cell duplicates its genetic material.
- Highlight the role of enzymes such as **DNA polymerase**.

5. Applications and Technologies:

- Discuss **forensic DNA analysis**, which aids in criminal investigations.
- Explore **genetic engineering**, **gene therapy**, and **DNA sequencing**.
- Address ethical concerns related to privacy and genetic information.



6. Future Directions:

- Consider emerging fields like **synthetic biology** and **CRISPR gene editing**.
- Discuss how advancements in DNA research impact medicine, agriculture, and biotechnology.

Remember to cite relevant sources and provide a balanced perspective. Whether you're writing for a scientific audience or a general readership, the story of DNA is captivating and full of wonder. Good luck with your paper! 🧬 📖

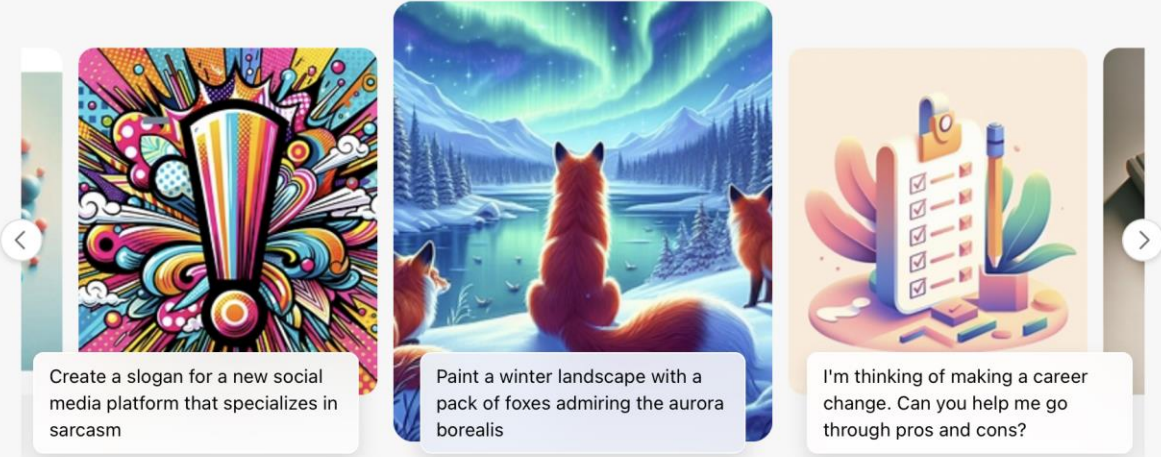
For additional inspiration, you can explore essays and topics related to DNA from resources like [Britannica](#), [IvyPanda](#), and [StudyCorgi](#) ¹ ² ³.

Learn more [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [+2 more](#)

← Jennifer Doudna & Emmanuelle Charpentier
Nobel Prize in Chemistry 2020  URL  URL

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Why are drug prices so high in the U.S.



Drug prices in the United States are indeed **remarkably high**, and understanding the reasons behind this phenomenon can shed light on the complexities of the pharmaceutical industry. Here are some key points:

1. Costs and Pricing:

- **Average Costs:** Americans spend approximately **\$1,300 per person per year** on prescription drugs.
- **New Drug Launches:** The median launch price for a new drug in the US during 2021 was **\$180,000** for a year's supply.
- **Price Increases:** While drugmakers have moderated price hikes for existing products since 2019, they still raise list prices by around **4% annually** ¹.




2. Why Are Prices So High in the US?:

- **Lack of Direct Regulation:** Unlike many other nations, the US does **not directly regulate** medicine prices.
- **Negotiation with Drugmakers:** In Europe, governments negotiate directly with drug manufacturers to limit what state-funded health systems pay. However, in the US, drug companies have largely been able to set prices based on market demand.
- **Anticompetitive Strategies:** A Congressional committee investigation found that drug companies raised prices "with abandon," using **anticompetitive strategies** and manipulating patents and marketing exclusivities granted by regulators ¹.

3. How It Works in the US:

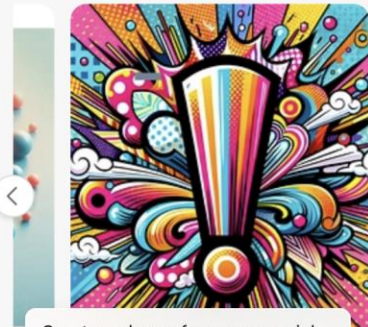
- **Private Insurers and Medicare:** Most drug costs are covered by **private insurers** or **Medicare**, which is the largest single buyer of health-care products and services in the US.
- **Medicaid Rebates:** For outpatient drugs reimbursed through Medicaid (which provides care for the poor), drugmakers must provide government rebates to lower prices.
- **Pharmacy-Benefit Managers (PBMs):** Private payers often rely on third-party PBMs (such as Cigna Corp.'s Express Scripts unit) to negotiate discounts. These PBMs make exclusive deals with drugmakers to lower prices, although they may limit patients' choice of drugs ¹.

In summary, the lack of direct price regulation, anticompetitive practices, and complex negotiations contribute to the high cost of prescription drugs in the US. Efforts to address this issue continue, including recent legislative changes aimed at reducing drug costs ¹ ².

Learn more [1](#)  [washingtonpost.com](#) [2](#)  [goodrx.com](#) [3](#)  [mprnews.org](#) [4](#)  [pgpf.org](#)

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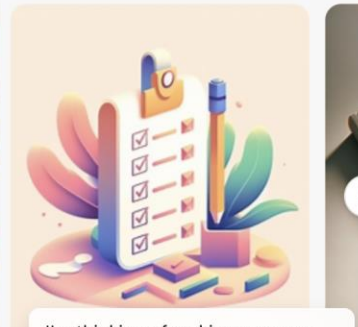
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I'm thinking of making a career change. Can you help me go through pros and cons?

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Describe Woodward's synthesis of cholesterol



Woodward's synthesis of cholesterol, a remarkable achievement in organic chemistry, was carried out by the eminent chemist **Robert Burns Woodward** and his collaborator **Franz Sondheimer** in 1952¹. Let's explore the fascinating steps of this groundbreaking synthesis:

1. Starting Point:

- Woodward's synthesis began with a compound called **hydroquinone** (1).
- In a **Diels-Alder reaction** with **butadiene**, hydroquinone was converted into a bicyclic intermediate known as **cis-bicyclo** (2).
- The goal was to transform this cis-bicyclo into the desired **trans isomer** (5).

2. Conversion to Trans Isomer:

- To achieve the trans configuration, Woodward's team synthesized the **sodium enolate salt** (4) from the cis-bicyclo.
- This involved treating the cis-bicyclo with **sodium hydride in benzene**.
- Acidification of the sodium enolate salt led to the formation of the desired trans isomer (5).

3. Cholesterol Synthesis:

- The trans isomer (5) served as a crucial intermediate.
- Further steps involved adding functional groups to create the complex cholesterol molecule.
- Woodward's team skillfully orchestrated a sequence of reactions to build the cholesterol framework.

4. Significance:

- Woodward's approach was innovative because it utilized known chemical intermediates available from natural resources.
- Chemical companies like **Merck & Co.** and **Monsanto** supported Woodward's work by providing essential intermediates from pilot plants.
- Their collaboration facilitated the successful synthesis of cholesterol, a tetracyclic alcohol with **eight stereocenters**.

5. Legacy:

- Woodward's achievement not only advanced our understanding of cholesterol but also demonstrated the power of strategic planning and collaboration in complex organic synthesis.
- His work paved the way for further studies on steroids and their biological significance.

For a visual representation of Woodward's synthesis, you can explore the [schematic view](#) of this remarkable scientific endeavor². 🌟

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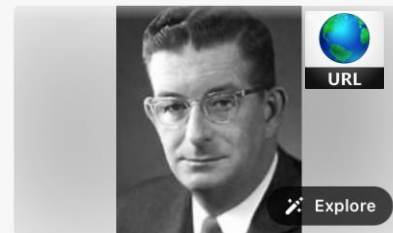
What is the Diels-Alder reaction?

Who was Robert Burns Woodward?

How has cholesterol synthesis evolved since then?



Robert Burns Woodward (April 10, 1917 – July 8, 1979) was an **American organic chemist** who left an indelible mark on the field. His contributions to modern organic chemistry are **immensely significant**, particularly in the **synthesis** and **structure determination** of complex natural products. Let's explore more about this remarkable scientist:



- **Early Life and Education:**

- Woodward was born in **Boston, Massachusetts**, on April 10, 1917.
- His mother, **Margaret Burns**, was an immigrant from Scotland and claimed to be a descendant of the poet **Robert Burns**.
- Woodward's early fascination with chemistry led him to perform experiments even during his primary school years.
- By the time he entered **high school**, he had already mastered most of the experiments from Ludwig Gattermann's textbook on experimental organic chemistry.
- His interest in scientific literature extended to obtaining original German papers, including the groundbreaking work on the **Diels-Alder reaction** by **Diels and Alder**.

- **MIT and Career:**

- In 1933, Woodward enrolled at the **Massachusetts Institute of Technology (MIT)**.
- Despite some setbacks, he persevered and received his **Bachelor of Science degree**.
- Throughout his career, Woodward's work was characterized by a deep understanding of chemical reactions, especially the Diels-Alder reaction.
- He collaborated closely with **Roald Hoffmann** on both theoretical and experimental studies.
- Woodward's achievements include the synthesis of complex molecules such as **cholesterol**, **cortisone**, **strychnine**, and **vitamin B12**.
- His groundbreaking work earned him the **Nobel Prize in Chemistry** in **1965**.



B.S. 1936
Ph.D. 1937

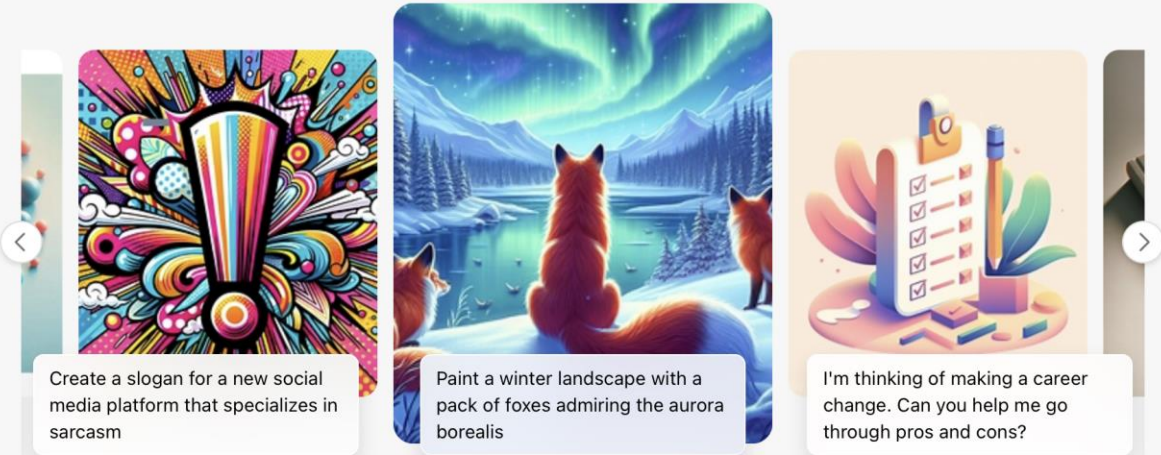


Ph.D. thesis
57 pp.

