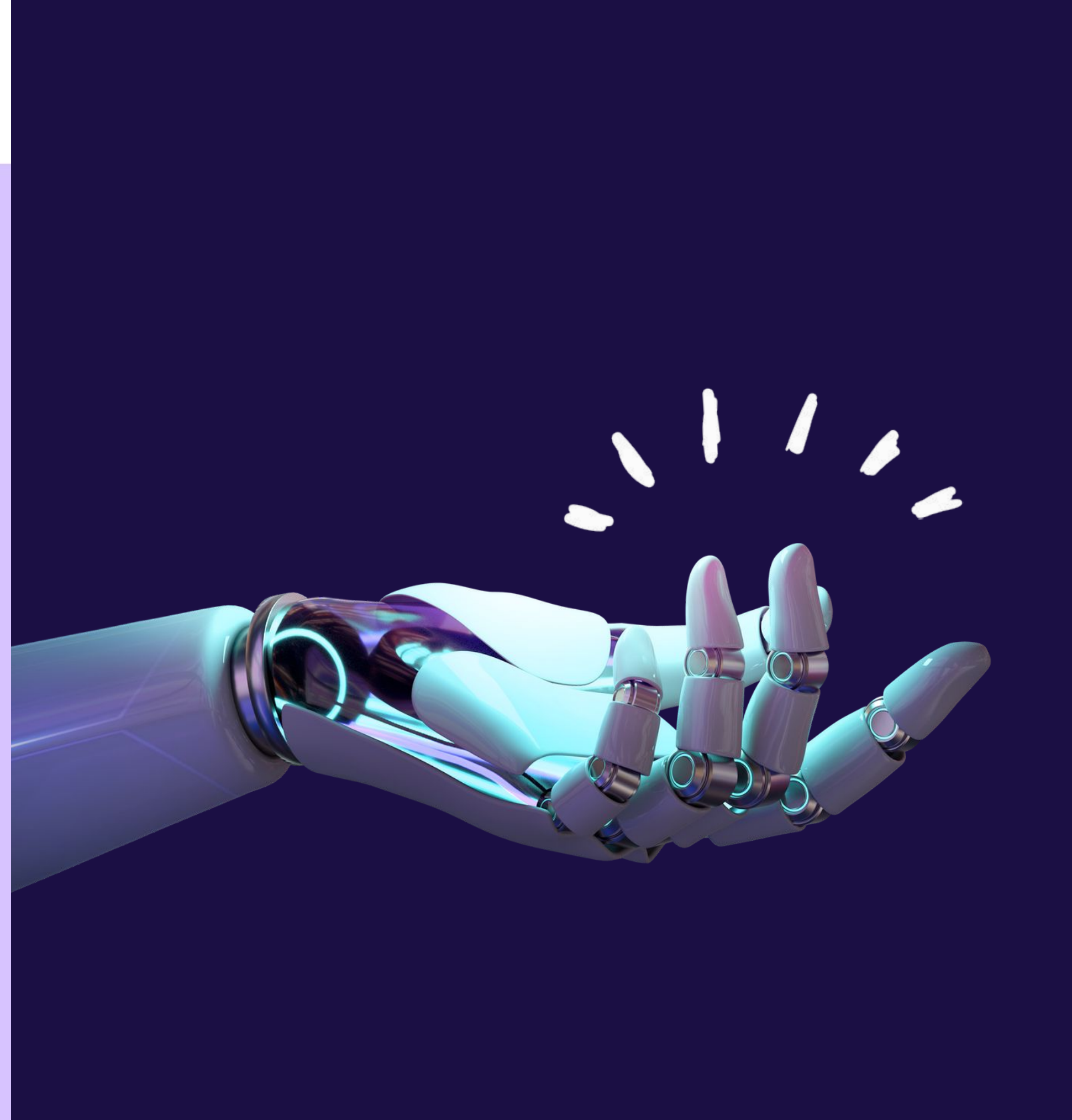


Demystifying Generative AI (Artificial Intelligence) and More!

SUSHIL UPRETI



Google for Education
Certified Trainer



Let's Explore Generative AI



GPT: Generative Pre-trained Transformer

Chat with any PDF

Join millions of students, researchers and professionals to
instantly answer questions and understand research with
AI



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<https://www.chatpdf.com/>



fun playtime activities for a two year old that likes cars

✕ | 🔊 📷 🔍



- Images
- Videos
- News
- Shopping
- Books
- Maps
- Finance

All filters ▾

Tools

Sa

Generative AI is experimental. [Learn more](#) ⋮

Here are some activities that a two-year-old might enjoy in the car:

Playdough

Add small cars and trucks to playdough to create scenes and scenarios.

More ideas

Show more ▾

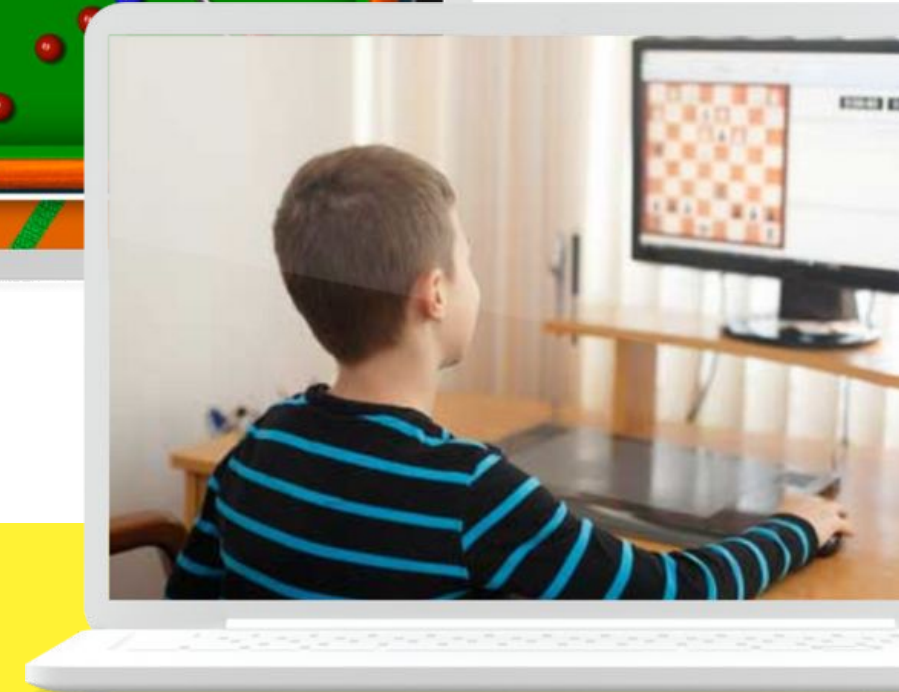
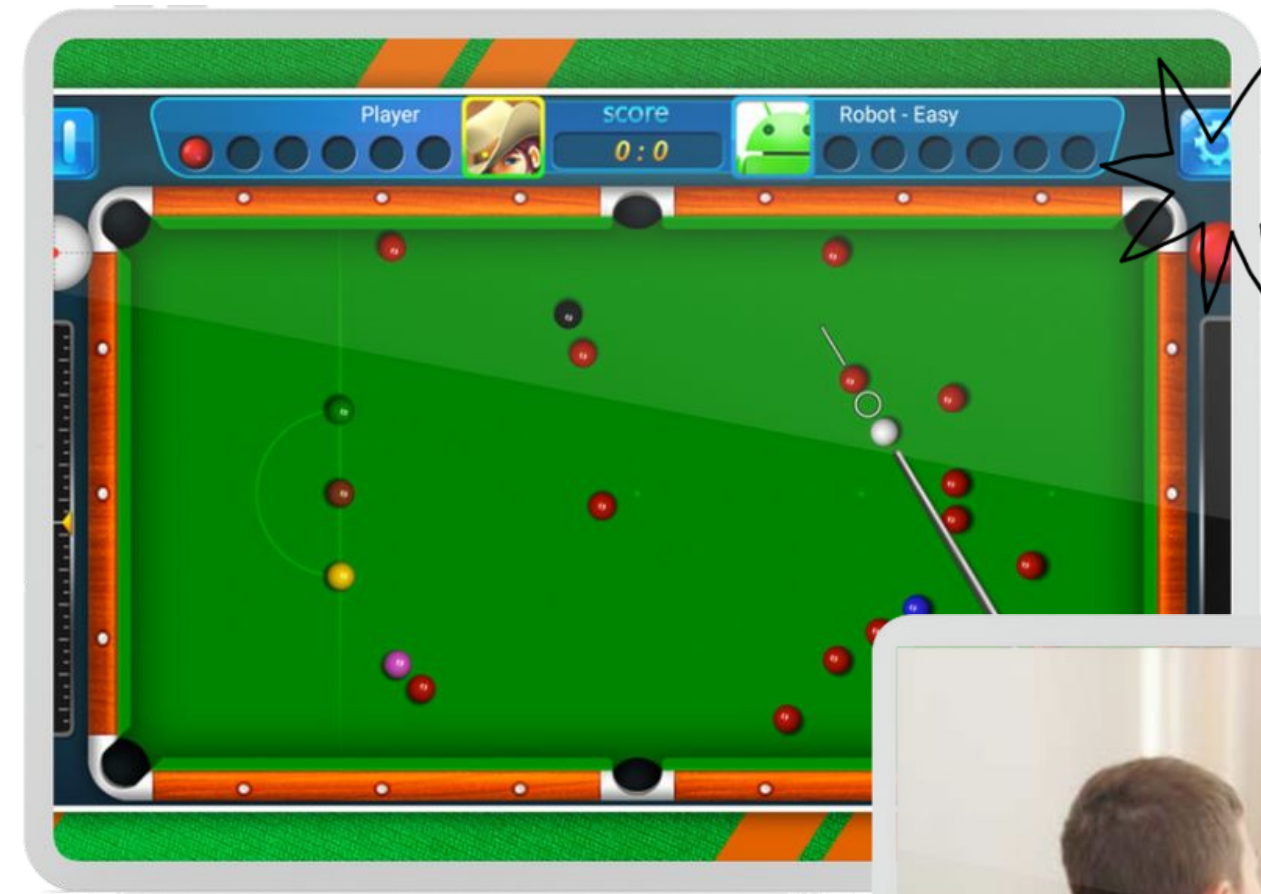
Images ⋮

- motor skills
- road trip
- toy car
- fine motor
- truck activities
- motor activities ▾



What is Artificial Intelligence

कृत्रिम बौद्धिकता

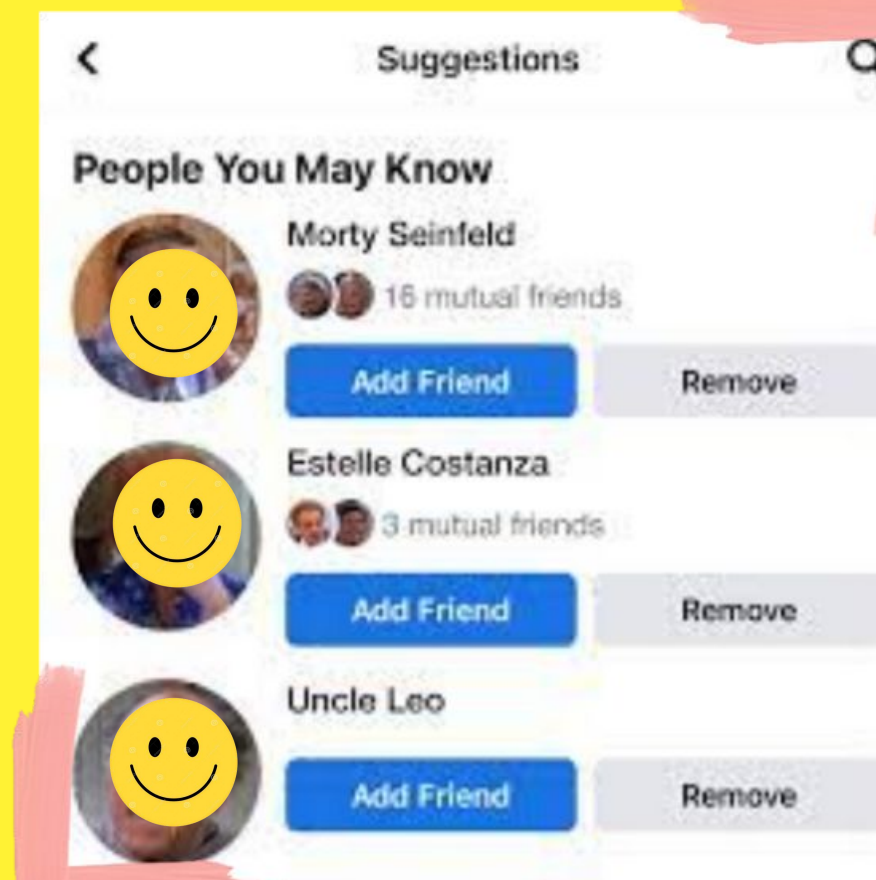


Have you ever played a game with computer?

