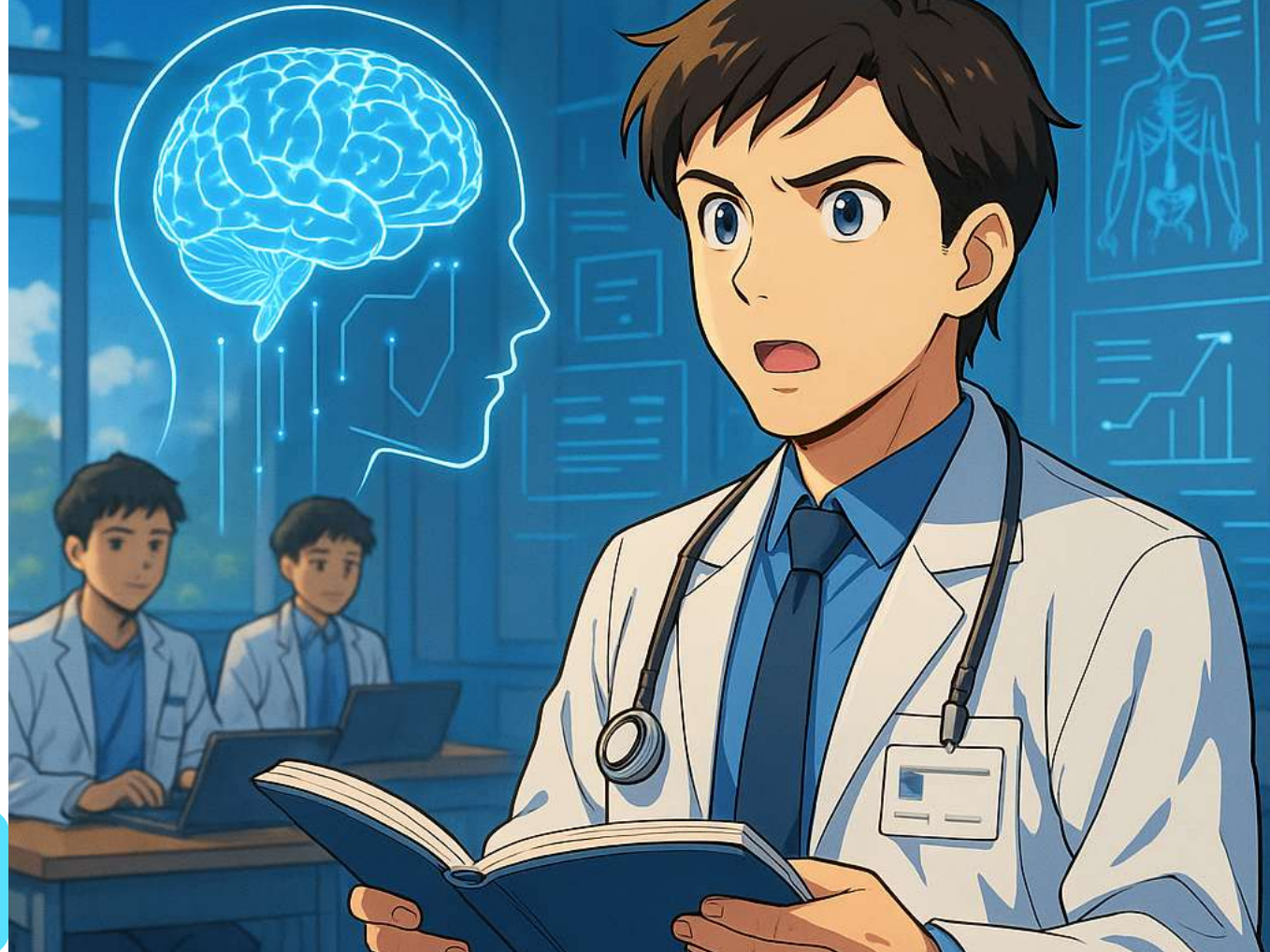


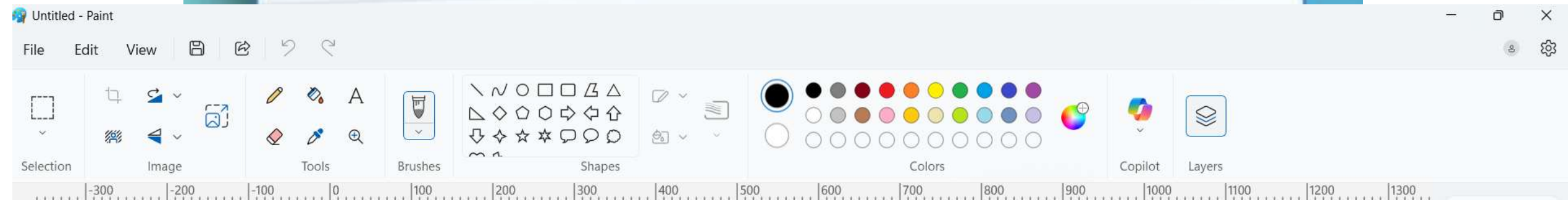
Artificial Intelligence in Medical Education

Enhancing Learning and Teaching



By: H. Vafapour
09173434335

Must-Have AI Tools to Boost Your Productivity



network level across the whole brain, including in deep brain regions. Previous studies in both macaques and humans have used functional magnetic resonance imaging (fMRI) and arterial spin labelling to show large-scale changes in brain activity and perfusion due to TUS. In macaques, TUS of deep cortical and sub-cortical regions have shown changes in task-based fMRI⁵ and behaviour⁶ and in resting-state fMRI (rsfMRI) connectivity profiles of targeted regions^{7,8}. In humans, TUS has been shown to affect changes in both rsfMRI connectivity and regional perfusion^{9,10}.

With magnetic resonance spectroscopy (MRS), it is possible to quantify in vivo levels of gamma-aminobutyric acid (GABA), the major inhibitory neurotransmitter and glutamate, the main excitatory neurotransmitter, providing insights into GABAergic and glutamatergic mechanisms of TUS-induced neuroplasticity. MRS measures of GABA are unable to distinguish between intra- or extracellular GABA, but are thought to represent tonic inhibition and the overall inhibitory "tone" of the region¹¹, rather than phasic or synaptic inhibition^{12,13}. In rats, TUS has been shown to reduce extracellular GABA with no change in glutamate levels up to 120 mins after intervention¹⁴. To date, MRS has not been exploited to explore the neurochemical basis of TUS neuromodulation in humans.

Here, we investigate whether TUS can induce offline changes in two deep cortical regions with well-defined and separable connectivity profiles at rest: the dorsal anterior cingulate cortex (dACC), part of the salience network¹⁵ and the posterior cingulate cortex (PCC), a major hub of the default mode network, which is most active during wakeful rest¹⁶. Aberrant functional connectivity in these networks has been implicated in several neurological and psychiatric disorders¹⁷, making these regions potential targets for therapeutic TUS applications.

stimulation. We show a selective reduction in GABA levels of PCC at -20-30 mins post-stimulation. We also show increased connectivity following TUS of both regions, with the increases in rsfMRI connectivity occurring at later (-46 mins compared to earlier (-13-mins post-TUS) time points. Additionally, stimulation of the PCC also increased functional connectivity dACC, but not vice versa. Importantly, we also show, via measurements and simulations, that we were able to effectively target both deep cortical regions in all individuals in something like neurofeedback or brain-computer interfaces?

Results

In this pre-re we investigate glutamate and following TUS design in Fig participants the three TUS remained wide (ods). Acoustic formed at the and MRI sessions left PCC or

2 of 12

What are the clinical applications of TUS?

How does TUS compare to traditional stimulation methods?

What are the future trends in non-invasive brain stimulation?