Woodward's legacy extends beyond his scientific accomplishments. His strategic thinking, collaboration, and innovative approaches continue to inspire chemists worldwide. 🌟

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Write code in BASIC for a bubble sort



Certainly! Below is a **Basic** implementation of the **bubble sort** algorithm:

```
CLS

DIM NameArray$(1000)
i = 0

' Read names into the array
READ Name$
DO WHILE Name$ <> "*EOD"
    i = i + 1
    NameArray$(i) = Name$
    READ Name$
LOOP

' The value of i is now the number of names in the array
ArraySize = i

' Bubble (or ripple) sort
FOR k = 0 TO ArraySize - 1
    FOR j = k + 1 TO ArraySize - k
        IF NameArray$(j) > NameArray$(k) THEN
            ' Swap elements if they are not in the intended order
            SWAP NameArray$(j), NameArray$(k)
        END IF
    NEXT j
NEXT k
```

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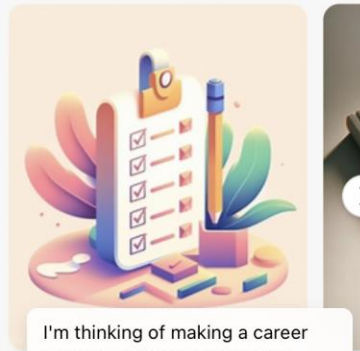
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Write code in “C” for a bubble sort



```
#include <stdio.h>

// Function to swap two elements
void swap(int* arr, int i, int j) {
    int temp = arr[i];
    arr[i] = arr[j];
    arr[j] = temp;
}

// Bubble sort function
void bubbleSort(int arr[], int n) {
    int i, j;
    for (i = 0; i < n - 1; i++) {
        for (j = 0; j < n - i - 1; j++) {
            if (arr[j] > arr[j + 1]) {
                swap(arr, j, j + 1);
            }
        }
    }
}

// Function to print an array
void printArray(int arr[], int size) {
    for (int i = 0; i < size; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");
}

int main() {
    int arr[] = {5, 1, 4, 2, 8};
    int N = sizeof(arr) / sizeof(arr[0]);

    bubbleSort(arr, N);

    printf("Sorted array: ");
    printArray(arr, N);

    return 0;
}
```

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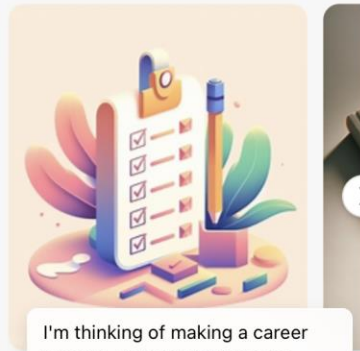
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Write code in Python for a bubble sort



Certainly! Below is a Python implementation of the **bubble sort** algorithm:

Python

```
def bubble_sort(arr):
    n = len(arr)
    for i in range(n):
        swapped = False
        for j in range(0, n-i-1):
            if arr[j] > arr[j+1]:
                arr[j], arr[j+1] = arr[j+1], arr[j]
                swapped = True
        if not swapped:
            break
    return arr

# Example usage:
arr = [64, 34, 25, 12, 22, 11, 90]
sorted_arr = bubble_sort(arr)
print("Sorted array is:", sorted_arr)
```

AI-generated code. Review and use carefully. [More info on FAQ.](#)

* Python is the most popular language in 2024 — 28% market share



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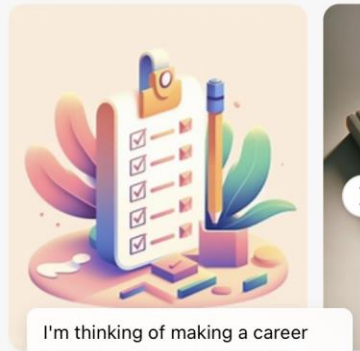
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Write code in Swift for a bubble sort





Certainly! Below is a **Swift** implementation of the **bubble sort** algorithm:

Swift

```
func bubbleSort(_ arr: inout [Int]) {
    let n = arr.count
    for i in 0..
```

AI-generated code. Review and use carefully. [More info on FAQ.](#)

Structurally looks similar to Python

Swift is a high-level language for all Apple platforms

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How accurate is the US GPS navigation system

The U.S. **Global Positioning System (GPS)**, a space-based technology owned and operated by the U.S. **government**, provides accurate positioning and timing information worldwide. Here are some key points regarding its accuracy:



1. Basic GPS Accuracy:

- The basic GPS service provides users with an accuracy of approximately **7.0 meters (23 feet)**, 95% of the time, anywhere on or near the Earth's surface ¹ ².
- This means that most GPS-enabled devices can determine your location within this range under open sky conditions.

2. Factors Affecting Accuracy:

- Several factors can affect GPS positioning accuracy:
 - **Satellite Signal Blockage:** Buildings, bridges, trees, and other obstacles can block or weaken GPS signals.
 - **Indoor or Underground Use:** GPS signals do not penetrate buildings or underground areas effectively.
 - **Multipath:** Signals reflected off buildings or walls can lead to inaccuracies.
 - **Radio Interference or Jamming:** Rarely, interference can impact accuracy.
 - **Solar Storms:** Major solar storms may temporarily affect GPS accuracy.
 - **Device Design:** Properly designed GPS devices comply with specifications for accurate positioning.

3. High-End Accuracy:

- High-end users (such as surveyors, scientists, and aviation professionals) can achieve much better accuracy:
 - **Dual-Frequency Receivers:** These can enable real-time positioning within a few centimeters.
 - **Augmentation Systems:** Some systems provide long-term measurements at the millimeter level.
 - **FAA Data:** Recent data shows high-quality, single-frequency GPS receivers attaining horizontal accuracy of ≤ 1.82 meters (5.97 feet), 95% of the time ³.

4. Speed Measurement Accuracy:

- Similar to positioning, the speed accuracy of GPS depends on various factors.
- The government provides the GPS signal with a global average user range rate error (URRE) of ≤ 0.006 meters/second over any 3-second interval, with 95% probability ³.

In summary, while basic GPS accuracy is around 7 meters, advanced techniques and high-quality receivers can achieve much higher precision. 🌟

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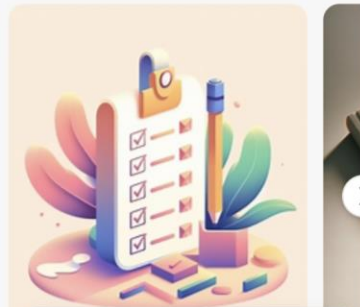
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Write a short essay about Great Dane dogs

The **Great Dane**, often referred to as the “gentle giant,” is a majestic and imposing dog breed known for its impressive size and friendly demeanor. Here are some key characteristics and facts about this remarkable breed:

1. **Appearance:**

- Great Danes have a commanding presence with a strong, muscular build and a sleek, well-proportioned body.
- They stand as one of the **largest dog breeds**, towering over most other dogs. When standing on their hind legs, they are even taller than most people.
- Their massive square-jawed head and elegant body lines give them a regal appearance.

2. **Temperament:**

- Despite their imposing size, Great Danes are known for their **gentle and friendly nature**.
- They are often called the “Apollo of Dogs” due to their graceful stride and noble demeanor.
- Patient with kids, they are people pleasers who make friends easily.

3. **Guardianship:**

- Great Danes are **alert home guardians**. The mere sight of these gentle giants is usually enough to make intruders think twice.
- However, those who mistake their friendliness for softness will encounter a powerful foe with true courage and spirit.

4. **Coat Colors and Patterns:**

- Great Danes come in various colors and patterns. Perhaps the best-known is the striking black-and-white patchwork pattern known as “**harlequin**.”
- Other colors include black, blue, brindle, fawn, mantle, merle, and more.

5. **Health Considerations:**

- Owning a dog of such imposing size, weight, and strength is a commitment not to be taken lightly.
- Responsible care includes proper nutrition, regular exercise, and attention to potential health issues common in large breeds.

In summary, the Great Dane combines elegance, loyalty, and a gentle disposition, making it a beloved companion for those who appreciate both size and heart. 🐾

For more detailed information, you can explore the [official AKC website](#) dedicated to this magnificent breed ¹. 🌟



Das ist Eugen, er bellt auf Deutsch





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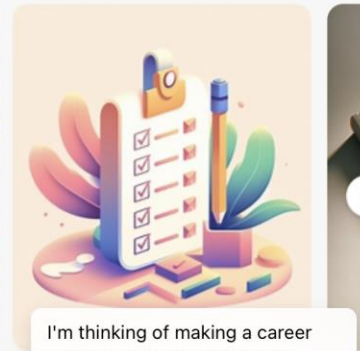
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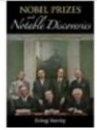
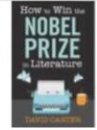









Who is Donald Cram the Nobel Prize winner

Donald J. Cram was an American chemist who was awarded the Nobel Prize in Chemistry in 1987. He shared this prestigious honor with Jean-Marie Lehn and Charles J. Pedersen "for their development and use of molecules with structure-specific interactions of high selectivity." Cram was one of the pioneers in the field of host-guest chemistry, which involves creating molecules that can mimic the behavior of molecules found in living systems ¹ ².

Born on April 22, 1919, in Chester, Vermont, Cram led a remarkable life and career. He grew up in a family of modest means and worked various jobs from a young age. He pursued his education with determination, earning a BS in chemistry from Rollins College, an MS from the University of Nebraska, and a PhD from Harvard University. His doctoral advisor was Louis Fieser, under whom he studied organic chemistry ³.


Cram's scientific contributions include the formulation of Cram's rule, which predicts the outcome of nucleophilic attack of carbonyl compounds. His work has had a lasting impact on the field of chemistry, influencing research in molecular recognition and other areas ¹.

Ads 

										
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Learn more ¹  en.wikipedia.org ²  nobelprize.org ³  nobelprize.org ⁴  britannica.com

      ● 1 of 30

 What is host-guest chemistry? Who are Jean-Marie Lehn and Charles J. Pedersen? Can you tell me more about Cram's rule?

Donald Cram taught freshman chemistry at UCLA for years





Surf's up—Malibu Beach



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Who is Donald Cram the carpet cleaner



Donald O. Cram, born on July 31, 1949, in Los Angeles, California, USA, is an intriguing character whose life intersected with an unexpected twist. While he shares a name with the renowned chemist **Donald J. Cram**, it is the mix-up between the two that adds a touch of humor and serendipity to their stories.