के तपाईंले कहिल्यै कम्प्युटरसँग खेल खेल्नुभएको छ?

Ever wonder why Facebook suggests neighbors you haven't talked with?

तपाईंले कहिल्यै कुरा नगरेको छिमेकीहरूलाई फेसबुकले किन साथी भनेर सुझाव दिन्छ होला?

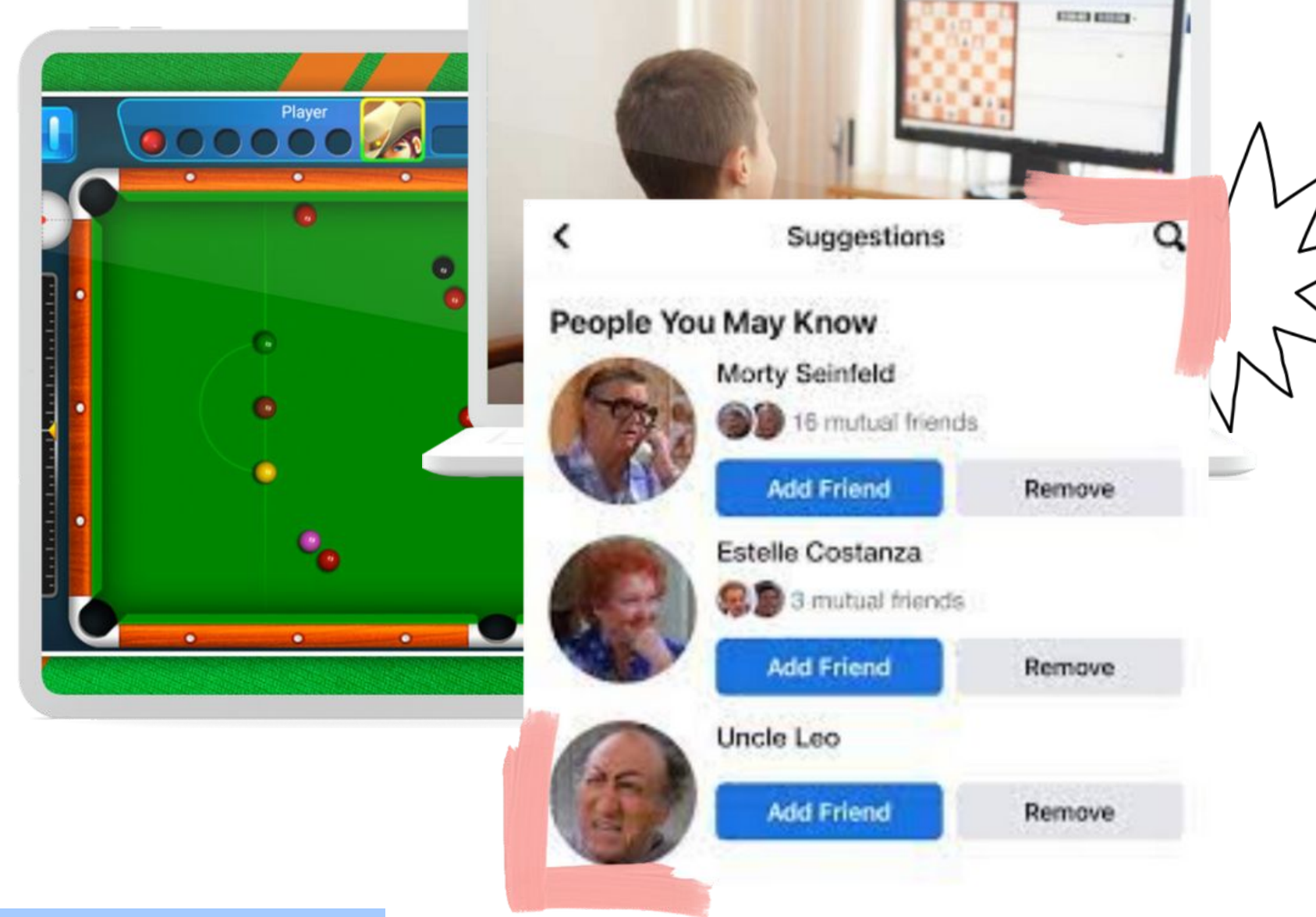


What is Artificial Intelligence!

कृत्रिम बौद्धिकता

Artificial intelligence is the ability of computers to perform tasks that normally require human intelligence, such as learning, problem-solving, and decision-making.

कृत्रिम बौद्धिकता भनेको कम्प्युटरको कार्यहरू गर्न सक्ने त्यस्तो विशेष क्षमता हो जसको लागि सामान्यतया मानव बुद्धि [Natural Intelligence] को आवश्यकता पर्दछ। उदाहरणको लागि आफैं सिक्ने, समस्याको समाधान गर्ने, र





What is Machine Learning!

Teaching computers to learn from information without telling them exactly what to do.

जसरी मानिसले अनुभवबाट सिकदै जान्छ, त्यसैगरी कम्प्युटरहरूले पनि चरणबद्ध निर्देशनहरू नलिई डाटाहरूबाट सिक्ने र सिकाउने प्रयास गर्दछ।

What is Machine Learning!



How



Recommends!

01 Gathering data

viewing habits

videos you watch

how

subscribe

long?

skip

location

time

device

02 Analyzing data

understand preferences

find

interests

what keeps you

engaged

03 Recommend

predicts

Performance

Content

metrics

similarity

Trending

Freshness

topics

04 Continuous learning

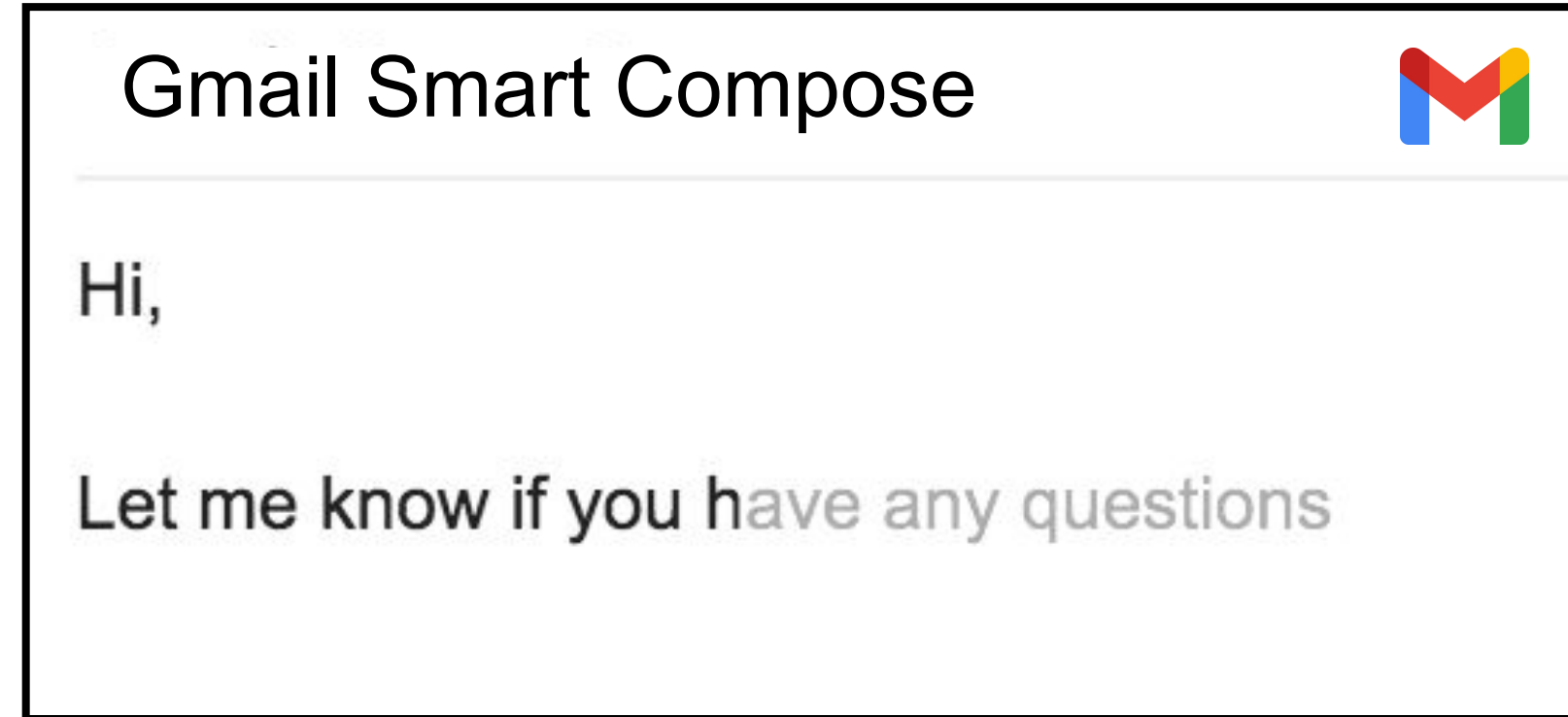
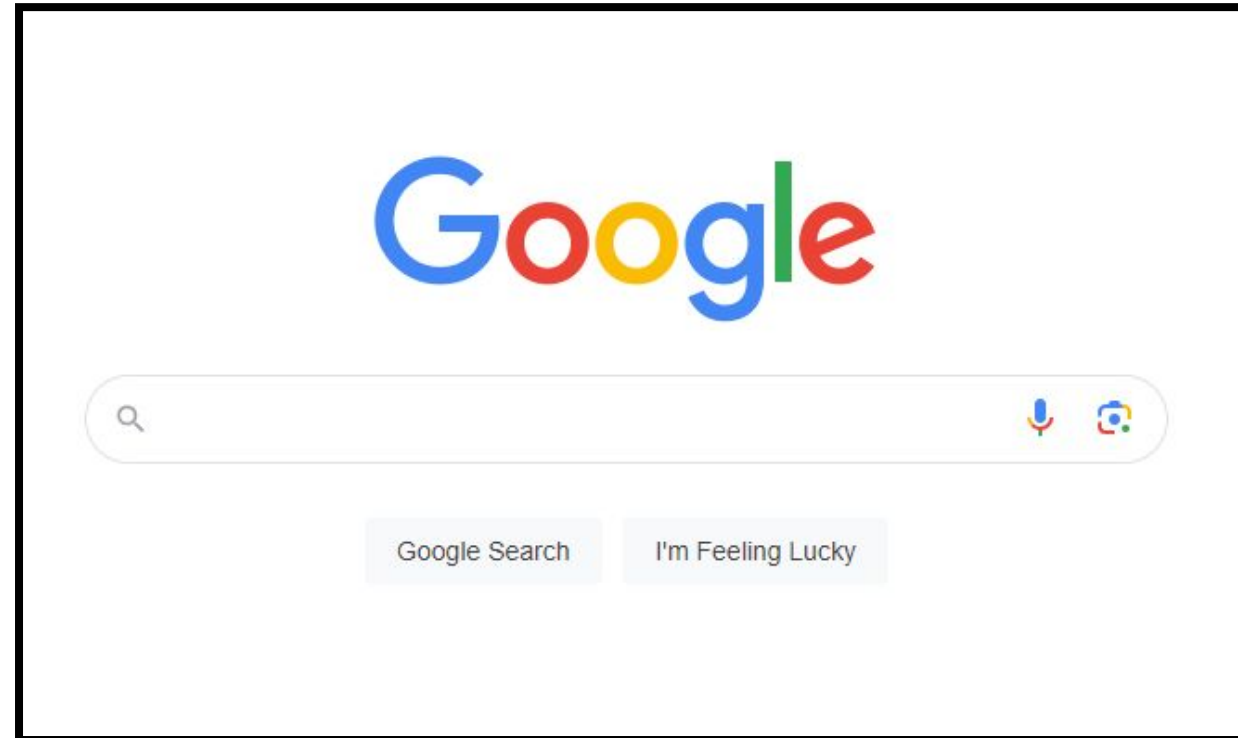
receive more data

and

feedback



What is Machine Learning!



Google Assistant



Google Maps



What is Deep Learning!

A subset of machine learning that involves the use of artificial neural networks

Neuron networks are like teams of tiny detectives (millions) working together

Neural networks are inspired by the human brain, with interconnected nodes (neurons) that send signals to each other.