Message Copilot

Quick response ▾ + 🗑️

Copilot

Sure! Here are a few fascinating takeaways from the research article on **transcranial focused ultrasound stimulation (TUS)**:

A New Frontier in Non-Invasive Brain Stimulation

- TUS can modulate deep brain structures with millimeter precision—something older techniques like TMS (transcranial magnetic stimulation) and tDCS (transcranial direct current stimulation) can't do as effectively.
- This study applied **theta-burst patterned TUS** to two areas: the *dorsal anterior cingulate cortex (dACC)* and the *posterior cingulate cortex (PCC)*—regions involved in attention and resting state networks.

Neurochemical impact

Message Copilot

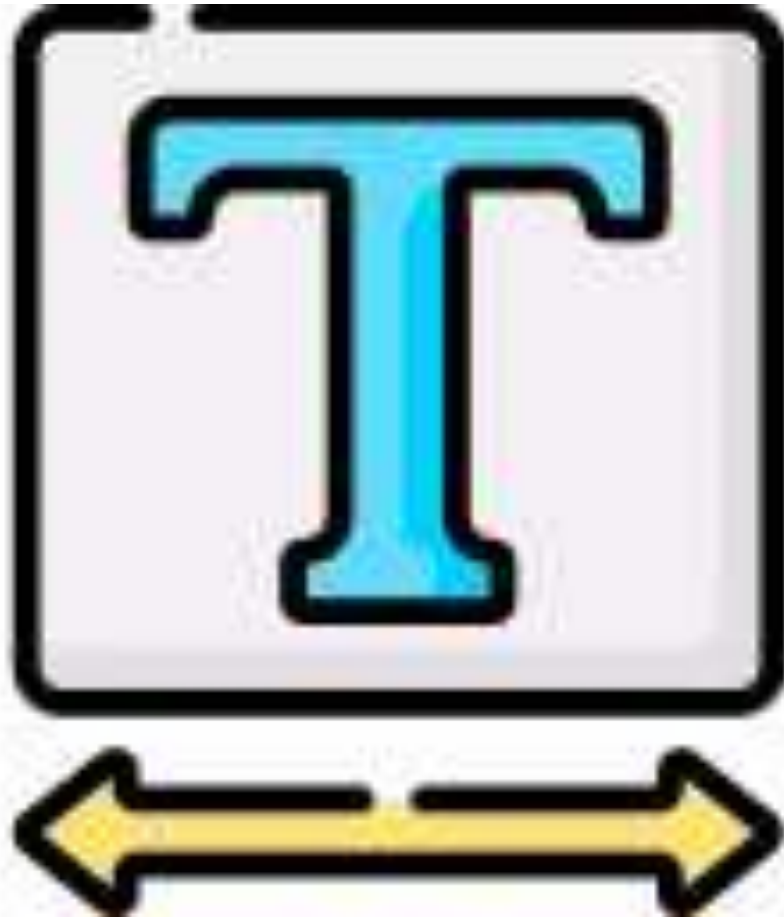
Quick response ▾ + 🗑️





Sider

auto Rtl/Ltr switcher extension





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for Windows

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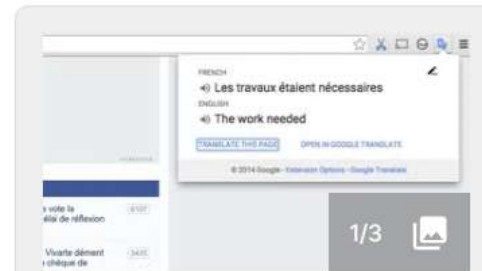
Information Alternative apps



Xavier Slim · Updated 10 months ago

Save time by just highlighting with your mouse

Google Translate for Chrome is a free [productivity](#) tool that enables you to easily translate while surfing the web. Developed by Google, this handy [browser extension](#) is a more compact and convenient version of the Google