Here's the fascinating tale:

1. The Carpet Cleaner Nobel Prize Winner:

- Donald O. Cram, at the age of 38, worked as a **carpet cleaner** in Altadena, California.
- In October 1987, he received an early morning call from an official with the **Royal Swedish Academy of Sciences**.
- The caller informed him that he had **won the Nobel Prize in Chemistry!**
- However, there was a slight hiccup: Donald O. Cram had been **mistaken** for the actual Nobel laureate, **Donald J. Cram**, who was 68 years old and also lived in Southern California.
- Initially thinking it was a prank, Donald O. Cram hung up. But the persistent caller insisted on the truth.
- As both Donalds coincidentally had chemistry backgrounds, the detailed explanation convinced him that this was no joke.
- With good humor, he informed the caller of their mistake.

2. The Real Nobel Laureate:

- Donald J. Cram, the true Nobel Prize winner, was a distinguished chemist known for his work in **host-guest chemistry** and the development of **molecular containers**.
- His contributions to the field were significant, earning him the prestigious recognition.

3. The Meeting and Laughter:

- The mix-up didn't end there. As an undergraduate, Donald O. Cram had routinely received mail intended for his namesake, the UCLA professor.
- The night after the Nobel error, he appeared as a guest on **The Tonight Show Starring Johnny Carson**, where he recounted the confusion.
- Eventually, the two Donalds met at a joint photo session for **People magazine**, sharing laughter over the unexpected turn of events.



In this delightful twist of fate, the carpet cleaner briefly basked in the glow of Nobel fame, proving that sometimes life's surprises are the most memorable. ✨

For more details, you can explore the [source](#) provided ¹. 😊

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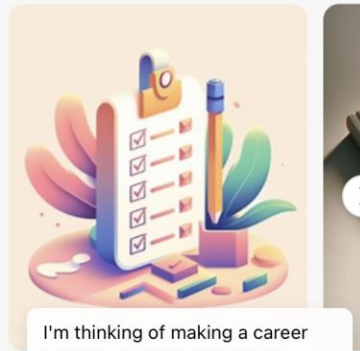
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Give me a ranking of electric cars by sales



Certainly! Let's explore the **top-selling electric vehicles (EVs)** based on sales data. As of August 2023, here are the best-selling fully electric vehicles worldwide:

1. **Tesla Model Y (U.S.): 772,364 units**
 - Tesla's Model Y continues to lead the pack, with more than double the sales of any other EV.
2. **Tesla Model 3 (U.S.): 364,403 units**
 - The Model 3 remains a popular choice for electric vehicle enthusiasts.
3. **BYD Atto 3 / Yuan Plus (China): 265,688 units**
 - BYD's Atto 3 (also known as Yuan Plus) is gaining traction globally.
4. **BYD Dolphin (China): 222,825 units**
 - Another successful offering from Chinese automaker BYD.
5. **GAC Aion S (China): 160,693 units**
 - GAC Group's Aion S is making waves in the Chinese market.
6. **Wuling HongGuang Mini EV (China): 153,399 units**
 - A compact and affordable EV capturing attention in China.
7. **GAC Aion Y (China): 136,619 units**
 - GAC Group's second entry in the top rankings.
8. **VW ID.4 (Germany): 120,154 units**
 - Volkswagen's ID.4 finds success in Europe and China.
9. **BYD Seagull (China): 95,202 units**
 - BYD's Seagull rounds out the top-selling EVs.

Similar results with Google

It's worth noting that Chinese EVs are gaining prominence, with three of the top five best-selling models coming from Chinese manufacturers. Additionally, regional market strength plays a significant role, as Europe and China dominate sales for certain models.

As the electric vehicle market matures and costs become more efficient, global EV sales are projected to make up half of new car sales by 2035. The transition to electric mobility is well underway! 🚗⚡

For more detailed information, you can explore the [source](#) provided  .

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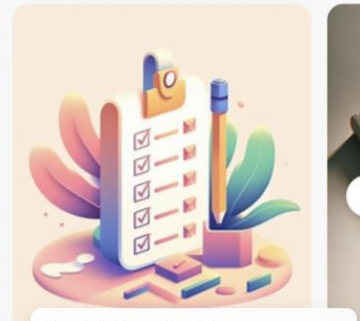
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Give me some information about solid phase peptide synthesis

Solid-phase peptide synthesis (SPPS) is a powerful method used for creating peptides in the laboratory. Let me break it down for you:



1. What is SPPS?

- SPPS is a technique for assembling peptides by linking amino acids together via amide bonds (peptide bonds).
- It allows rapid and efficient peptide chain assembly.
- The process involves attaching amino acids to a solid support (usually resin beads) and building the peptide chain step by step.

2. How Does SPPS Work?

- The process starts at the **C-terminus** (carboxyl end) of the peptide and proceeds toward the **N-terminus** (amino end).
- Each amino acid is protected on its N-terminus and side chain using appropriate protecting groups.
- Successive cycles of deprotection and coupling reactions are performed.
- The peptide remains covalently attached to the solid support throughout the synthesis, allowing for the removal of excess reagents and byproducts.



3. Advantages of SPPS:



- Efficient and rapid assembly of peptides.
- Easy purification due to the solid support.
- Enables the synthesis of difficult-to-express peptides and D-proteins.
- Incorporation of unnatural amino acids and backbone modifications


4. Key Steps in SPPS:

- **Coupling:** Amino acids are added one by one, forming peptide bonds.
- **Deprotection:** Removal of protecting groups.
- **Washing and Filtration:** To remove excess reagents and byproducts.

5. Historical Significance:

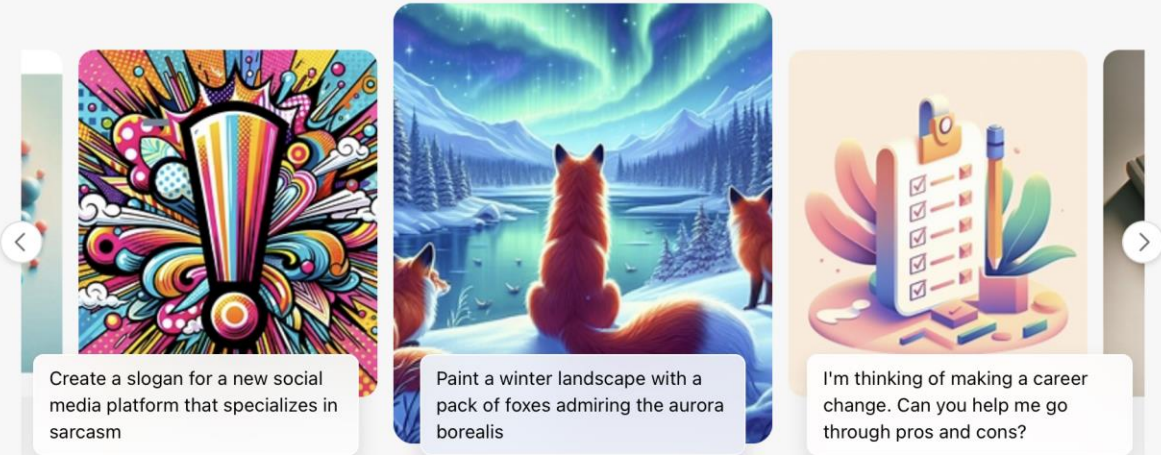
- SPPS was pioneered by **Robert Bruce Merrifield** and revolutionized peptide synthesis.
- It is widely used in research, drug development, and industrial production.

Remember, SPPS allows scientists to create custom peptides with precision, making it an essential tool in biochemistry and pharmaceutical research.  

 Nobel Prize in Chemistry 1984

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Tell a story about a cat who chased a dog

Once upon a time in a quaint village nestled among rolling hills, there lived a curious cat named Whiskers. Whiskers wasn't your ordinary feline; she was brave, adventurous, and had a penchant for exploring every nook and cranny. Her sleek black fur and bright green eyes made her stand out among the other cats.

One sunny afternoon, as Whiskers was prowling the gardens behind the old mill, she spotted a dog named Buddy. Buddy wasn't like the other dogs in the village. He wasn't boisterous or territorial; instead, he was timid and gentle. His golden fur and droopy ears gave him an endearing appearance.

Whiskers, with her tail held high in the air, approached Buddy with caution but curiosity. Buddy, seeing the cat approach, felt a mix of fear and intrigue. He had never interacted with a cat before, and his instincts told him to run. But today was different for Whiskers; she wasn't going to let this opportunity slip away.

With a sudden burst of energy, Whiskers dashed after Buddy. Through the gardens they went, past blooming flowers and buzzing bees. The villagers watched in amusement as roles reversed—today it wasn't a dog chasing a cat but rather a cat chasing a dog.

Buddy's legs pumped furiously as he darted through the meadows, Whiskers hot on his tail. They ran past the tranquil pond where ducks swam peacefully and through sun-dappled groves where butterflies danced in the air. The wind whistled past their ears as they raced toward the old oak tree at the edge of the village.

Finally, exhausted but exhilarated, they both collapsed under the tree's sprawling branches. Whiskers panted, her eyes shining with excitement. Buddy sat beside her, his tongue lolling out, and for the first time, he wagged his tail—a sign of acceptance.

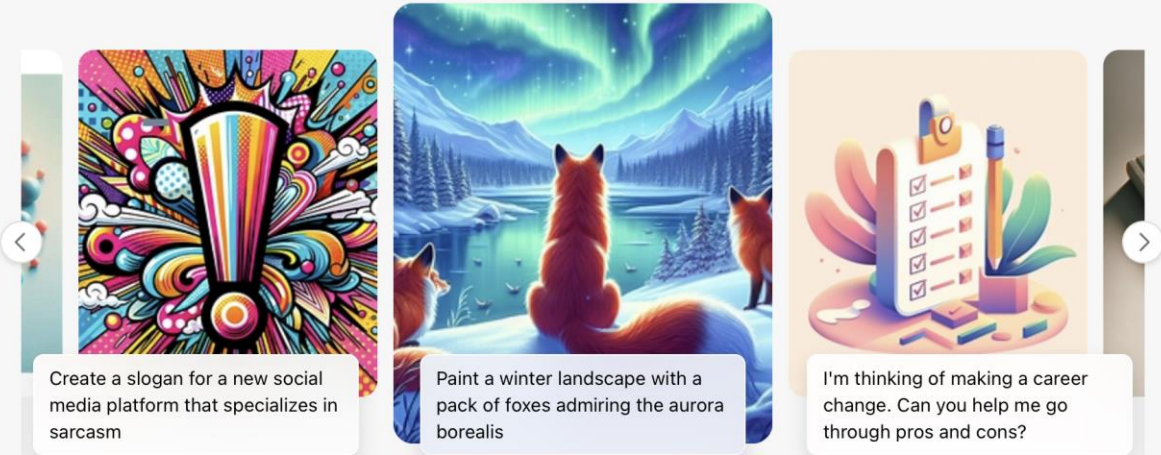
It was under that ancient oak that their unlikely friendship blossomed. No longer did Buddy run from cats, and Whiskers no longer saw dogs as foes. They spent their days exploring together, chasing butterflies, and napping in the sun-dappled grass. The villagers marveled at this odd pair—the cat and the dog who defied convention.