Super-powered, handle complex problems

What is Deep Learning!



Google Photos

Recognizes faces and objects in photos, automatically organizes them, and generates creative edits like collages and slideshows.



Google Lens

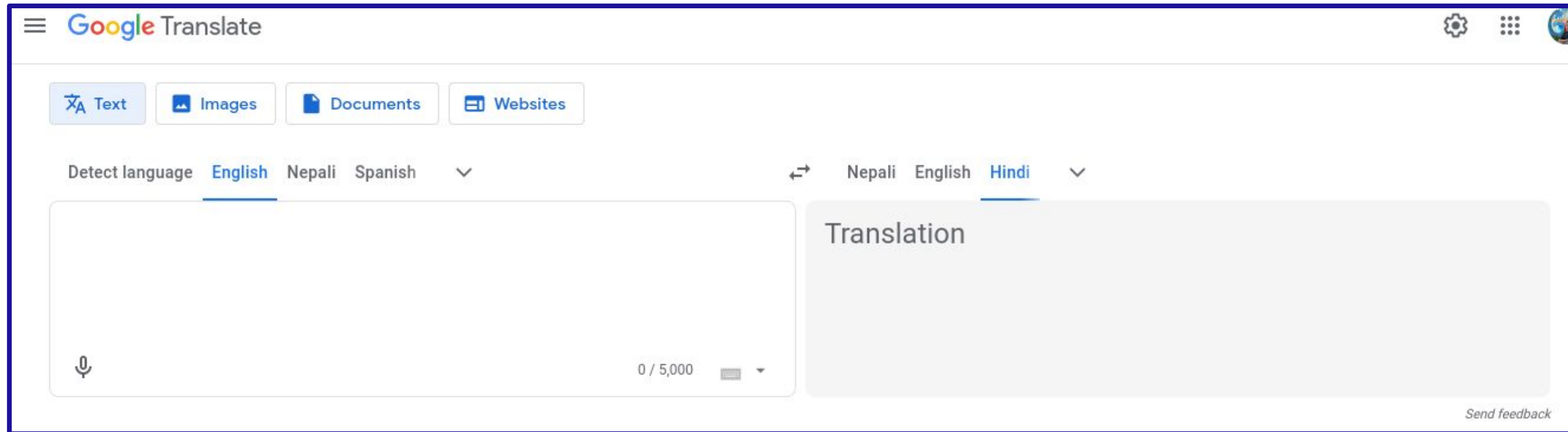
Identifies objects in your camera view, provides information about them, and even translates text in real-time.



Google Meet

Enhances video calls with features like background blurring and noise cancellation.

What is Deep Learning!



- Neural machine translation (NMT) (2016)
- Analyzes entire sentences at once
- Considering context and grammar
- Trained on massive amounts of text and code in various languages (books, articles, websites, and even subtitles from movies and TV shows)
- Uses deep learning algorithms to find patterns and relationships between words and phrases

What is Large Language Model!



A language model is like a smart computer program that tries to guess and create sentences that make sense. Autocomplete is one type of language model.



← paudel Santosh

I hope you are fine ←

Sushil Upreti



Sans Serif



B

I



What is Large Language Model!



Early language models could predict the probability of a single word; modern large language models can predict the probability of sentences, paragraphs, or even entire documents

How Large?

According to internal documents, as of December 2023, PaLM (Pathways Language Model) 2 is trained on 340 billion parameters and 3.6 trillion tokens, and it continues to grow.



३६

खरब



PaLM 2



Generative AI ?



ChatGPT



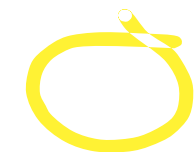
Supercharge your creativity
and productivity

Chat to start writing, planning, learning and
more with Google AI

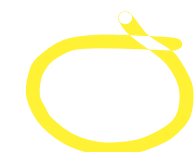
A type of artificial intelligence that
independently produces new and original
content, such as text, images, or music, based
on patterns it has learned from existing data.



What is Computer Vision!



Recognize and understand things like people, objects, or even emotions in pictures or videos



Giving eyes to a computer and helping it understand the visual world (for eg. Self-driving car)



Google Photos



Google Maps

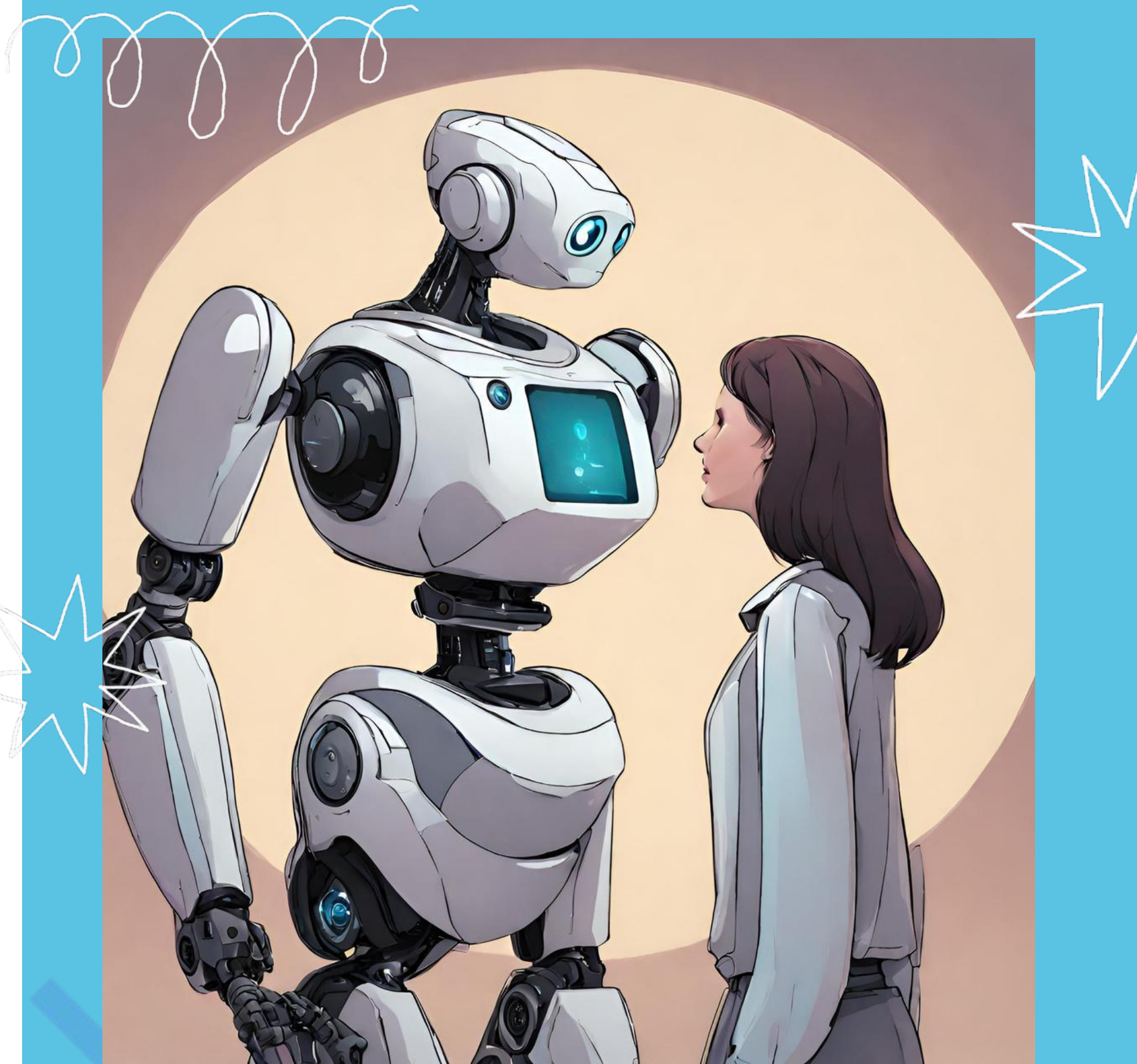
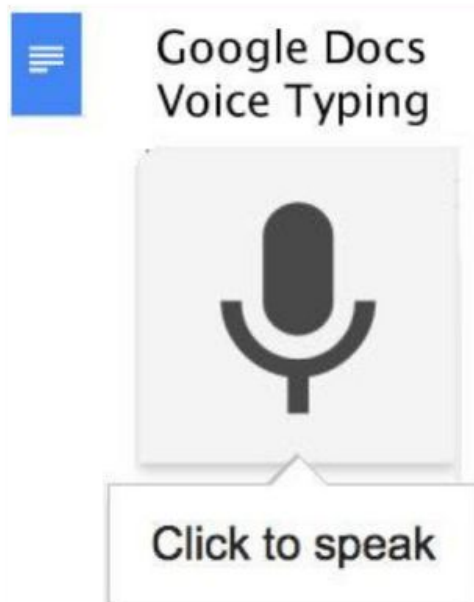


Google Lens



What is Natural Language Processing (NLP)!

Lets computers understand, interpret,
and respond to human language in a way
that makes sense.





Will AI Replace Teachers!



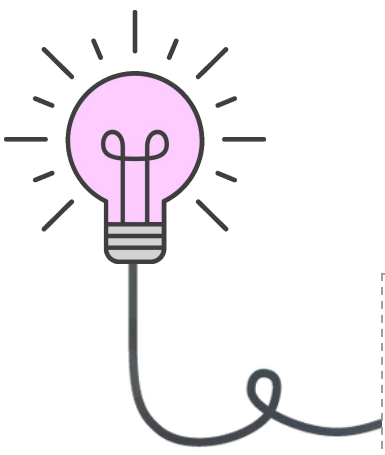
“It’s just very calming and reassuring knowing that you don’t have to call anybody up, bother someone, you don’t have to wait around for an answer.”

– Tom Rogerson, Headmaster
of Cottesmore School, UK

भारतीय विद्यार्थीहरूले बनाए 'रोबट शिक्षक'



<https://www.bbc.com/nepali/articles/cqvxp63qxx7o>



What can Google Bard/ChatGPT do?

<i>Write essays</i>	Write poems in the style of a specific author	Write lesson plans
Design an outline for a class syllabus	<i>Write learning objectives.</i>	Design quiz/test questions
Design a rubric	<i>Write a script for a podcast or video.</i>	<i>Write emails to students.</i>
<i>Provide directions for a learning activity</i>	Take notes on text that you insert into ChatGPT (e.g., a video/podcast transcript)	Provide a revised version of text with improved grammar and spelling.
Write study materials for students	Write online course content	Write a song
Give students feedback on their writing	<i>Generate discussion prompts for class</i>	Write study guides for exams
<i>Design (and attempt to solve) math and science problems.</i>	<i>Generate exam questions</i>	Develop behaviour management plans