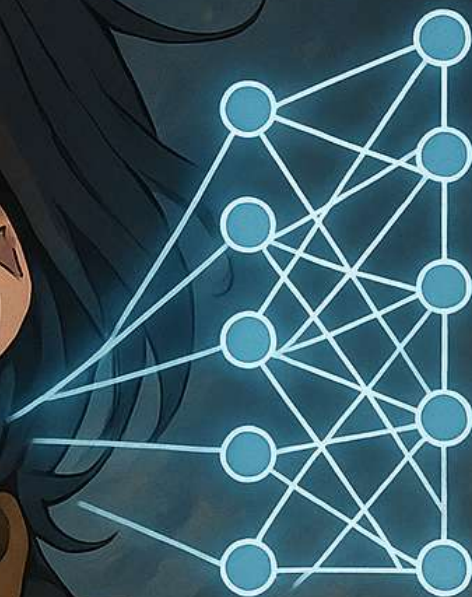
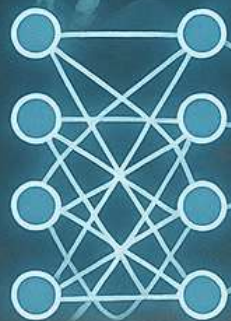


App specs

License

**INPUT
PROMPT**

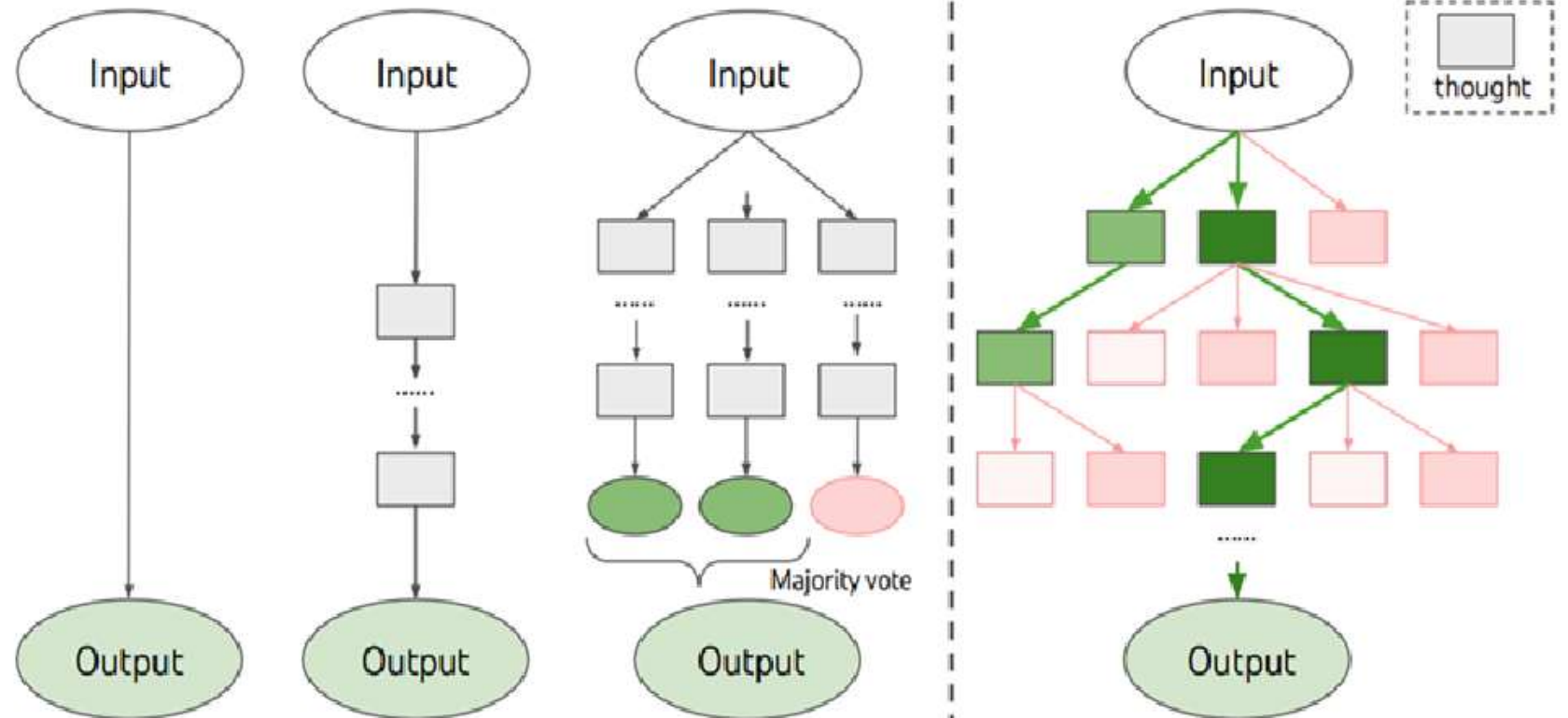
**AI NEURAL
NETWORK**



**BETTER
RESULT**

Chain of thought

A technique used with large language models (LLMs) to enhance their ability to **solve complex problems** by **breaking them down** into **smaller, intermediate steps**



Untitled for

GPT Quiz Generator for Forms™

Add text to generate questions Result (generated questions)

Estimate: \$0 (0 Tokens), Total spent tokens: 47933, Remaining balance: \$0.18 (61606 Tokens), [Deposit Info](#)

Instruction **i** Example: Upper Elementary (5th Grade, 10-11 years old)

Text for generating questions:
Add text to generate questions

Load text from image, pdf & docs **i**

Choose File No file chosen

Quick import **?**

Remove All Text

- Questions settings

User: vaf@gmail.com

Multiple Choice

Questions count: 1

Answers: Count 1

Correct answers: 1

Model: gpt 4o mini **i**

Language: English

+ Additional settings

+ Restore from history

Generate Questions

?

Close



Gemini

2.5 Pro

فیزیک MRI طراحی کنم شما این کار را به عنوان یک متخصص فیزیک ام آر آی در 10 سوال تخصصی انجام دهید به صورت تست 4 گزینه ای و قابل ارسال برای دانشجویان

Show thinking

باشه حتما. من برای شما یک اپلیکیشن تحت وب طراحی می‌کنم که شامل 10 سوال تخصصی فیزیک نه‌ای است. این اپلیکیشن کاملاً دانشجویان می‌توانند به سوالات مره خود را مشاهده کنند. شما کیشن را ذخیره کرده و برای کنید.