And so, in that little village, where flowers bloomed, and laughter echoed through the meadows, Whiskers and Buddy taught everyone that friendships could be found in the most unexpected places. Their playful antics became the stuff of legends, and generations of cats and dogs would hear the tale of the cat who chased a dog and found a friend.

And they all lived happily ever after, under the shade of the old oak tree. 🌳🐾

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Write a story about the internment of japanese americans during world war 2

Certainly! Let me take you back to a dark chapter in American history—the **internment of Japanese Americans** during World War II. This painful episode serves as a stark reminder of the fragility of civil rights during times of fear and conflict.

Title: “Whispers Behind Barbed Wire”

The year was 1942, and the world was engulfed in war. The attack on Pearl Harbor had sent shockwaves across the United States, and fear gripped the nation. Amid the chaos, President Franklin D. Roosevelt signed **Executive Order 9066**, a fateful decision that would alter the lives of thousands of Japanese Americans forever.

Chapter 1: The Order

“For the sake of national security,” they said. But the words were hollow, and the ink on the order was heavy. Japanese Americans—citizens and immigrants alike—were uprooted from their homes, their businesses, their lives. Families torn apart, futures shattered. The West Coast became a battleground of suspicion and prejudice.

Chapter 2: Barren Lands

The internment camps sprouted like desolate flowers in the heartland. Ten of them, scattered across California, Arizona, Wyoming, Colorado, Utah, and Arkansas. Barbed wire fences encircled barren lands, and guard towers loomed like silent sentinels. Behind those fences, dignity withered, and hope flickered.

Chapter 3: Lost Dreams

In the camps, life was a paradox. Dust storms swept through rows of hastily assembled barracks. Children played in the shadow of guard towers, their laughter echoing against the harsh reality. Elders remembered cherry blossoms in spring, but here, seasons blurred into monotony.



Chapter 4: Resilience and Defiance

Yet, amid the despair, resilience bloomed. Families created makeshift schools, teaching their children despite the odds. Artists painted, poets whispered verses, and musicians strummed strings. The human spirit refused to be caged.

Chapter 5: The Unseen Heroes

Fred Korematsu, a quiet man with steely resolve, challenged the internment all the way to the Supreme Court. Mitsuye Endo, a soft-spoken secretary, became a symbol of quiet resistance. Their names etched in history, their courage a beacon for generations to come.

Chapter 6: The Aftermath

The war ended, and the barbed wire came down. Japanese Americans returned to a fractured world. Some rebuilt, while others carried scars too deep to heal. The government offered apologies, but time could not erase the pain.

And so, dear reader, let us remember those who endured—those who whispered hope behind barbed wire, who clung to their humanity when the world turned blind. May their stories echo through time, a testament to the resilience of the human spirit. 🌸🔑

Sources:

1. [Japanese Internment Camps: WWII, Life & Conditions | HISTORY](#)
2. [Japanese American internment | Definition, Camps, Locations, Conditions ...](#)
3. [Japanese-American Internment | ushistory.org](#)
4. [Internment of Japanese Americans - Wikipedia](#)

Learn more [1 H history.com](#) [2 W en.wikipedia.org](#) [3 B britannica.com](#) [4 U ushistory.org](#) [5 G gettyimages.com](#)

     ● 2 of 30



Tell me more about Fred Korematsu.

What was life like in the internment camps?

Did any families manage to reunite after the war?

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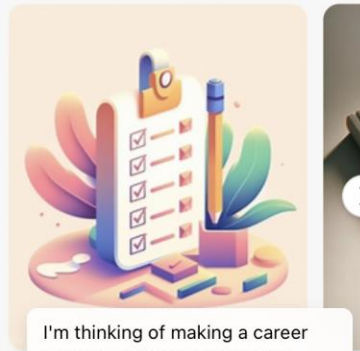
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Create a slogan for a new social media platform that specializes in sarcasm



Paint a winter landscape with a pack of foxes admiring the aurora borealis



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Write a song about the Titanic



Copilot

Certainly! Here's a song about the **Titanic**:

(Verse 1) 🎵 In the heart of England, built with pride, A ship of dreams, where hopes reside. The Titanic, a gem of the sea, Set sail with souls, wild and free. 🎵

(Chorus) 🎵 Oh, Titanic, a tale untold, Of brave hearts, young and old. Amidst the waves so wide and vast, A story forged, in histories cast. 🎵

(Verse 2) 🎵 Stars that night shone bright and clear, Unaware of the approaching fear. Iceberg ahead in cold embrace, Changed forever, time and space. 🎵

(Chorus) 🎵 Oh, Titanic, a tale untold, Of brave hearts young and old. Amidst the waves so wide and vast, A story forged in histories cast. 🎵

(Bridge) 🎵 The band played on, as water rose, Passengers clung to life's fragile prose. Lifeboats launched, hearts heavy with loss, The unsinkable ship met its final cross. 🎵

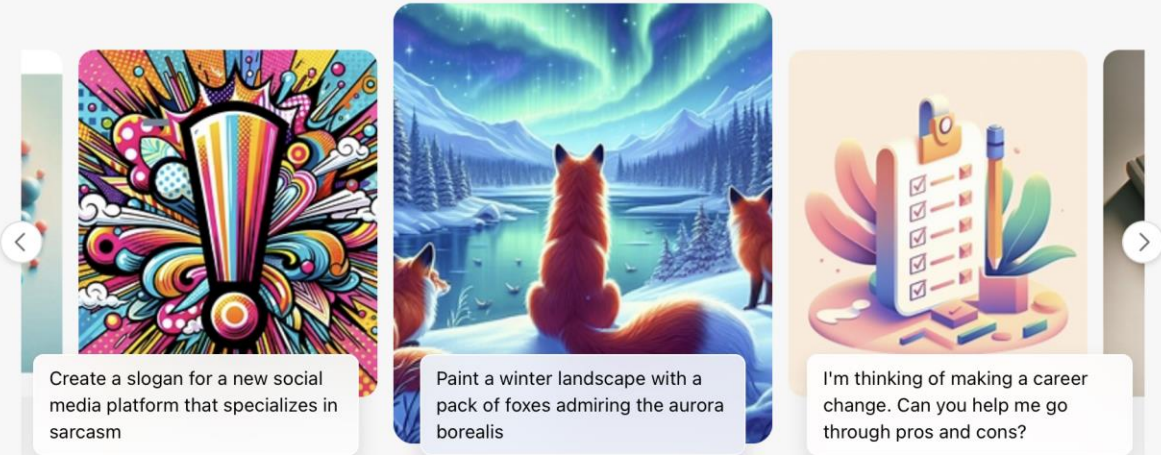
(Chorus) 🎵 Oh, Titanic, a tale untold, Of brave hearts young and old. Amidst the waves so wide and vast, A story forged in histories cast. 🎵

(Outro) 🎵 Beneath the moon's mournful gaze, The Titanic rests in ocean's maze. Her legacy lives on, a haunting refrain, A ship of dreams, forever in our vein. 🎵

And so, we remember the Titanic—a symbol of both human ambition and tragedy. 🌊🚢

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Three AI-generated images are shown in a carousel. The first image is a vibrant, colorful abstract design with a central funnel-like shape. The second image is a winter landscape with foxes admiring the aurora borealis. The third image is a checklist with a plant and a pencil.

Left prompt: Create a slogan for a new social media platform that specializes in sarcasm

Middle prompt: Paint a winter landscape with a pack of foxes admiring the aurora borealis

Right prompt: I'm thinking of making a career change. Can you help me go through pros and cons?

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How can I determine the value of mathematical pi

Certainly! The value of π (pi) can be determined using various methods. Here are a few ways:

1. Calculating Pi Using the Measurements of a Circle:

- Make sure you are using a perfect circle (not ellipses or ovals).
- Measure the circumference of the circle as accurately as possible.
- Measure the diameter of the circle.
- Use the formula: $\pi = \text{Circumference} / \text{Diameter}$.
- Repeat this process with several different circles and average the results for accuracy¹.

2. Calculating Pi Using an Infinite Series:

- One simple method is the **Gregory-Leibniz series**.
- It converges to pi with every iteration.
- Accurately produces pi to five decimal places with 500,000 iterations¹.

3. Other Mathematical Series and Formulas:

- There are more complex mathematical series that can calculate pi to a great number of decimal places.
- These include Nilakantha Series, Leibniz's Formula, and Ramanujan's Pi Formula² ³.

Remember that pi is an irrational number, which means it cannot be expressed as a simple fraction and has an infinite decimal expansion. It's approximately 3.14159... and is widely used in mathematics and science. 🍌📐

Learn more

1  [wikihow.com](#)

2  [iq.opengenus.org](#)

3  [byjus.com](#)

4  [youtube.com](#)

5  [youtube.com](#)

+3 more

Isaac Newton
determined the value
of π to 16 decimal
places in 1666



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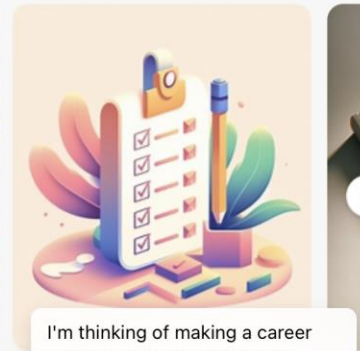
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Tell me about Onalaska Washington

Certainly! **Onalaska**, an unincorporated community and census-designated place (CDP) in **Lewis County, Washington**, has a rich history and a unique name. Here are some interesting details:

1. **Population:** As of the **2020 census**, Onalaska had a population of **657**¹. It's a small community, but its character and heritage make it noteworthy.
2. **Etymology:** The name "Onalaska" has an intriguing origin. It comes from the poem "**The Pleasures of Hope**" by Scottish poet **Thomas Campbell**. Originally, the place referenced in the poem was called **Oonalaska**, which was later shortened to Onalaska. Interestingly, this name became a company tradition, leading to the existence of other towns named Onalaska in **Wisconsin** and **Texas**¹.
3. **History and Lumber Industry:** Onalaska was built around an inland mill established by the **Carlisle Lumber Company** in **1909**. Actual production commenced in **1914**. At its peak in **1929**, the company's inventory included over **20 million board feet of lumber**—enough to stretch all the way to the **Panama Canal**! However, issues with unionization in the late **1940s** led the Carlisle family to close down the mill and leave the town. The company's surviving **225-foot smokestack** near **Carlisle Lake** stands as the last trace of one of the most successful mid-sized sawmills in **Washington state**. The mill employed a significant number of **Japanese and Japanese Americans**, who lived north of today's **State Route 508**. Streets like **Oriental Avenue**, **Nippon Avenue**, and **Tokyo Avenue** were part of their community. During World War II, these local Japanese Americans were forced to relocate to **Camp Tulelake** in California, where they helped with its construction and were subsequently interned for the duration of the war. The **Lewis County Museum** in **Chehalis** honors their legacy¹.
4. **Geography:** Onalaska covers a total area of **1.60 square miles** (4.15 km²) and is situated at an elevation of **515 feet** above sea level. It lies along **Washington State Route 508**¹.
5. **Community:** Living in Onalaska offers residents a **suburban rural mix feel**, and most residents own their homes. The town has a close-knit community spirit, and its historical ties to the lumber industry add to its charm².