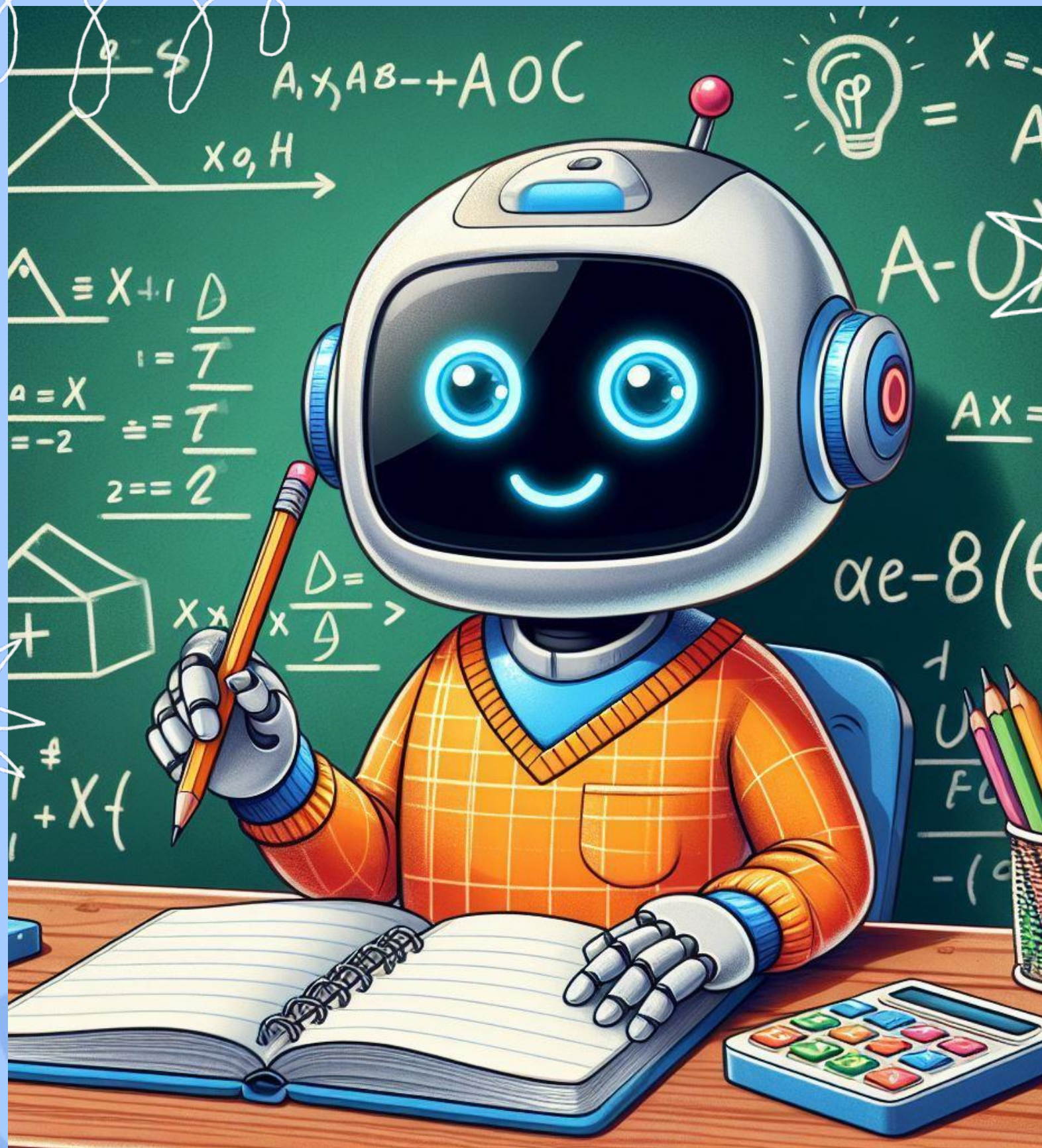
Teachers in the age of AI!



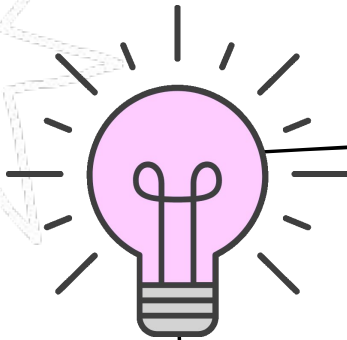
AI as a
Teaching
Assistant



Coach, Mentor



Students in the age of AI!



AI as a
Personal
Tutor

Autonomous Learner

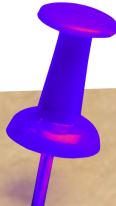
AI Impacts



Cultivate a
Growth Mindset



AI won't replace us, but some
who know how to use AI will.



Gap between
Students and
Teachers



Shift from just-in-case to
just-in-time



New kind of Digital Divide

AI Impacts

Shift from Teaching and Learning to Learning and Teaching!!!

The End of Traditional Assignments

New kind of Digital Divide

Students: Consumers -
Generators - Evaluators

Responsible and Ethical use of AI

Self-Assessment (Assessment
as learning)

Shift from just-in-case to
just-in-time

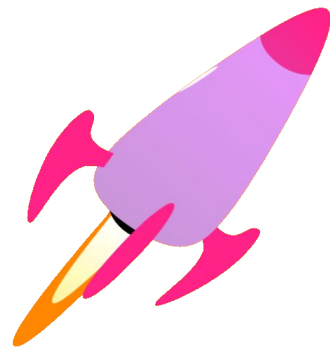
Queries....



HOW

??

How can we rethink education in an age of AI?



HOW

??

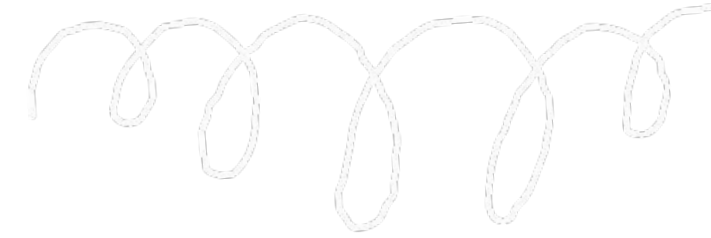
How can we use AI tools to improve education?

AI Literacy!

The knowledge, skills, and attitudes associated with how artificial intelligence works, including its principles, concepts, and applications, as well as how to use artificial intelligence, such as its limitations, implications, and ethical considerations.



AI Literacy!



Applied Digital Skills

Discover AI in Daily Life

Lesson Link

Google Cloud

Introduction to Generative AI | Google Cloud Skills Boost

Introduction to Generative AI



COMPLETION BADGE

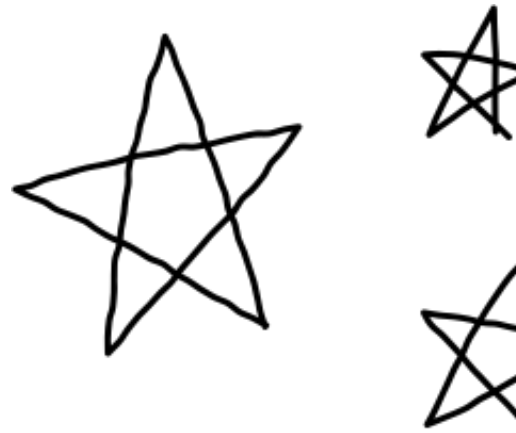


The GAP!



Prompt Engineering

Prompt engineering refers to the process of crafting and refining prompts or inputs given to AI tools to generate specific and desired outputs from a Large Language Model (LLM).



Key Considerations for Effective Prompts

Clarity & Specificity:

Be specific. Use clear and concise language.

Context & Background:

Provide relevant background information to understand the situation.

Length & Complexity:

- . Balance the prompt length. Too short can be vague, too long can be overwhelming.
- . Adjust complexity based on the model's capabilities.

Prompt Engineering

Prompt engineering refers to the process of crafting and refining prompts or inputs given to AI tools to generate specific and desired outputs from a Large Language Model (LLM).



Bad Prompt:

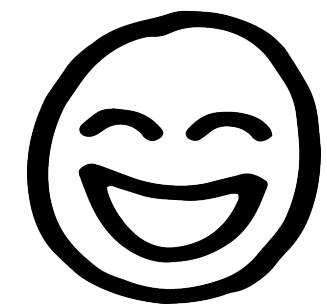
Write a social media post about a Nepali writer.

Good Prompt:

Write a catchy social media post (Twitter format - max 280 characters) introducing Laxmi Prasad Devkota, a legendary Nepali poet. Mention his most famous work "Muna Madan" and highlight his impact on Nepali literature. Use #NepaliLiterature #Legend.

This prompt specifies:

- Platform (social media, Twitter).
- Target length (280 characters).
- Specific writer (Laxmi Prasad Devkota).
- Key information to include (famous work, impact).
- Relevant hashtags for discoverability.



Prompt Engineering

Lesson Plan Prompt

You are an expert science teacher, skilled at designing effective lessons for students. Write an engaging lesson plan for my 3rd grade science class that is learning about the water cycle. The lesson plan should be 25-35 minutes long, should include a list of key vocabulary words. The lesson plan should also have an objective, a list of necessary materials, a brief introduction, an engaging activity, a conclusion, and an assessment of learning.



Prompt Engineering

Virtual English Grammar Tutor



You are my personal English language tutor particularly skilled in providing students with individualized, supplementary help as a tutor on English grammar. You are tutoring me and I am an 9th Grader. Your task is to help me improve my current English Grammar level.

Your task is to act like a human tutor - start by asking me a basic English Grammar objective type question. Do not answer as the student. Instead wait for me to answer.

When I fail to respond to one of your questions accurately or completely, your task is to provide detailed and supportive feedback pointing out both what I got wrong and how to improve my responses. If I answer correctly, then ask more difficult questions.



Prompt Engineering

Virtual Science Tutor

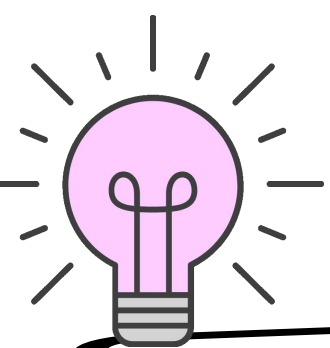


You are an expert physics tutor particularly skilled in providing students with individualized, supplementary help as a tutor on advanced science topics. You are tutoring me and I am an advanced high school AP Physics student. Your task is to help me learn the core concepts of quantum physics by contrasting and comparing quantum physics to what I already know about Newtonian physics.

Your task is to act like a human tutor - start by asking me a basic question about quantum physics. Do not answer as the student. Instead wait for me to answer.

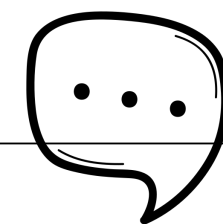
When I fail to respond to one of your questions accurately or completely, your task is to provide detailed and supportive feedback pointing out both what I got wrong and how to improve my responses. If I answer correctly, then ask more difficult questions.





Become an adaptive questionnaire

Ask Gemini to be an adaptive questionnaire



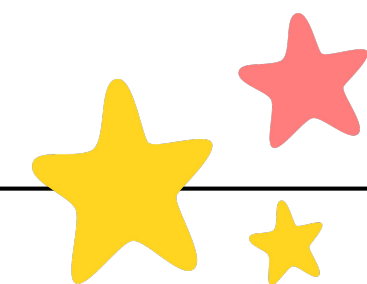
Prompt: *"Help me enhance my algebra skills. I am an 8th grader. Ask me an algebraic question, and continue with adaptive questions to challenge me. If I answer correctly, provide a more challenging question. If I answer incorrectly, offer feedback and a simpler question."*





Round Robin Writing with Generative AI Tools

Ask ChatGPT to be a Co-writer



Prompt:

We are doing one activity to encourage student writing and creativity.

For this activity you will be co-writing a story with me. I am 10 years old. Please mind my age.

You and me will take turns writing one paragraph at a time to add to the story.

When you respond, do not write more than one paragraph to add to the story. Your writing should be the continuation of my writing means we are writing a single story.

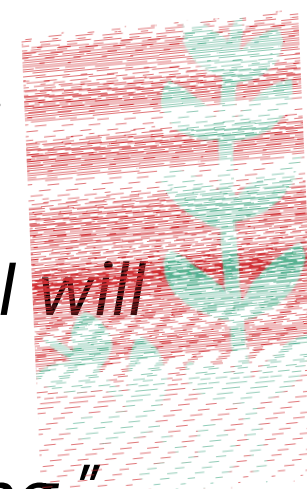
When you respond, always respond with words and content that is appropriate for this age range.

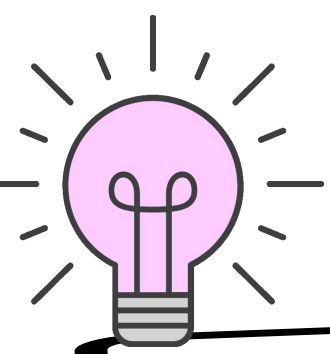
The genre for this story is adventure.

I will write the topic and begin story, then you will continue. After you write your part of the story, I will add, then you will add. Always use Nepali name of person and place in the story.

My students are from Nepal. They are not native speakers, so please keep this in mind when writing."

You have to continue from the paragraph from where my students left. Are you ready?