+ Video Deep Research

Gemini can make mistakes, including about p
Your privacy & Gemir..

MRI آزمون فیزیک

سوال 1 از 10

فرکانس لارمور (Larmor Frequency) که فرکانس تقدیمی پروتون‌ها در یک میدان مغناطیسی است، به کدام عامل بستگی مستقیم دارد؟

قدرت میدان مغناطیسی	قدرت گرادیان
زمان آکوی (TE)	زمان آسایش T1

پاسخ اشتباه است. پاسخ صحیح: قدرت میدان مغناطیسی اصلی (B0)

لوضیح هوشمند پاسخ

Claude

+ New chat

Chats

Artifacts

Recents

Educational Activity Design

Natural Disaster Education via Sn...

Radioactivity in Bananas

Feature Flags Design Strategy

Material Composition and Thickne...

Social Dnamics Exploration

Artifacts

+ New artifact

Inspiration My artifacts

All Learn something Life hacks Play a game Be creative Touch grass

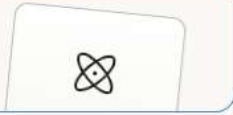


STEAM banner with 'وقت لول آبه!' and 'تخفیف ۱۵٪'.

Remix of Interactive Flashcard Learning App

I'll customize this artifact:

Interactive Flashcard Learning App
Interactive artifact



Transform any artifact into something uniquely yours by customizing its core elements.

1. Change the topic - Adapt the content for a different subject
2. Update the style - Refresh the visuals or overall design
3. Make it personal - Tailor specifically for your needs
4. Share your vision - I'll bring it to life

Where would you like to begin?



Retry

Claude can make mistakes. Please double-check responses.

Reply to Claude...