Next time you drive along State Route 508, you'll know a bit more about the fascinating history behind Onalaska! 🌲🏠

Learn more [1 w en.wikipedia.org](#) [2 n niche.com](#) [3 q bing.com](#) [4 + mapquest.com](#)

👍 🗑️ 📄 ⬇️ 📄 🔊 ● 2 of 30



What are some outdoor activities in Onalaska?

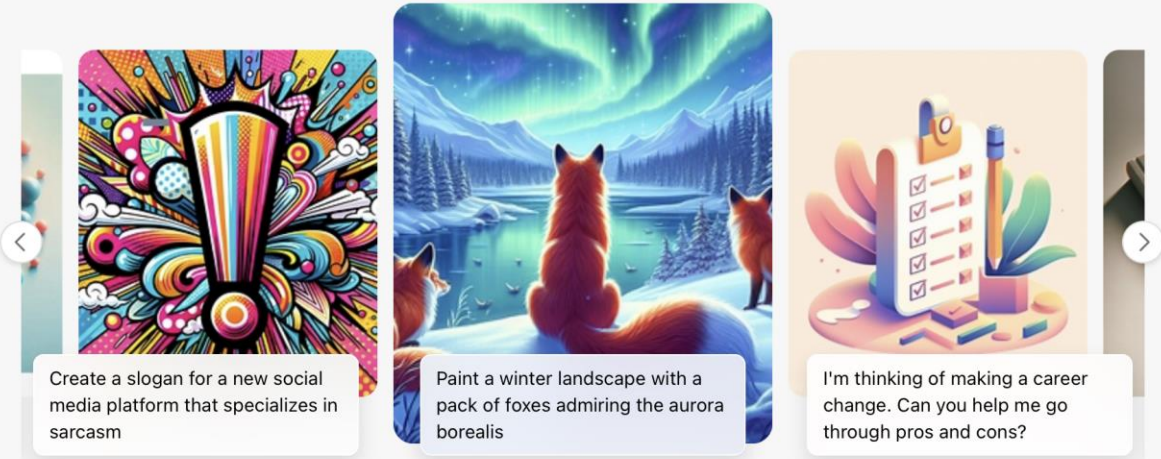
Tell me more about Carlisle Lake.

Are there any local events or festivals held in Onalaska?

Considerable information by searching Google
ChatGPT didn't recognize Onalaska

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Three AI-generated images are shown in a carousel. The first image is a vibrant, abstract graphic with a central funnel shape and various colorful patterns. The second image is a winter landscape with a pack of foxes admiring the aurora borealis. The third image is a checklist with a plant and a pencil.

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Paint a winter landscape with a pack of foxes admiring the aurora borealis

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How do tuition fees for higher education in the united states compare to other countries

Certainly! Let's compare tuition fees for higher education in the United States with those in other countries. Here's an overview:

1. United States:

annual

- **Average Annual Tuition and Fees:** The average cost of tuition and fees in the U.S. varies significantly depending on the type of institution (public vs. private) and the state. For the 2023–2024 academic year, the average annual tuition and fees at public institutions for in-state students is around \$10,662, while private colleges charge an average of \$42,162¹.
- **Financial Aid:** Many U.S. colleges offer financial aid, scholarships, and tuition discounts to help offset costs for students.

2. England:

- England has the highest university tuition fees in the world. An average annual fee at an English public institution amounts to approximately **\$12,330** when converted to USD using purchasing power parity¹. However, it's essential to note that England wasn't always so expensive; since the early 2000s, annual costs have increased by 700%¹.

3. Australia, Canada, and Other Countries:

- Australia, Canada, Chile, Japan, and South Korea also have tuition fees in excess of **\$4,000¹**.
- Countries in continental Europe, such as Spain, France, and Germany, tend to have **far lower fees** by comparison.
- Sweden, Norway, Denmark, and Finland have **no tuition fees** at all for higher education¹.

4. Top Universities Worldwide:

- The tuition fees at top universities worldwide can vary significantly. For example:
 - **University College London (UCL), UK:** UCL charges top UK fees to home/EU students and fees ranging from **£19,720 to £28,610** for international undergraduates².
 - **University of Chicago, US:** The University of Chicago charges **US\$57,642** for undergraduate programs and an average of **US\$49,734** for most postgraduate programs².

5. Overall Comparison:

- While some countries have high tuition fees (like England and the U.S.), others offer more affordable or even free higher education. It's essential for students to consider both tuition costs and available financial aid when choosing where to study.

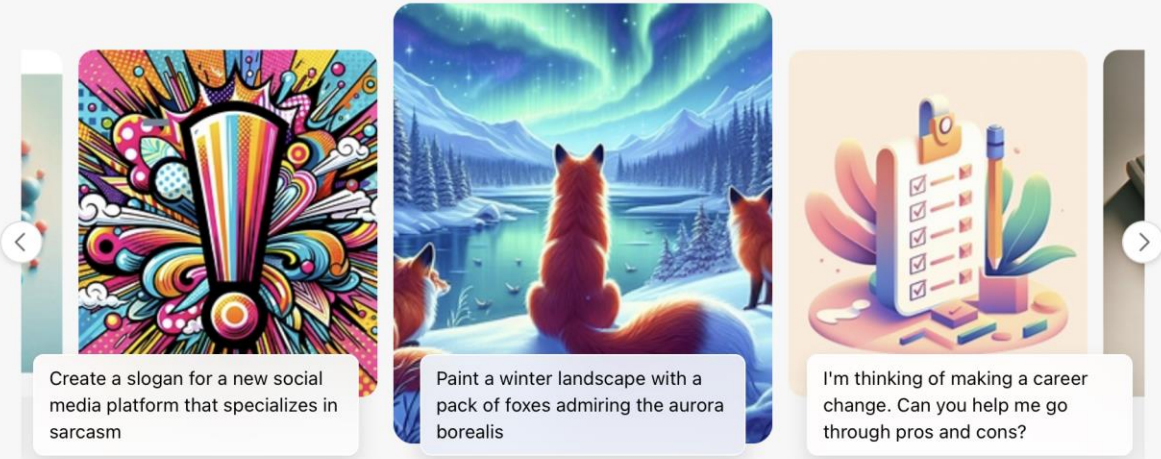
Remember that these figures can change over time, and individual circumstances may vary. It's crucial for students to research specific universities and programs to understand the full cost of attendance and available financial support. 🎓🌍

UCR—1960
\$150/year

\$1,582 (2024)
6.7X

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In terms of investment, what are the best undergraduate majors of study



Copilot

When considering the return on investment (ROI) for undergraduate majors, certain fields of study stand out for their potential to yield higher earnings over time. Here's a summary of the best undergraduate majors in terms of investment:

- **Engineering:** Majors in various engineering disciplines, including **petroleum, aerospace, industrial, software, nuclear, electrical, mechanical, civil, biomedical, chemical, and architectural engineering**, are known for high ROI. Engineering degree holders can expect median monthly earnings of **\$6,000**, or **\$72,200 per year**, after debt payments¹.
- **STEM Fields:** Degrees in **science, technology, engineering, and mathematics** (STEM) are among those with the highest ROI. These careers offer competitive salaries due to specialized skill sets that are in high demand¹.
- **Healthcare:** Majors related to healthcare, such as **nursing and dental support services**, also provide a good return on investment. The healthcare industry often offers stable employment opportunities and competitive salaries².
- **Construction Management and Quality Control/Safety Technicians:** These majors are also noted for their ROI, with graduates finding well-paying jobs in their respective fields².
- **Architectural Engineering:** This major is particularly valuable, with a median income of **\$90,000**, an unemployment rate of **1.3%**, and only **29%** of degree holders pursuing advanced degrees, which indicates a strong job market for bachelor's degree graduates in this field³.

It's important to note that while these majors may offer a good return on investment, students should also consider their interests, skills, and career goals when choosing a major. Additionally, the value of a major can be influenced by the job market, location, and the individual's ability to leverage their degree in the workforce. 🎓👜

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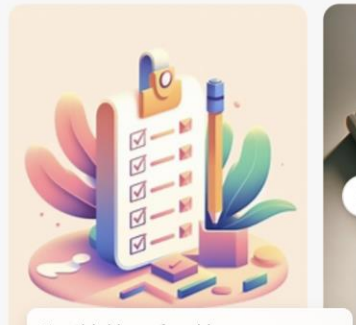
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Paint a winter landscape with a pack of foxes admiring the aurora borealis



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In terms of investment, what are the worst undergraduate majors of study



When it comes to the return on investment (ROI) for undergraduate majors, some studies have identified certain degrees that tend to offer lower financial returns compared to others. Here are some undergraduate majors that are often cited as having a lower ROI:

- **Sociology:** Graduates in sociology may find themselves in meaningful roles such as social workers, corrections officers, or chemical dependency counselors. However, these positions typically offer lower median salaries, resulting in a lower ROI for the degree ¹.
- **Fine Arts:** Fine arts majors often pursue their passion for creativity and expression, but they may face financial challenges due to lower average earnings and job opportunities, which can lead to a lower ROI ¹.
- **Education:** Those who major in education are usually driven by a desire to teach and impact future generations. Despite the noble intent, the financial rewards in this field are often modest, especially when weighed against the cost of obtaining the degree ¹.
- **Religious Studies/Theology:** Majors in religious studies or theology may be fulfilling for those interested in spiritual or religious careers, but they often come with lower financial compensation compared to other fields ².
- **Hospitality/Tourism:** The hospitality and tourism industry offers various career paths, but the initial ROI for these majors can be lower, particularly in entry-level positions ².
- **Nutrition:** While nutrition is an important field within healthcare, the financial returns for nutrition majors are often lower than those for other healthcare-related fields ².
- **Psychology:** Psychology is a popular field of study, and while it can lead to rewarding careers, the financial ROI is often lower unless one pursues advanced degrees or specialized certifications ².

It's important to note that ROI is not solely about financial gain. Many individuals choose their majors based on personal interests, values, and the desire to contribute to society, rather than potential earnings. Additionally, the job market is dynamic, and the value of a degree can change over time. Passion, dedication, and continued learning can also lead to success in any field. 🎓

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The image shows three examples of AI-generated content. The first is a vibrant, colorful abstract graphic with a central funnel shape, surrounded by various patterns and colors. The second is a winter landscape painting featuring a pack of foxes sitting on a snowy bank, looking up at a bright green aurora borealis in a dark sky over a frozen lake and mountains. The third is a 3D illustration of a checklist on a clipboard, with a pencil and a small plant next to it, set on a circular base.