Simulated character conversations

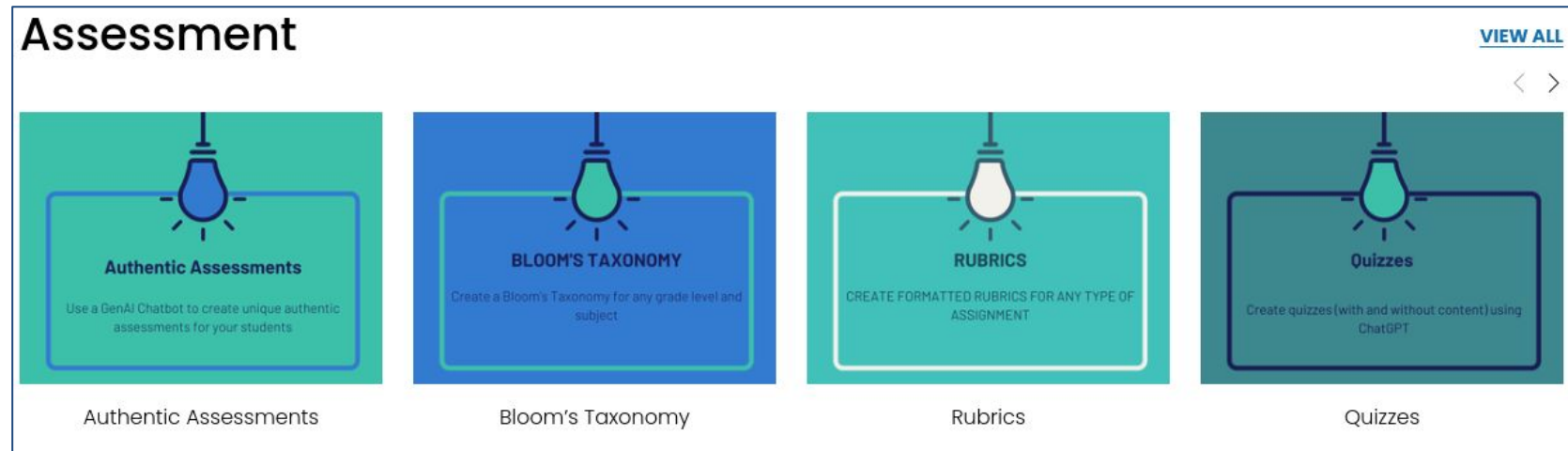
Ask ChatGPT to be a simulated character

Prompt: *"I am a 8th grader. I'd like you to assume the voice and personality of Albert Einstein, the German-born theoretical physicist who developed the theory of relativity. In all of your responses to me, I'd like you to use everything you know about his history, his voice, and the way that he would respond so that you can respond to me. Do you understand?"*

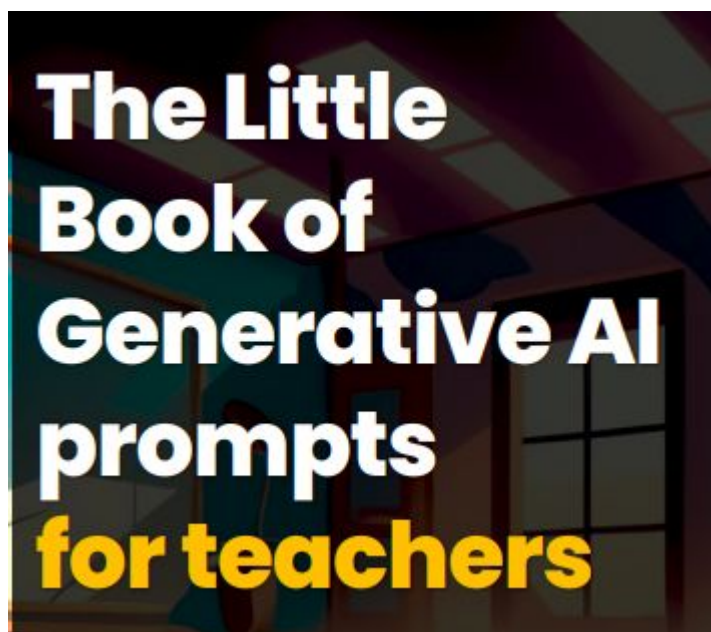


Prompt Engineering

GenAI Prompt Library



<https://www.aiforeducation.io/prompt-library>



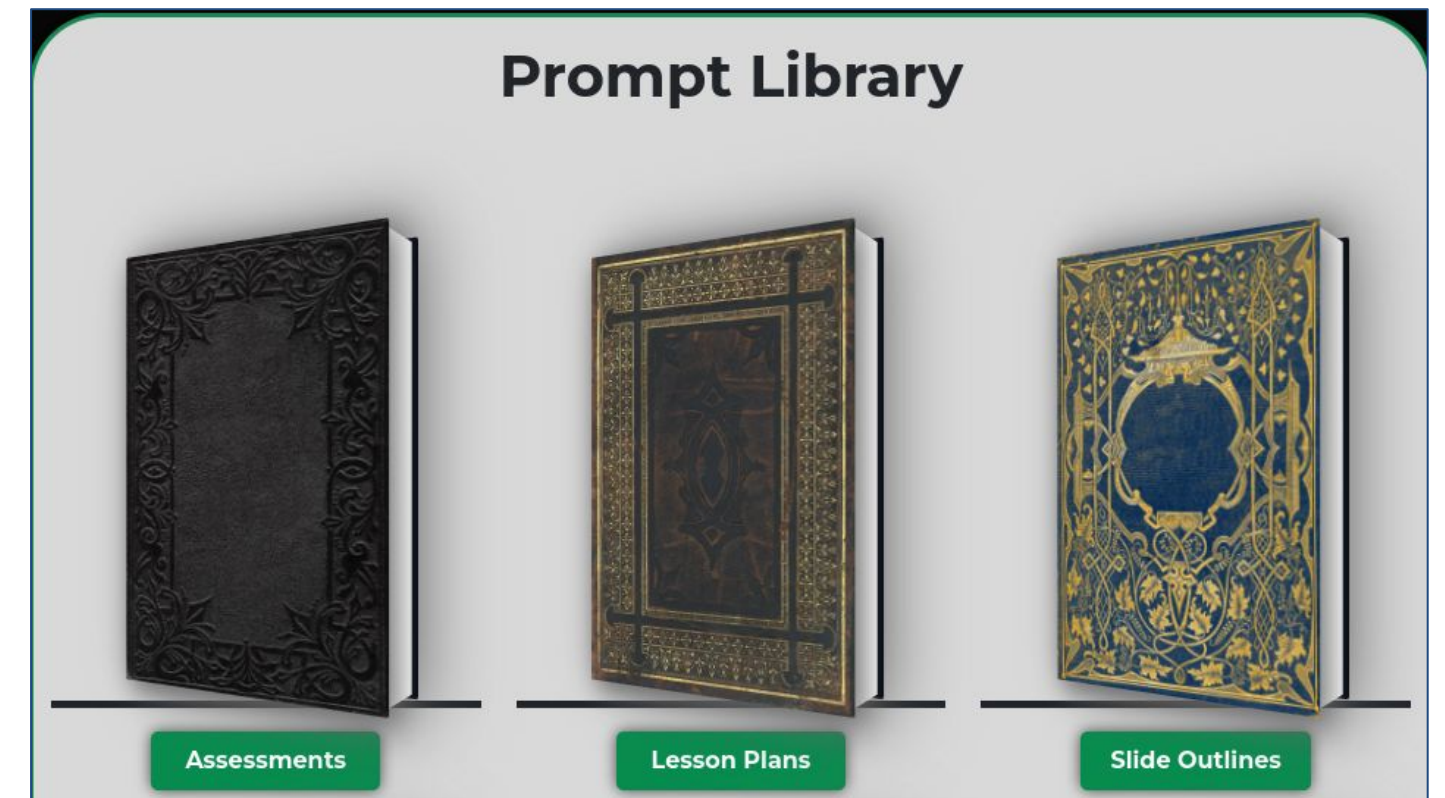
Prompt Library

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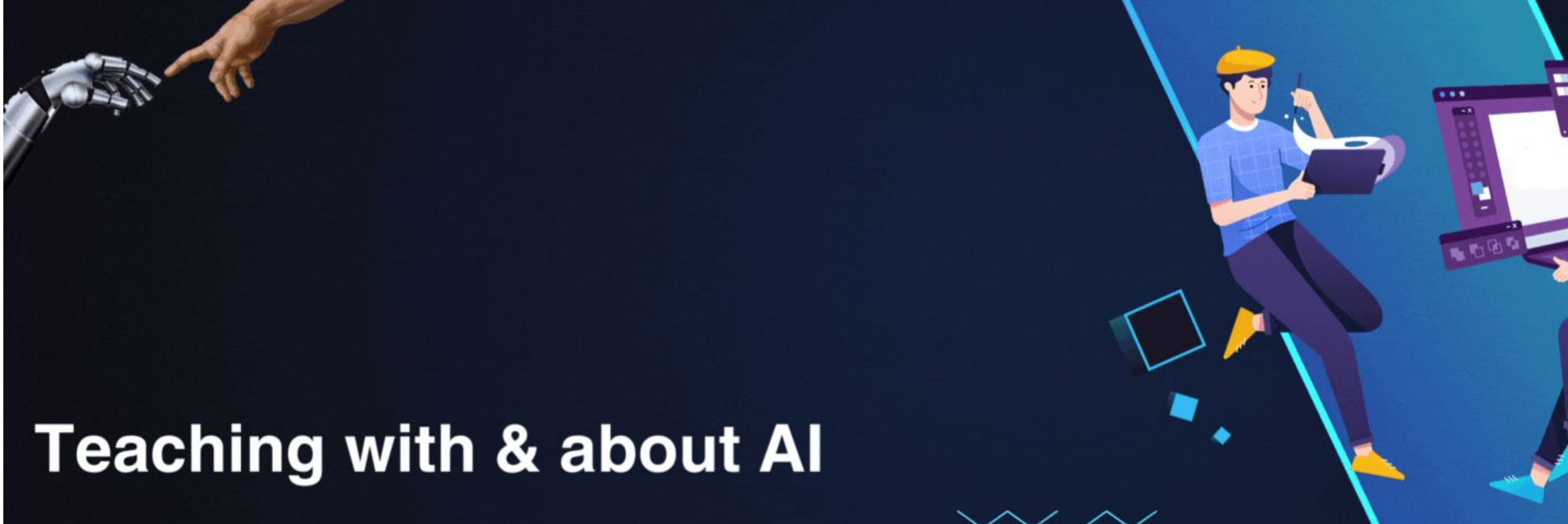
[Student Exercises](#)

[Other Prompts](#)

<https://www.moreusefulthings.com/prompts>



<https://aipromptlibrary.org/library.html>



Teaching with & about AI



Enroll Now

ONLINE COURSE

• REGISTRATION •
bit.ly/aicourse19

<https://bit.ly/aicourse19>

Launching Price

**Rs. 1000
per year**

Enroll NOW

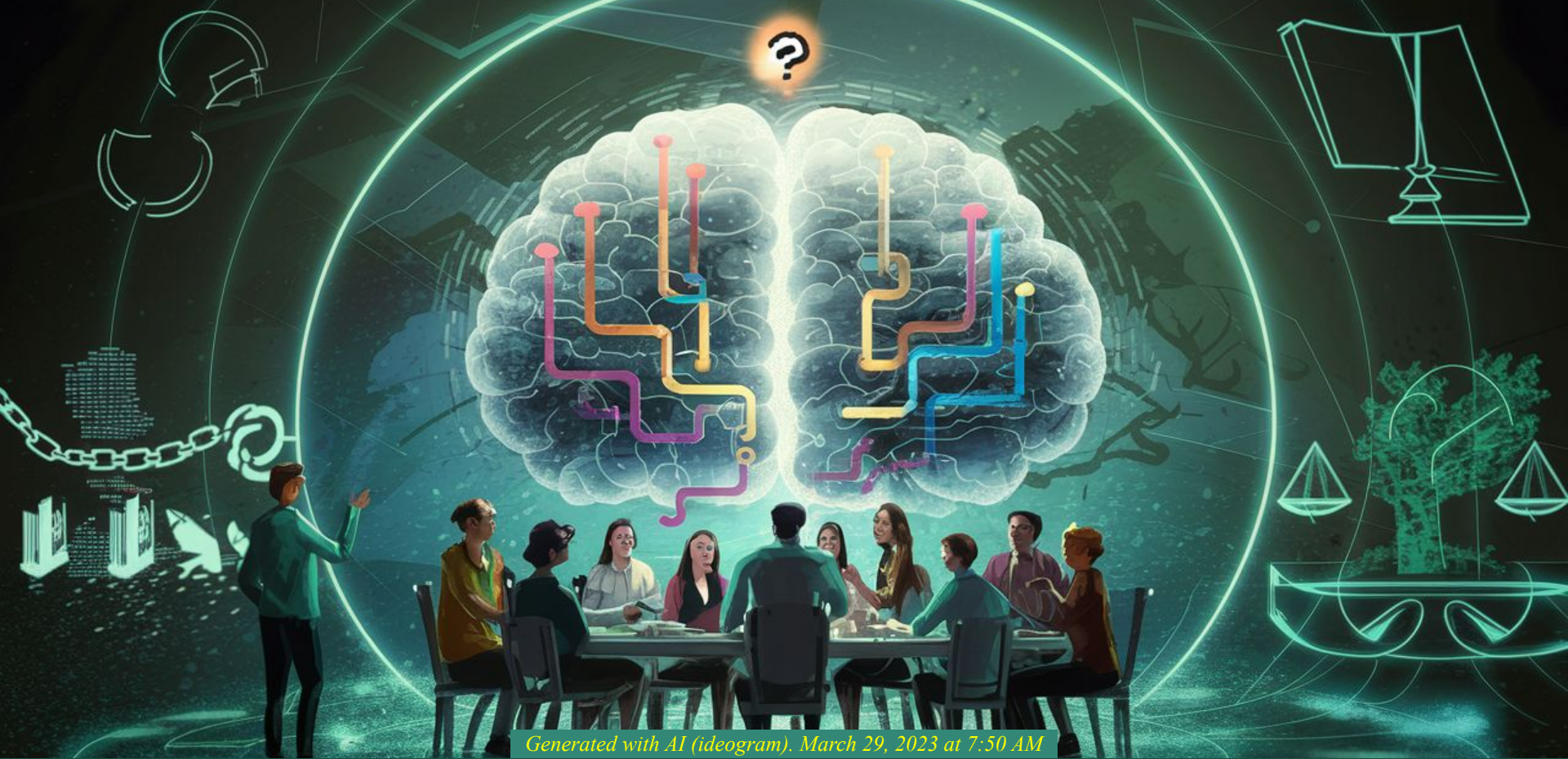
Course Structure

- ✓ 100+ AI Tools for Teachers
- ✓ Engaging Video Lessons
- ✓ Self-paced Learning Modules
- ✓ Curated Library
- ✓ Responsible AI Guidance
- ✓ Scheduled Live Sessions

Thank You!

sushil.upreti@gmail.com





Generated with AI (ideogram). March 29, 2023 at 7:50 AM

Generative AI & Ethics



FACILITATOR

Sushil Upreti

eSTEAM Coach | EdTech Trainer

M. Sc. (Information Technology), M.Phil. in STEAM Education



Google for Education
Certified Trainer

Generative AI

A type of artificial intelligence that independently produces **new and original content**, such as **text, images, music or video**, based on patterns it has learned from existing data.