Claude Sonnet 4



Diagnostic

Use ↑ ↓ arrows or click to flip



Create new flashcards

Gemini

2.5 Pro

Build an interactive flashcard app that presents educational content through a term/definition or question/answer format, featuring a...

Show thinking

Of course. I will build an interactive flashcard generator for you. This application will allow you to enter any topic, and it will use AI to generate a set of flashcards for you to study. The flashcards will have a cool flip animation, just like you asked.

Here is the complete, self-contained flashcard application. You can preview it and start learning right away.

Interactive Flashcard Generator

Ask Gemini

+ Video Deep Research Canvas

Interactive Flashcard Generator

Code

Preview

Share

AI Flashcard Generator

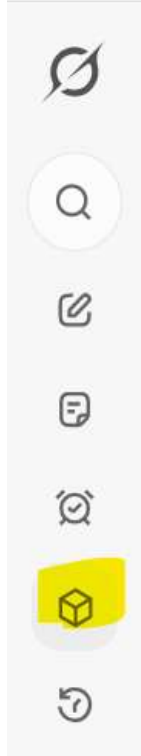
Enter a topic and get a set of flashcards to study.

Diagnostic

Generate Cards


What are Diagnostic Lab Tests?


8 / 10



Projects

+ Add


New Workspace


New Workspace



New chat

Search chats

Library

Sora

GPTs

Grammarly

Abstract Image Generator

Video AI

Chats

AI in Medical Education

Research Feedback Recomme...

Follow-up on Manuscript Status

Hassan Vafapour
Free

Explore GPTs

+ Create

Search GPTs

Top Picks Writing Productivity Research & Analysis Education Lifestyle DALL-E Programming

Increase your efficiency

1



Diagrams: Flowcharts & Mindmaps
INFOGRAPHICS & VISUALIZATION
DIAGRAMS, CHARTS + ANALYSIS For
CODE: Database, UX, ERD, PlantUML! For...
By Next Generation Intelligence

2



Presentation
4.0 - Make Presentations 10x faster
Save as PPT and Google Slides
By slidedecksai.com

3



**Presentation & Diagram Generator
by <ShowMe>**
Supports: Flowchart, UML, Mindmap, Gantt
Chart, ERD, Process Flow, DFD, Org Chart,
Venn, Pie, Bar, Wireframe, Blueprint....
By helpful.dev

4



Resume
By combining the expertise of top resume
writers with advanced AI, we assist in
diagnosing and enhancing your resume. [...]
By jobright.ai

5



Video AI
4.1 ★ - AI video maker GPT - generate
engaging videos with voiceovers in any
language!
By invideo.io

6



**TurboScribe Transcription —
Transcribe Audio/Video**
Transcribe, summarize, and chat with
audio and video files. Upload at
turboscribe.ai, then chat here!...
By TurboScribe

All My notebooks **Featured notebooks** New!

✓ Most recent **+ Create new**

Featured notebooks

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How To Build A Life, from The Atlantic
Apr 22, 2025 · 45 sources

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Q1 Earnings Reports For Top 50...
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Apr 26, 2025 · 44 sources

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Trends in Health, Wealth and...
Apr 15, 2025 · 24 sources

Techno Sapiens
Parenting Advice for the Digital Age
May 6, 2025 · 21 sources

The Economist
The World Ahead 2025
Jul 7, 2025 · 70 sources





- Chat
- Stream
- Generate Media
- Build
- History

Chat Prompt

Welcome to AI Studio

`'Item: Apple, Price: $1' Extract name, price to JSON →` Run Ctrl←

What's new

-  **URL context tool**
Fetch information from web links
-  **Native speech generation**
Generate high quality text to speech with Gemini
-  **Live audio-to-audio dialog**
Try Gemini's natural, real-time dialog with audio and video inputs
-  **Explore and co-develop apps**
See Gemini in action with interactive, open source examples

Google AI models may make mistakes, so double-check outputs.

Run settings

Gemini 2.5 Pro

Token count 0 / 1,048,576

Temperature

Media Resolution Default

Thinking

Thinking mode

Set thinking budget