Create a slogan for a new social media platform that specializes in sarcasm

Paint a winter landscape with a pack of foxes admiring the aurora borealis

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Create a picture of a young boy watching a waterfall



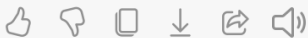
I'm unable to create actual images, but I can offer you a vivid description to spark your imagination. Imagine this:

A young boy, no more than ten, with a mop of untamed hair the color of autumn leaves, stands at the precipice of discovery. His small hands are clasped behind his back, and his eyes, bright as the summer sky, reflect a world of wonder. He's perched on a moss-covered rock, toes skimming the cool, clear water that pools at the base of the waterfall.

The waterfall itself is a marvel, a silver cascade tumbling down from the heights with the grace of a thousand dancers. The sound is thunderous, a constant rumble that speaks of the earth's deep conversations. Mist dances around the boy, cloaking him in a veil of droplets that shimmer in the fractured light.

He is still, almost statuesque, as the scene etches itself into his memory. This is a moment of pure connection with nature, a silent communion with the wild and untamed. It's a picture painted not on canvas, but on the heart, where the beauty of the world in its rawest form comes alive.

This is the image of a young boy watching a waterfall, a snapshot of innocence and awe that tells a story without words.



● 2 of 30

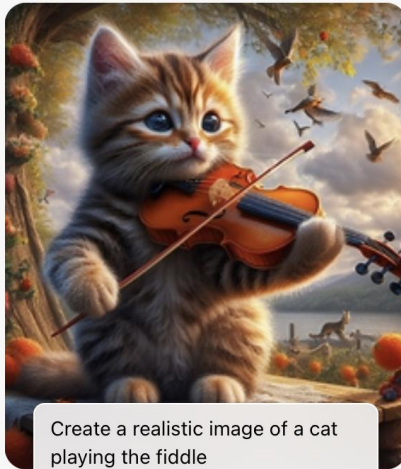
Same result with ChatGPT



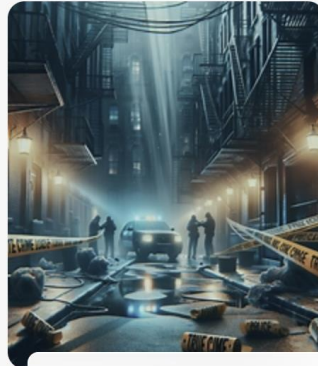
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Create a realistic image of a cat playing the fiddle



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Recents

- GPT: Generative Pre-trained Transform... 7:26 AM
- draw a picture of a young boy watching... 7:12 AM
- Recent Advances in Chemistry Yesterday
- Microsoft Copilot Yesterday
- History of Guano 4 days ago
- Uses of Guano 4 days ago
- Guano Trade in the 18th Century 4 days ago
- Fritz Haber's Contributions 5 days ago
- Bombing of Leipzig during World Wa... Mar 6, 2024

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Wot's a GPT

0/4000





The term "GPT" can refer to two different concepts:

1. **Generative Pre-trained Transformer (GPT):** This is a type of artificial intelligence model designed to generate human-like text. GPT models use a neural network architecture known as transformers and are pre-trained on a large corpus of text data. They are capable of performing a variety of language-related tasks, such as translation, question-answering, and content creation [1](#) [2](#) [3](#).
2. **GUID Partition Table (GPT):** In the context of computer storage, GPT stands for GUID Partition Table, which is a standard for the layout of the partition table on a physical storage device like a hard disk drive or solid-state drive. It uses globally unique identifiers (GUIDs) and is part of the Unified Extensible Firmware Interface (UEFI) standard [4](#) [5](#).

Depending on the context, GPT could mean either of these. If you're referring to AI and machine learning, it's likely the first definition. If you're discussing computer hardware, it's probably the second. Would you like to know more about one of these topics?



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- Designer **← Left click here**
- Vacation planner
- Cooking assistant
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Ask me anything...



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Going to → Designer

Create any image you can imagine

By Microsoft



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Create a picture of a young boy watching a waterfall



Designer

I've created an image of a young boy watching a waterfall. I hope it captures the serene and awe-inspiring moment you envisioned.



1 of 30



"a young boy watching a waterfall"

Designer

Powered by DALL-E 3

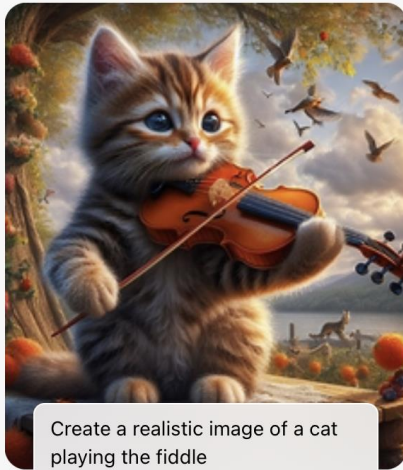


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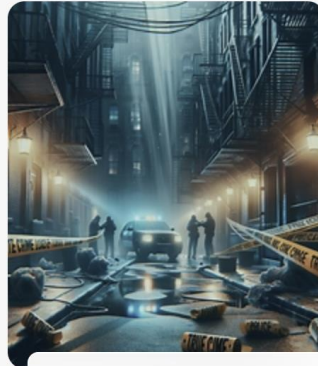
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Going to → Vacation planner

I can help you discover new places, create itineraries & help book your travels

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Kayak through Halong Bay



Walk the Great Wall



Attend La Tomatina Festival in Spain

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New topic

Plan a vacation for me in Orlando Florida

Vacation planner

Let's continue personalizing your Orlando, Florida adventure. What's your preference for the arrival date?



I want to arrive on June 1st.

What are the best places to visit in Orlando?

Can you suggest some budget-friendly hotels?

Vacation planner

Fantastic! With your arrival set for June 1st, you'll be greeted by Orlando's warm summer weather, perfect for exploring the theme parks and attractions. Let's keep the momentum going. What's your preference regarding the budget for this trip?

Tours and activities



Buy Tickets Online & Save At Universal Orlando Resort
universalorlando.com
1 days • from **\$119**



Florida Bioluminescence Clear Kayak Tour | Cocoa
tripadvisor.com
4/5 ★★★★★ (24)
1hr 30min • from **\$65**



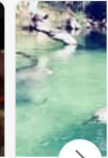
Orlando Manatee And Natural Spring Adventure
tripadvisor.com
4.5/5 ★★★★★ (107)
2hr • from **\$65**



Clearwater Beach Day Trip From Orlando With
tripadvisor.com
4.5/5 ★★★★★ (40)
11hr • from **\$99**



Crayola Experience Entry Ticket
getyourguide.com
3/5 ★★★☆☆ (5)
1 days • from **\$30**



Orlando Natural Spring Adventure
viator.com
4.69/5 ★★★★★
2hr • from

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2 of 30

Flights from Vienna to Orlando

bing.com/travel/flights

One way Round trip

Washington, United States - WAS

Orlando, United States - ORL

Fri, April 12, 2024

Thu, April 18, 2024

✈ Fly from the nearest airport (Washington)

Best matches ⓘ

Round-trip price

S Spirit Airlines 10:40 AM - 01:06 PM 2h 26m · Nonstop **\$107**

And on and on...

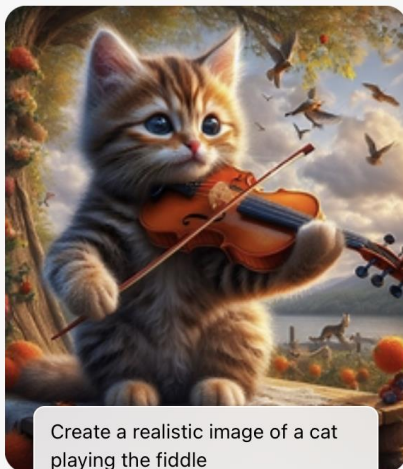


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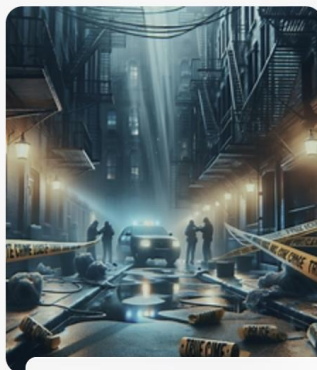
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Create a realistic image of a cat playing the fiddle



What's the most popular true crime show streaming right now?

Copilot uses AI. Check for mistakes. [Terms](#) | [Privacy](#) | [FAQs](#) [Get Copilot Pro](#)

Ask me anything...



0/4000



Copilot GPTs

- Copilot
- Designer
- Vacation planner
- Cooking assistant
- Fitness trainer



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Recents

- GPT: Generative Pre-trained Transfo
- draw a picture of a young boy watching 7:12
- Recent Advances in Chemistry Yesterday
- Microsoft Copilot Yesterday
- History of Guano 4 days ago
- Uses of Guano 4 days ago
- Guano Trade in the 18th Century 4 days ago
- Fritz Haber's Contributions 5 days ago
- Bombing of Leipzig during World Wa Mar 6, 2024

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Feedback

Cooking assistant

I can help you find recipes, create meal plans and get cooking tips & tricks


By Microsoft




- Chat
Authentic Indian curry recipes
- Chat
Flavorful chicken seasoning blends
- Chat
Healthy smoothie bowl ideas
- Chat
How to cook the perfect steak

← --- Suggestions --- →

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Ask me anything... 

  0/4000 

Display a menu

Feedback

Cooking assistant

Cooking the perfect steak involves a few key steps to ensure it's juicy, flavorful, and cooked to your desired doneness. Here's a simple guide:

1. **Choose the Right Cut**: Select a high-quality cut of beef like ribeye, sirloin, or filet mignon for the best results.
2. **Room Temperature**: Let the steak sit out until it reaches room temperature, which can take about 30 minutes to an hour depending on the thickness.
3. **Season Well**: Generously season both sides with salt and pepper. You can also add other spices or herbs if you like.
4. **Preheat the Pan**: Use a heavy skillet or grill and get it very hot before adding the steak. This will help create a nice sear.
5. **Cooking Time**: Cook the steak on one side without moving it until a crust forms. Then flip it and cook to your preferred level of doneness. Use a meat thermometer to check the internal temperature.
6. **Rest the Steak**: After cooking, let the steak rest for about 5 minutes to allow the juices to redistribute.

Would you like to know the ideal cooking times for different levels of doneness, or do you have a specific type of steak or cooking method in mind?



1 of 30

And on and on...



What is the difference between rare, medium-rare and well-done?

How do I know when my steak is done?



Ask me anything...