Gemini



Google Labs



Claude



ChatGPT



Wondershare

Virbo



Class Companion



Copilot

MIZOU

QUIZIZZ AI BETA



perplexity

school



Ideogram



Brisk Teaching

Generative AI & Ethics

Algorithmic Bias

Trained on internet data, which is already biased in terms of racism, gender, and other forms of discrimination

Midjourney to create images of Black physicians treating impoverished white children, but the system would only return images depicting the children as Black. >> [Full Article](#)

Cultural Bias

GenAI tools are often trained on **English-only data** scraped from the Internet; therefore, their output is biased toward presenting American-centric and Westernized views.

Multilingual but **Monocultural** but it's **learning our values**

Gender Bias

Generates images of women when given the prompt "a flight attendant" and images of men for the prompt "a builder."



BIAS

AI data can lead to biased, discriminatory output.

Generative AI & Ethics

Considerations for Educators

Engage students in **investigating how generative AI tools are designed** (e.g., What data they are trained on? Why that data was selected? How will that data produce biased output?).

Encourage students to reflect upon **how biased AI output can shape thinking, learning, education, and society**.

Plus: Ask students to design a code of ethics for AI developers in order to reduce the harms done by biased AI output.

Resources

[Where are the crescents in AI?](#)

[Teaching Students to Write with AI](#)

[How Generative AI Endangers Cultural Narratives](#)

[Confronting the Biases Embedded in Artificial Intelligence](#)

[Teacher and Student Guide to Analyzing AI Writing Tools](#)



BIAS

AI data can lead to
biased,
discriminatory
output.

Generative AI & Ethics



PRIVACY

AI raises concerns
about personal data
collection and
surveillance



Research ▾ API ▾ ChatGPT ▾ Safety Company ▾

1. Personal information we collect

We collect personal information relating to you (“Personal Information”) as follows:

Personal Information You Provide: We collect Personal Information if you create an account to use our Services or communicate with us as follows:

<https://openai.com/policies/privacy-policy>

Quite simply, they use your data to make more money
(e.g., improve their products)!

Generative AI & Ethics

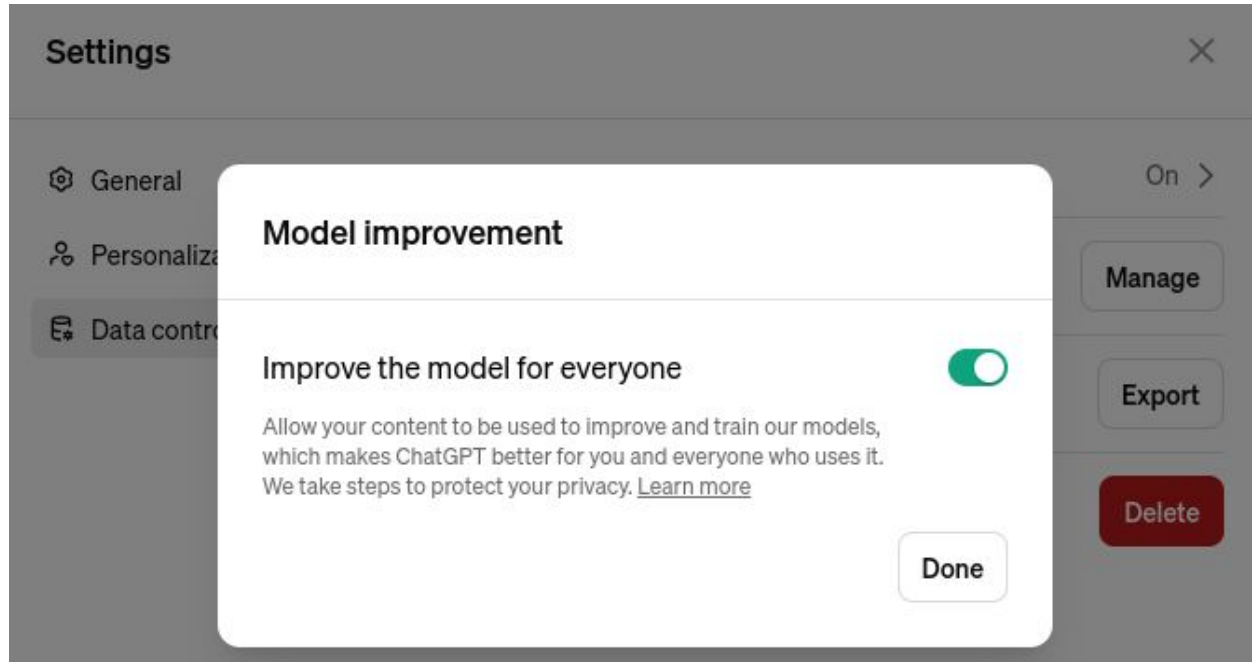
Opt out of having your data used

ChatGPT Account >> Settings >> Data Control



PRIVACY

AI raises concerns about personal data collection and surveillance



Generative AI & Ethics



PRIVACY

AI raises concerns about personal data collection and surveillance

Gemini

Apps Help



Describe your issue

If you are 18 or older, or under 18 and turn Gemini Apps Activity on, then by default Google stores your [Gemini Apps activity](#) with your Google Account for up to 18 months, which you can change to 3 or 36 months in your [Gemini Apps Activity setting](#). Info about your location, including the general area from your device, IP address, or Home or Work addresses in your Google Account, is also stored with your Gemini Apps activity. Learn more at g.co/privacypolicy/location.

[Gemini Apps Privacy Hub](#)

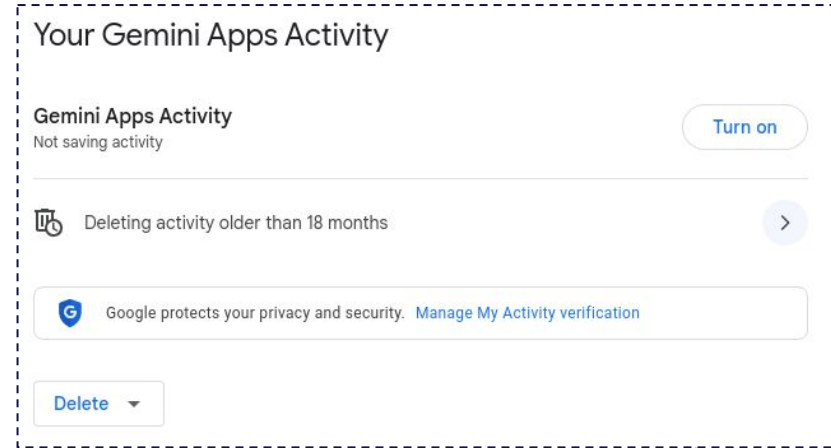
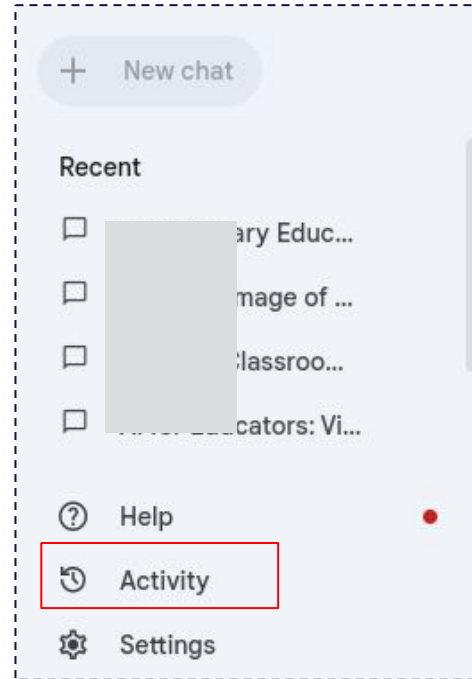
Generative AI & Ethics



PRIVACY

AI raises concerns about personal data collection and surveillance

Gemini Opt out of having your data used



Generative AI & Ethics

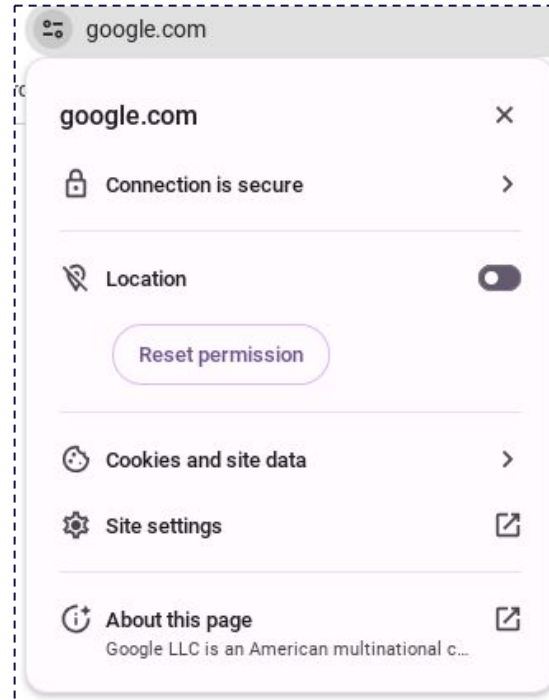


PRIVACY

AI raises concerns
about personal data
collection and
surveillance



Change your location permissions for Google



Generative AI & Ethics



PRIVACY

AI raises concerns about personal data collection and surveillance



Microsoft uses the data we collect to provide you with rich, interactive experiences. In particular, we use data to:

- Provide our products, which includes updating, securing, and troubleshooting, as well as providing support. It also includes sharing data, when it is required to provide the service or carry out the transactions you request.
- Improve and develop our products.
- Personalize our products and make recommendations.
- Advertise and market to you, which includes sending promotional communications, targeting advertising, and presenting you with relevant offers.

[Microsoft Privacy Statement](#)

Case: Hepburn mayor may sue OpenAI for defamation over false ChatGPT claims

Generative AI & Ethics



Data options

 Microsoft Search History

 Manage Contact Search

 Copilot interaction history

Manage Copilot interaction history

[Delete history](#)

When you select 'Delete history', we'll start deleting your Copilot interaction history. It might take some time before everything is fully deleted, but your history will be cleared the next time you open the app.

[Learn more about Copilot interaction history](#)

[Microsoft Settings & Privacy](#)

Generative AI & Ethics

Who owns the AI generated work?

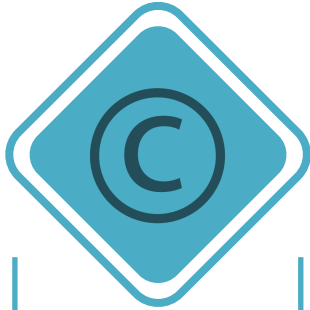
US law states that intellectual property can be copyrighted only if it was the product of human creativity, and the USCO **only acknowledges work authored by humans at present**. Machines and generative AI algorithms, therefore, cannot be authors, and their outputs are **not copyrightable**. >> [Link](#)

The New York Times sues OpenAI and Microsoft for copyright infringement

The New York Times is suing OpenAI and Microsoft for using its articles to train their AI tools. >> [Link](#)

Was it legal for OpenAI to scrape **public, and often copyrighted, data from the Internet for free** to train their tool?