0/4000



Display a menu

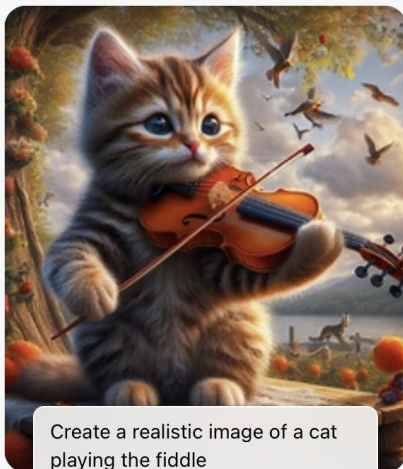


Back to → Copilot

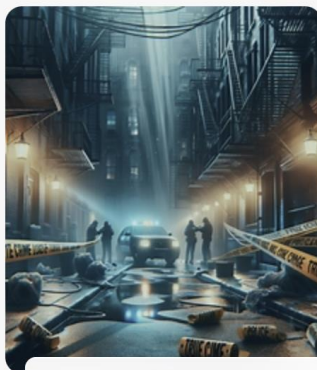
Your everyday AI companion



Find a kid-friendly, vegetarian dinner recipe and the grocery list



Create a realistic image of a cat playing the fiddle



What's the most popular true crime show streaming right now?

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Ask me anything...



0/4000



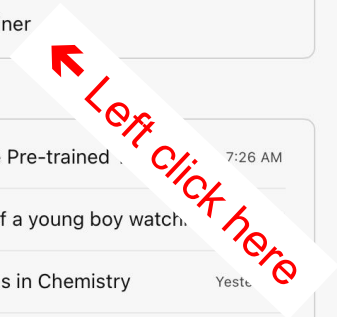
Copilot GPTs

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- Vacation planner
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- Fitness trainer



Recents

- GPT: Generative Pre-trained 7:26 AM
- draw a picture of a young boy watch.
- Recent Advances in Chemistry Yesterday
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- Uses of Guano 4 days ago
- Guano Trade in the 18th Century 4 days ago
- Fritz Haber's Contributions 5 days ago
- Bombing of Leipzig during World War I Mar 6, 2024



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Going to → **Fitness trainer**

I can help design exercise programs & educate on nutrition, health & wellness

By Microsoft



Chat

Maximizing results with circuit training



Chat

Importance of rest and recovery days



Chat

Tips for preventing workout injuries



Chat

Benefits of meditation for fitness

← - - - - - Suggestions - - - - - →

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Tell me about cycling and fitness



 You

tell me about cycling and fitness

 Fitness trainer

Cycling is a fantastic form of exercise that offers a wide range of fitness benefits. It's a low-impact activity that can help improve cardiovascular health, increase muscle strength and flexibility, and aid in weight management. Cycling can also reduce stress levels and improve mental well-being.

Whether you're cycling outdoors or using a stationary bike, it's important to set clear fitness goals. Are you looking to improve endurance, increase speed, or perhaps lose weight? Let me know your fitness goal, and I can suggest a tailored cycling routine for you. What is your primary fitness goal with cycling? 🚴

      1 of 30

And on and on...



How do I get started with cycling?

What are some common injuries in cycling?

Can you suggest a good stationary bike for home use?



Ask me anything...

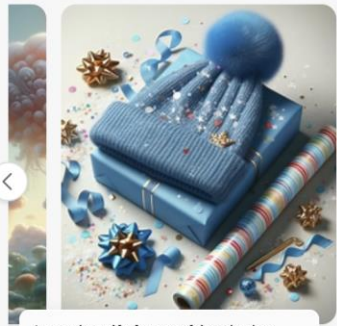


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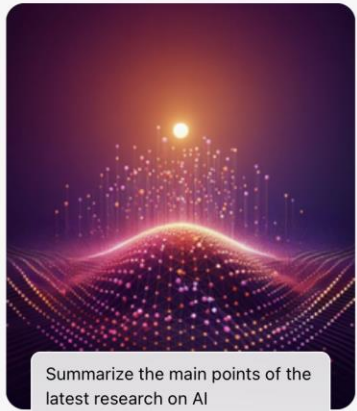
Back to Copilot

Your everyday AI companion

This appeared March 30, 2024



I need a gift for my friend who likes to hike in cold weather



Summarize the main points of the latest research on AI



Compose a love song that doubles as a proposal
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Ask me anything...



0/4000

Chats Plugins

Lorain

Copilot GPTs

- Copilot
- Designer
- Personal shopper
- Vacation planner
- Cooking assistant
- Fitness trainer

Left click here

Recents

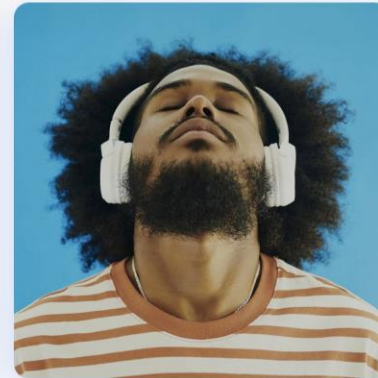
- picture of a mouse surfing at malibu 10:42 AM
- Calculating Pi Mar 22, 2024
- "Cavatina" from "The Deer Hunter" Mar 18, 2024
- comment on My future is in your har Mar 16, 2024
- Chemistry Jokes Mar 16, 2024
- Going to the Opera House and havir Mar 16, 2024
- Road Bike vs Mountain Bike for Exer Mar 16, 2024
- Google AI Mar 14, 2024
- Comparación de poesía de Emily Dic Mar 13, 2024

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Going to → Personal shopper

I can help you save time and money on your next purchase. Shop with confidence!

By Microsoft



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Rain jackets with Gore-Tex

Personal shopper

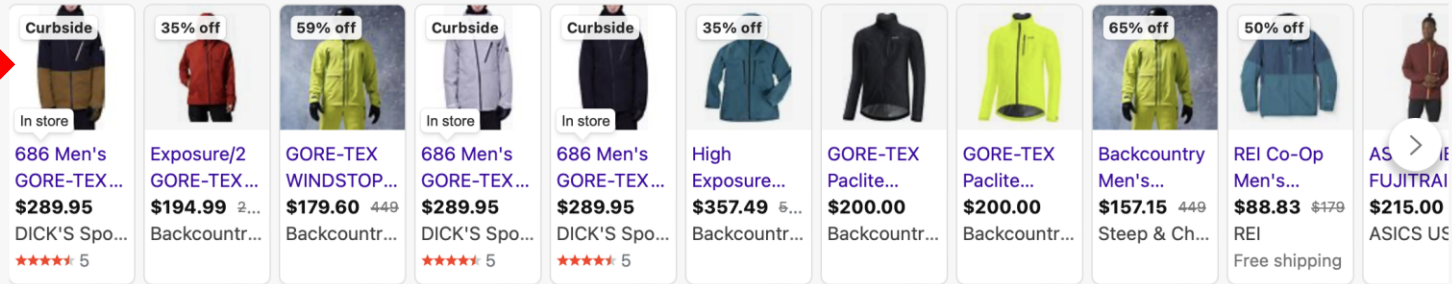
Gore-Tex jackets are renowned for their **durability**, **waterproof**, and **breathable** properties, making them ideal for various outdoor activities. They come in different styles and technologies, such as:

- **GORE-TEX Pro**: For extreme conditions and demanding activities ¹.
- **GORE-TEX PACLITE®**: Lightweight and packable, great as a backup jacket ¹.
- **GORE-TEX Active**: Designed for high aerobic activities, offering lightweight and extreme breathability ¹.

You can find a wide range of Gore-Tex jackets at stores like [REI Co-op](#) and [DICK'S Sporting Goods](#), as well as brand-specific options from [The North Face](#). Whether you're looking for something for everyday wear or specialized gear for mountaineering, there's a Gore-Tex jacket that can meet your needs.

If you have specific requirements or preferences, let me know, and I can help you find the perfect jacket! 🧥

Ads ⓘ



Product Name	Price	Retailer	Discount
686 Men's GORE-TEX...	\$289.95	DICK'S Spo...	Curbside
Exposure/2 GORE-TEX...	\$194.99	Backcountr...	35% off
GORE-TEX WINDSTOP...	\$179.60	Backcountr...	59% off
686 Men's GORE-TEX...	\$289.95	DICK'S Spo...	Curbside
686 Men's GORE-TEX...	\$289.95	DICK'S Spo...	Curbside
High Exposure...	\$357.49	Backcountr...	35% off
GORE-TEX Paclite...	\$200.00	Backcountr...	
GORE-TEX Paclite...	\$200.00	Backcountr...	
Backcountry Men's...	\$157.15	Steep & Ch...	65% off
REI Co-Op Men's...	\$88.83	REI	50% off
ASICS FUJITRAI...	\$215.00	ASICS US	

Learn more 1 [gore-tex.com](#) 2 [rei.com](#) 3 [dickssportinggoods.com](#) 4 [thenorthface.com](#)

👍 🗒️ ⬇️ 🔄 🗣️ 1 of 30

? What are the benefits of Gore-Tex? Can you recommend a budget-friendly option? How do I care for my Gore-Tex jacket?



Ask me anything...



0/8000 ➔

End of Copilot Examples








A whole new way to work



AI Software Available for PCs—Windows



For PCs—Microsoft Windows





AI software	Type	AI features	Pricing plan	 URL
<p>ChatGPT</p> <p>By January 2023, fastest-growing consumer software application in history; 100 million users</p>	<p>Generative</p>	<p>Chatbots</p> <p>Translation</p> <p>Data classification</p>	<p>Free</p> <p>ChatGPT Plus – \$20</p>	 URL
<p>TensorFlow</p>	<p>Machine learning</p>	<p>Layered components</p> <p>Parallel neural network training</p>	<p>Free</p>	 URL
<p>Google AI</p>	<p>Generative</p>	<p>Visual blocks</p> <p>Data validation</p> <p>Dataset search</p>	<p>Free</p> <p>Custom pricing</p>	 URL
<p>Jasper</p>	<p>Writing</p>	<p>Activity dashboards</p> <p>Integrated marketing campaigns</p> <p>Content delivery and management</p>	<p>Creator – \$39 a month</p> <p>Teams – \$99 a month</p> <p>Business – a custom plan</p>	 URL

For PCs—Microsoft Windows

AI software	Type	AI features	Pricing plan
Vosk	Speech recognition	Streaming API Vocabulary reconfiguration Speaker identification	Free
ElevenLabs	Generative voice	Tuning precision Online text readers Voice cloning	Free Starter – \$1 a month Creator – \$11 a month Independent publisher – \$99 a month Growing business – \$330 a month Enterprise – custom pricing



For PCs—Microsoft Windows

AI software	Type	AI features	Pricing plan	 URL
PyTorch	Framework	Distributed training Tensor computation Automatic differentiation	Free	 URL
spaCy	NLP library	Syntactic dependency parser Sentence boundary detection Built-in visualizers	Free	 URL
Midjourney	Generative	Stylistic range High image quality Remix features	Basic – \$10 a month Standard – \$30 a month Pro – \$60 a month Mega – \$120 a month	 URL

For PCs—Microsoft Windows

AI software	Type	AI features	Pricing plan
OpenCV	Computer vision & machine learning software library	Video analysis Real-time object detection Face recognition	Free
Rasa	Conversational	Contextual guidance Reporting/analytics Third-party integrations	Custom pricing



ChatGPT (OpenAI)



ChatGPT

New chat



ChatGPT 3.5

Today

New chat



How can I help you today?

Help me pick

a gift for my dad who loves fishing

Write a message

that goes with a kitten gif for a friend on a rough day

Brainstorm content ideas

for my new podcast on urban design

Brainstorm incentives

for a customer loyalty program in a small bookstore



Upgrade plan

Get GPT-4, DALL-E, and more



Ole Olsen

Enter topic/question here...



ChatGPT can make mistakes. Consider checking important information.



Comparing Microsoft Copilot with ChatGPT see

AI Software Available from Apple's App Store

Name	Rating	Comments
AI Art Generator	3.5	Turn words into pictures
AI Chat Bot - Ask Assistant	4.7	Native ChatGPS app for Macs
AI Chat Bot - Writing Assistant	4.5	Improve your writing
AI Chat Bot – Ask AI Assistance	4.4	Ask questions get answers
AI Slides Presentation Chatbot	3.0	Create PowerPoint Slides
AI Writer Assistant: NextBot 1AI	4.7	Assistance in writing
Chat Q&A Robot	4.0	Ask questions get answers
Chat & Ask AI by Codeway	4.4	Ask questions get answers
Chat Unlimited & Ask Brutus AI	4.7	Ask questions get answers
ChatGen Plus: Top AI Chat Bot	5.0	Wide variety of functions
CodeAI: AI for Xcode	4.8	Writes computer code
Imagine AI Art Generator	3.9	Turn words into pictures
Magic – Drawing and AI	4.1	Assistance in drawing
Spellar AI – Speaking Copilot	5.0	Assistance in public speaking
Taskade	4.5	For software developers

Rating: 1 = worst; 5 = best

AI everywhere **Apple and AI**



Have you heard of artificial intelligence? AI has been [absolutely everywhere](#) this year, and Apple's some way behind what companies like [OpenAI](#), [Microsoft](#), and [Google](#) are doing in this area. WWDC 2024 could well mark the moment when it catches up, and Apple boss [Tim Cook](#) has [already said](#) the company will make big strikes in generative AI this year.



Also of note: [a social media post](#) from Apple exec Greg Joswiak that says WWDC 2024 will be "Absolutely Incredible" – and we don't think the capping up of those two words is any coincidence. Exactly what these AI features will be remains to be seen, though reports suggest Siri is going to [be at the center](#) of these AI-related upgrades.

We're also likely to see AI assistance for writing messages and summarizing text, as well as AI-powered playlist creation [inside Apple Music](#). These changes are going to be happening across all of Apple's platforms and devices, and it seems probable that we'll get a big update on Apple's artificial intelligence work at the start of the WWDC 2024 keynote.

Summarizing Microsoft Copilot

- An excellent tool that complements Google, Bing, etc.
- Answers need to be verified — **be skeptical**
- Copilot learns with use resulting in better, more accurate answers
- Copilot on the Web can be slow at times













Summarizing Microsoft Copilot (cont.)

- Querying the same question often produces different results*
- Copilot is a work in progress—it frequently changes
- You can quickly find yourself down a rabbit hole

* Copilot is self-learning over time



Additional Copilot Information

- Explanation of Copilot      
- Copilot for Microsoft 365 
- Information from Microsoft 
- Wikipedia explains Microsoft Copilot 
- Microsoft Copilot vs. Copilot 365 



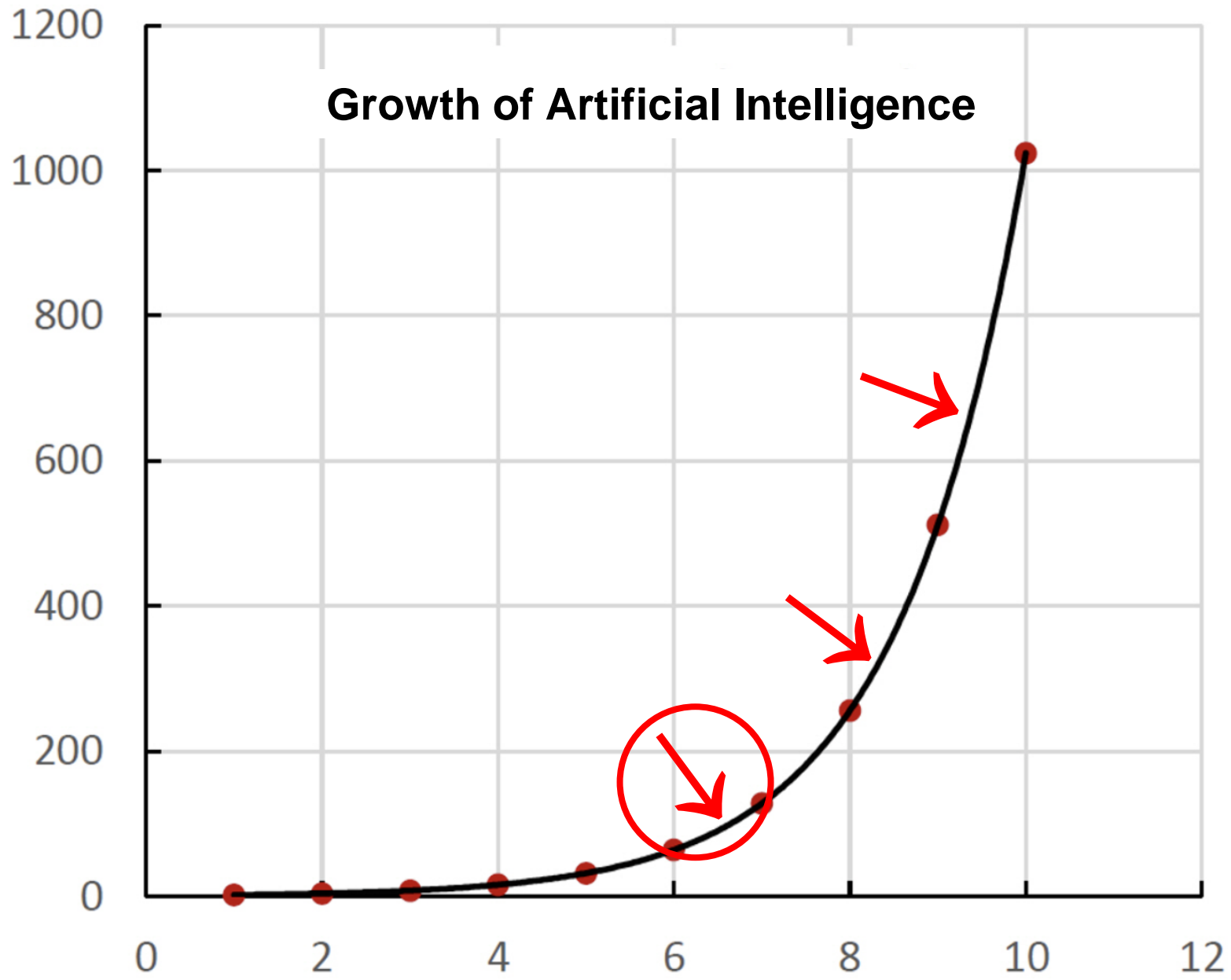
Timekettle AI Translation



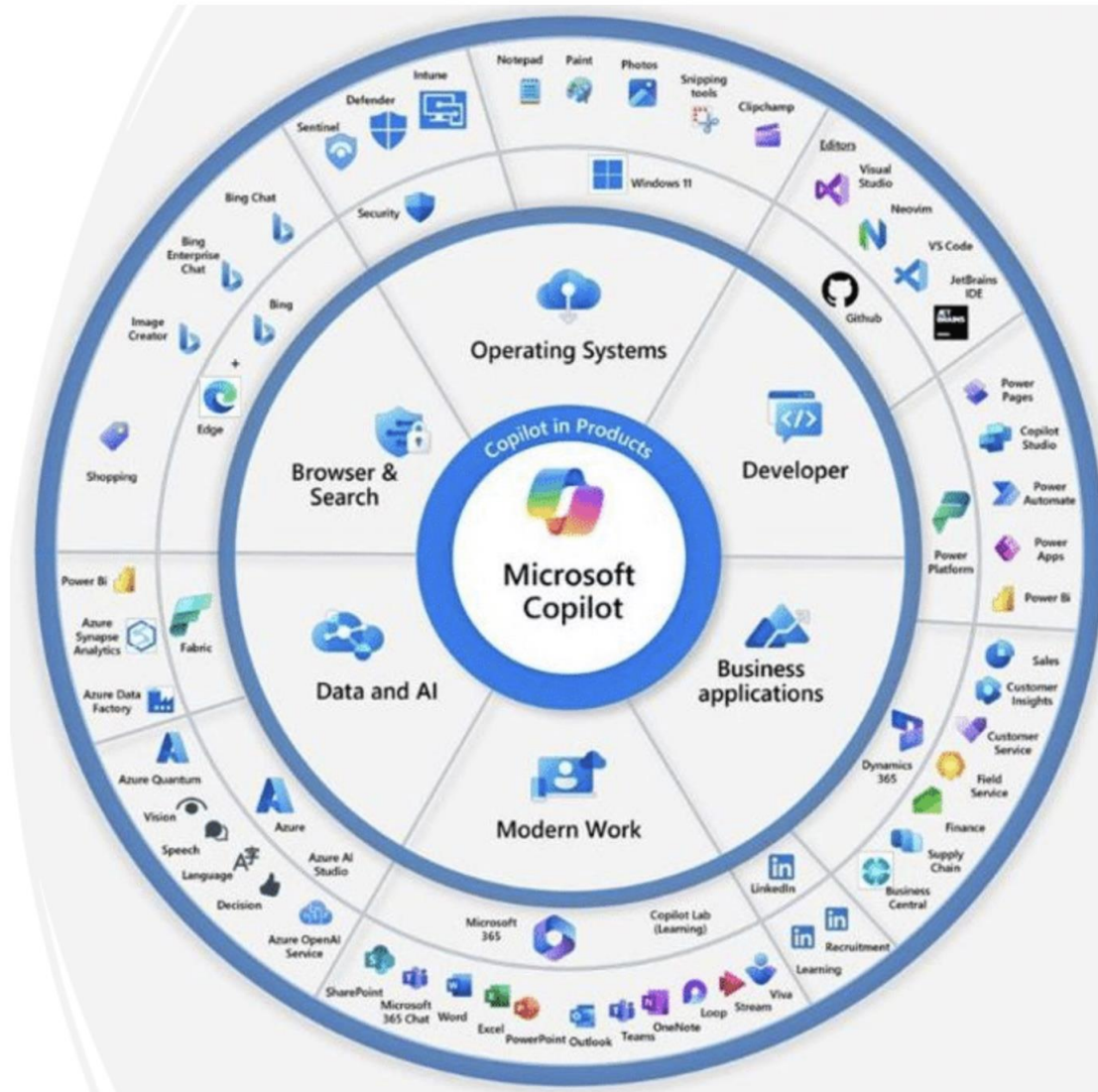
Six translation products
\$120 to \$300
40 languages 93 accents
Up to 20 people in 5 languages



Growth of Artificial Intelligence



Give Copilot a Try!



That's All Folks!