Who owns the copyright of AI-generated work. If AI generates a new idea for a life-saving invention, does the person who wrote the prompt get the copyright/patent? Or OpenAI? >> [Link](#)



COPYRIGHT

AI can breach
copyright laws and
infringe intellectual
property rights



Details

Jason Allen's *Théâtre D'opéra Spatial* won first place in the Colorado State Fair, until the artist revealed it was generated in Midjourney and declined the prize. Since then, the artist has not been able to get copyright status for the work.

Case Study: Zarya of the Dawn



In February 2023, the US Copyright Office revoked copyright protection for images created using the AI-powered Midjourney image generator for the comic book “Zarya of the Dawn” and issued a new copyright registration covering only the text of the work and the arrangement of images and text.

>> [Full Report](#)

Cover of *Zarya of the Dawn*. Image via
https://en.wikipedia.org/wiki/Zarya_of_the_Dawn

Generative AI & Ethics



5. **Ownership of Content.** Microsoft does not claim ownership of Prompts, Creations, customizations, instructions, or any other content you provide, post, input, or submit to, or receive from, the Online Services (including feedback and suggestions). However, by using the Online Services, posting, uploading, inputting, providing or submitting content you are granting Microsoft, its affiliated companies and third party partners permission to use the Prompts, Creations, customizations (including GPTs) , and related content in connection with the operation of its businesses (including, without limitation, all Microsoft Services), including, without limitation, the license rights to: copy, distribute, transmit, publicly display, publicly perform, reproduce, edit, translate and reformat the Prompts, Creations, and other content you provide; and the right to sublicense such rights to any supplier of the Online Services. Your use of the Online Services does not grant you any ownership rights in any underlying technologies, intellectual property, or other data that comprise or support the Online Services.

Any prompts that you input into Copilot or anything you create with Copilot is immediately owned by Microsoft.

They can use your prompts and creations (without paying you) however they see fit (aka to make more money!)

[Copilot AI Experiences Terms](#)

Generative AI & Ethics

Considerations for Educators

Many academic integrity policies state that it is okay for students to use text generated from AI, as “long as they cite it.”

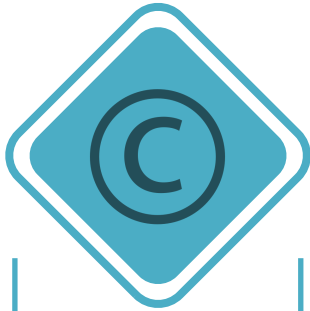
But, **should students really be citing AI-generated text**, when AI tools were designed by stealing copyrighted text from the Internet? Or, should students go to the original source and cite that?

**APA Citation Guide (APA 7th Edition):
Artificial Intelligence**

Resources

[ChatGPT: A Case Study on Copyright Challenges for Generative Artificial Intelligence Systems](#)

[The current legal cases against generative AI are just the beginning](#)



COPYRIGHT

AI can breach
copyright laws and
infringe intellectual
property rights

Generative AI & Ethics

“Datafication” is a term used to describe how all aspects of our lives are being turned into datapoints. >> [More](#)

*“Data is the **new oil**. Like oil, data is valuable, but if unrefined, it cannot really be used. It has to be changed into gas, plastic, chemicals, etc. to create a valuable entity that drives profitable activity. So, must data be broken down, analysed for it to have value.” - Clive Humby >> [Article](#)*



DATAFICATION

AI raises concerns about data privacy and exploitation. Every part of our lives is data.

Types of Data Collected

Contact Info, Contacts, Location, User Content, Search History, Browse History, Purchases, Financial Info, Usage Data, Social Media Data, User-Generated Content and many more. >> [Article](#)

Generative AI & Ethics



ACADEMIC INTEGRITY

AI raises concerns of
plagiarism, cheating,
and false content

Hallucination

Something that is **not actually present**

Factors of Hallucination

Training data **limitations**, **Inability** to verify facts, **Ambiguity** in prompts, **Over-optimising** for fluency, **Lack** of a ground truth

**Two US lawyers fined for submitting
fake court citations from ChatGPT**

Generative AI & Ethics



ACADEMIC INTEGRITY

AI raises concerns of plagiarism, cheating, and false content

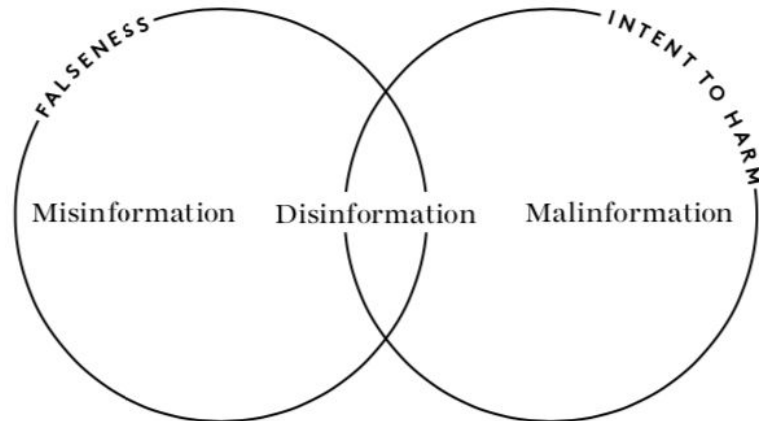
Deepfakes

AI-manipulated videos and images

making it harder to distinguish between **fact** and **fiction**

Filter Bubbles

Algorithms powered by AI that expose users only to information that confirms their pre-existing beliefs, further amplifying false narratives



Generative AI & Ethics



ACADEMIC INTEGRITY

AI raises concerns of
plagiarism, cheating,
and false content

Interesting One...

Cheating Fears Over Chatbots Were Overblown, New Research Suggests

A.I. tools like ChatGPT did not boost the frequency of cheating in high schools, Stanford researchers say.

UNITED KINGDOM

Most students use AI for studies, digital divide emerges – Survey



Karen MacGregor 02 February 2024

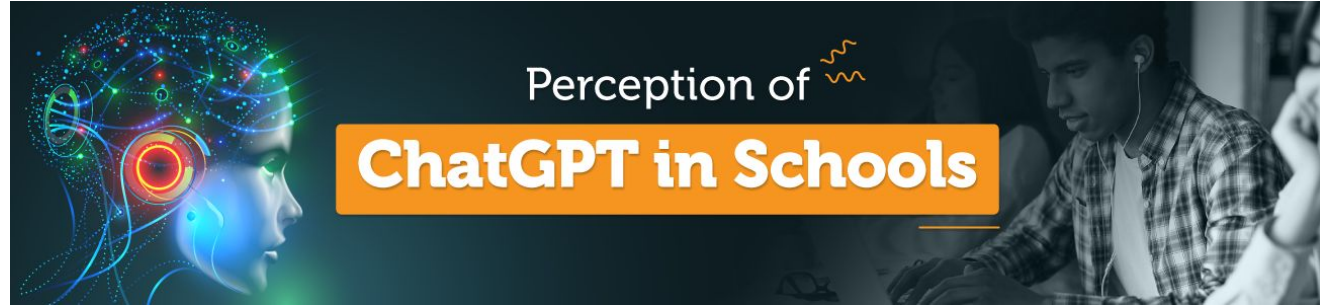
Among students surveyed, 53% have used generative AI to help with their studies. The most common use is as an 'AI private tutor', with 36% using AI to help explain concepts.

Generative AI & Ethics



ACADEMIC INTEGRITY

AI raises concerns of
plagiarism, cheating,
and false content



'I love that students would have another resource to help answer questions. Do I worry some kids would abuse it? Yes. But they use Google and get answers without an explanation. It's my understanding that CHATGPT explains answers. That would be more beneficial.'

'I don't think banning it will stop cheating. I think that it creates an opportunity to have discussions with students about why we ask them to do assignments and how cheating won't benefit them.'

Generative AI & Ethics



ACADEMIC INTEGRITY

AI raises concerns of
plagiarism, cheating,
and false content

OpenAI Using Our Services

What You Cannot Do. You may not use our Services for any illegal, harmful, or abusive activity. For example, you may not:

- Automatically or programmatically extract data or Output (defined below).
- **Represent that Output was human-generated when it was not.**
- Interfere with or disrupt our Services, including circumvent any rate limits or

Representing output from ChatGPT as human-generated (when it was not) is not only an academic integrity issue, it is **a violation of OpenAI's Terms of Use.**

Students need to learn **when it is okay** to use generative AI chatbots, and **when it is not okay**.

Generative AI & Ethics

Considerations for Educators

- **Define what you mean by AI** (e.g., Grammarly? ChatGPT? Google Docs Autocomplete?)
- **Be specific about when students can and cannot use AI:**
 - When is the use of AI allowed? (e.g., for brainstorming? For a specific assignment? For improving writing quality?)
 - When is it not allowed? (e.g., for doing students' work for them)
 - Does informing the instructor about the use of AI make its use allowable?
- **Explain why the use of AI is not allowed** (e.g., “writing helps improve and deepen thinking,” “writing makes your thinking visible to me,” “writing is an important 21st century skill”; see [Terada, 2021](#))
- **Be transparent about how you plan to identify AI-generated texts:**
 - Will you be using an AI text detector? (If so, [read this first!](#))
 - What will happen if one of these tools flags student work as AI-generated?



ACADEMIC INTEGRITY

AI raises concerns of
plagiarism, cheating,
and false content

Generative AI & Ethics

AI is energy-intensive

Google's overall operations consume more electricity than the entire nation of Nepal.



ENVIRONMENT

AI technology
impacts
environment
through mining,
energy consumption
and waste

OCTOBER 13, 2023 | 5 MIN READ

The AI Boom Could Use a Shocking Amount of Electricity

Powering artificial intelligence models takes a lot of energy. A new analysis demonstrates just how big the problem could become

BY LAUREN LEFFER

A University of Massachusetts Amherst study revealed that training a single large language model (LLM) can create a carbon footprint equal to that of five cars over their lifetimes. Among the LLMs studied, the Transformer model was the most energy-intensive, consuming 656,347 kWh of electricity and emitting 626,155 kg of CO2 equivalent, almost five times the lifetime emissions of an average American car.

Generative AI & Ethics



ENVIRONMENT

AI technology
impacts
environment
through mining,
energy consumption
and waste

AI is energy-intensive

ARTIFICIAL INTELLIGENCE

MIT
Technology
Review

Making an image with generative AI uses as much energy as charging your phone

A Computer Scientist Breaks Down Generative AI's Hefty Carbon Footprint

Is generative AI bad for the environment? A computer scientist explains the carbon footprint of ChatGPT and its cousins—and how to reduce it

BY KATE SAENKO & THE CONVERSATION US

Generative AI & Ethics

Extractive AI

[Kate Crawford](#) – researcher, author, and leading AI scholar – refers to Artificial Intelligence as an “**extractive**” technology. In her book *Atlas of AI* she compares the **AI industry to mining**, drawing comparisons between oil and precious metal extraction.

Rare earth minerals and metals (Lithium, Cobalt, Copper etc) are crucial for AI development, used in batteries, memory chips, and processors.



ENVIRONMENT

AI technology
impacts
environment
through mining,
energy consumption
and waste

How can we respond to the environmental impact of generative AI?

AI's Impact
on the
Environment



*Classroom Guide +
Discussion Questions*

Generative AI & Ethics

Ghost Work



HUMAN LABOUR

AI automation raises concerns about job automation and exploitation

BUSINESS • TECHNOLOGY

Exclusive: OpenAI Used Kenyan Workers on Less Than \$2 Per Hour to Make ChatGPT Less Toxic

Data Labeling, Data Entry, Market Research, Testing, Speech Recognition Training, Feedback

Generative AI & Ethics

Digital Divide

There's a major gap between people who can access and use digital technology and those who can't.

Access divide

Refers to the difference between those who have access to technology and those who do not. High/low Internet access, premium version

Usage divide

Refers to the difference between those who know how to use technology and those who do not.

Quality of use gap

Possess the digital skills to navigate the Internet but lack the knowledge to utilize it effectively and extract its full potential



AI DIGITAL DIVIDE

Most students use AI for studies, emerging a new type of digital divide

Generative AI & Ethics



AI DIGITAL DIVIDE

Most students use AI for studies, emerging a new type of digital divide

COMMENTARY

How language gaps constrain generative AI development

There are over 7,000 languages spoken worldwide, yet the internet is primarily written in English and a small group of other languages.

Generative AI tools are often trained on internet data, meaning access to these tools may be limited to those who speak a few data-rich languages like English, Spanish, and Mandarin.

Generative AI & Ethics



AI TEXT DETECTORS

Be critical while
using AI text
detectors

AI Text Detectors

The launch of ChatGPT motivated the development of new AI text detectors, such as [GPTZero](#), [ZeroGPT](#), [Sapling](#), [Copyleaks](#), and, more recently, Turnitin, to identify potential cases of plagiarism.

These tools were designed to determine **whether text was written by humans or by AI** (or both).

Many of these tools boast a 97% or higher accuracy rate; but, when put to the test, they are **not always as accurate as they claim**.

Was this text written by a human or AI?

Try detecting one of our sample texts:

Paste your text here ...

0/5000 characters

Generative AI & Ethics



AI TEXT DETECTORS

Be critical while
using AI text
detectors



AI Detectors Being Turned Off at Vanderbilt University - But NOT the AI Itself.

In addition to the false positive issue, AI detectors have been found to be more likely to label text written by non-native English speakers as AI-written (Myers, 2023).

[Read full article...](#)

Resource:

[Explore b4 using AI Text Detectors](#)

Generative AI & Ethics



AI LITERACY

Knowledge, skills,
and attitudes
associated with how
artificial intelligence
works

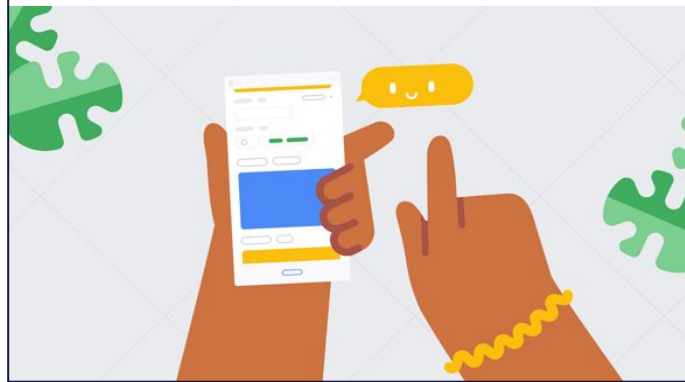
Google Cloud

Introduction to Generative AI



COMPLETION BADGE

Discover AI in Daily Life



common sense education®

AI Literacy Lessons for Grades 6–12

- Understand what AI is and how it works
- Consider some of its potential benefits and risks
- Think critically about how we can be responsible and ethical users of AI

Generative AI & Ethics

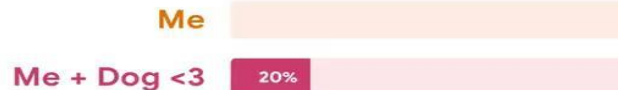
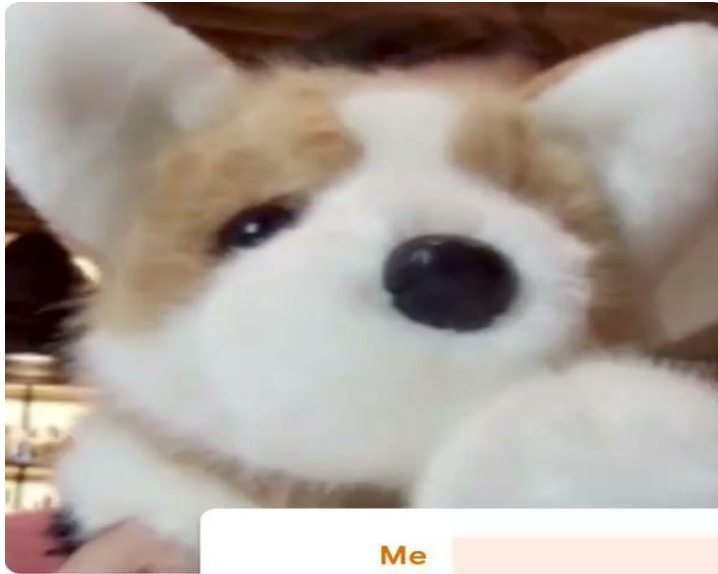


AI LITERACY

Knowledge, skills,
and attitudes
associated with how
artificial intelligence
works

Teachable Machine

Train a computer to recognize your
own images, sounds, & poses.



Use AI to help all students achieve **educational goals**

Reaffirm adherence to existing **policies**

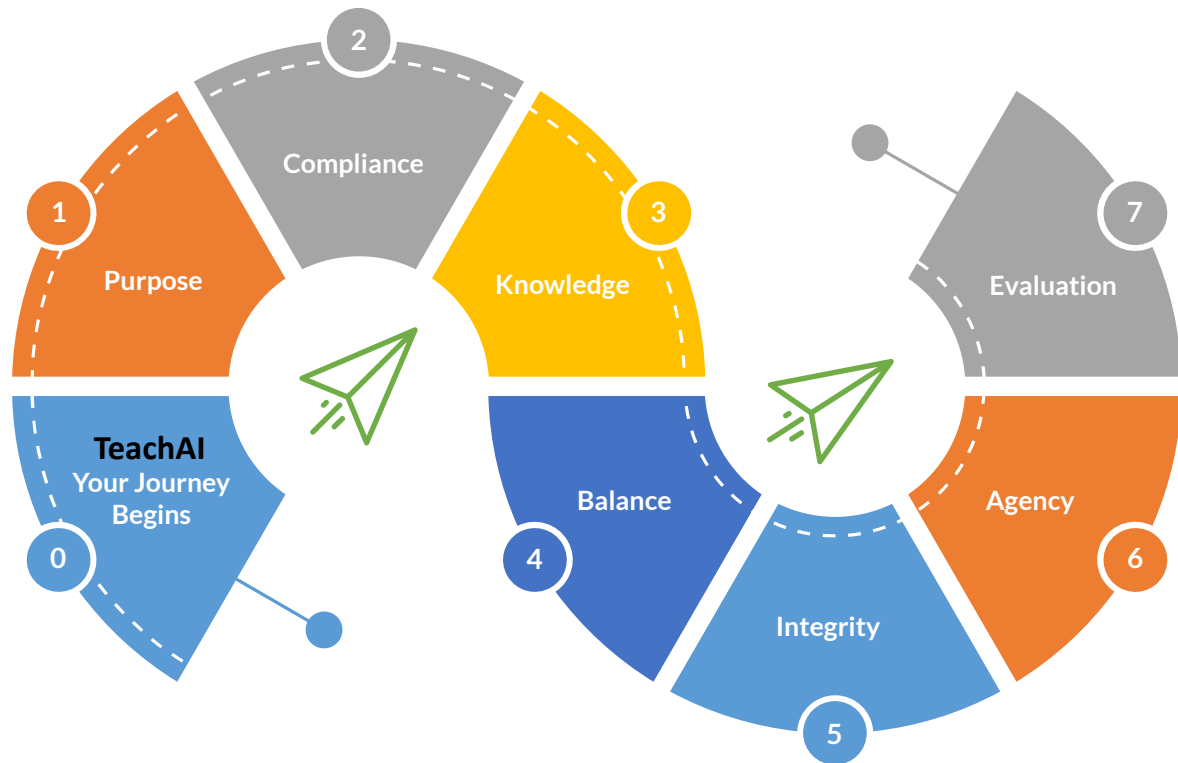
Promote **AI Literacy**

Realize the **benefits** of AI and address the **risks**

Advance **academic Integrity**

Maintain **human decision-making** when using AI

Regularly **assess the impacts** of AI



AI Guidance for Schools Toolkit

- For education authorities, school leaders, and teachers
- To help create thoughtful guidance on incorporating AI in education
- Principles and a framework for incorporating AI in education
- Sample language as a starting point for:
 - School Guidance on the Use of AI
 - Addendums to Existing Policies
 - Letter to Staff
 - Student and Class Policies
 - Letter to Parents and Guardians
 - An AI in Education Presentation



Visit teachai.org/toolkit

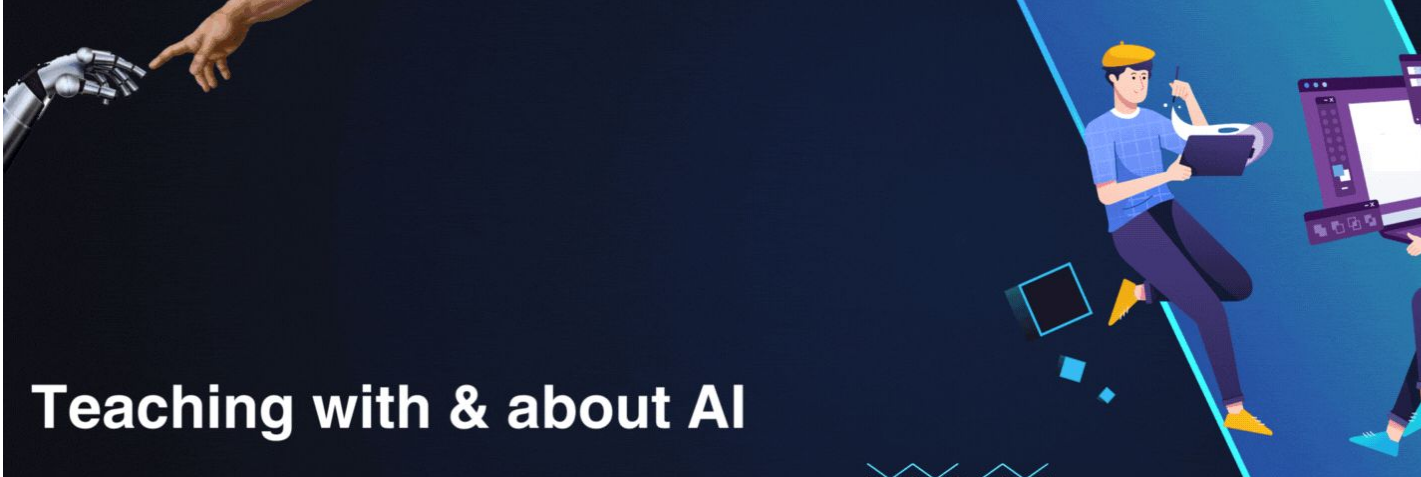


◆ Sample Student Agreement for AI Use

AI can help me learn better and is important for my future, so I promise to use it the right way and make smart choices.

1. I will use AI tools responsibly and will not use AI in a way that could harm myself or others.
2. I will only use AI to support my learning and will follow my school's rules and teacher's instructions on when and how to use AI on an assignment.
3. I will be honest about when I use AI to help with assignments, and I will not turn in work that is fully created by an AI as my own.
4. If I use AI, I will review its work for mistakes.
5. I will check with my teacher when unsure about what is acceptable.

 Sample language when reviewing your class syllabus: AI tools may be used for brainstorming or preliminary research, but using AI to generate answers or complete assignments without proper citation or passing off AI-generated content as one's own is considered plagiarism.



Teaching with & about AI



Enroll Now

ONLINE COURSE

• REGISTRATION •
bit.ly/aicourse19

<https://bit.ly/aicourse19>

Launching Price

**Rs. 1000
per year**

Enroll NOW

Course Structure

- ✓ 100+ AI Tools for Teachers
- ✓ Engaging Video Lessons
- ✓ Self-paced Learning Modules
- ✓ Curated Library
- ✓ Responsible AI Guidance
- ✓ Scheduled Live Sessions

References:

- <https://leonfurze.com/ai-ethics/>
- "AI & Ethics" slide deck by Torrey Trust, Ph.D. is licensed under CC BY NC 4.0.



Sushil Upreti

📞 977-9851037892

✉ sushil.upreti@gmail.com



Google for Education
Certified Trainer

ICT in Pedagogy

30 AI Tools for Teachers

Sushil Upreti

EdTech Trainer | eSTEAM Coach

Co-Founder, Digital & Beyond

Visiting Faculty, School of Education, Kathmandu University



CERTIFIED
EDUCATOR



ChatGPT



CHATBOTS



How can I help you today?

Suggest fun activities
to do indoors with my high-energy dog

Create a charter
to start a film club

Write a SQL query
that adds a "status" column to an "orders" table

Suggest fun activities
for a family visiting San Francisco

Message ChatGPT...



ChatGPT can make mistakes. Consider checking important information.

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

LLM

Developed by:



OpenAI

Released on:

November 30, 2022





Gemini



CHATBOTS

Hello.

How can I help you today?

Help write SQL to
generate a report

Help me write a refund
email for a product
that's damaged

Write a product
description for a new
type of toothbrush

Evaluate and rank
common camera
categories

Enter a prompt here



Developed by:



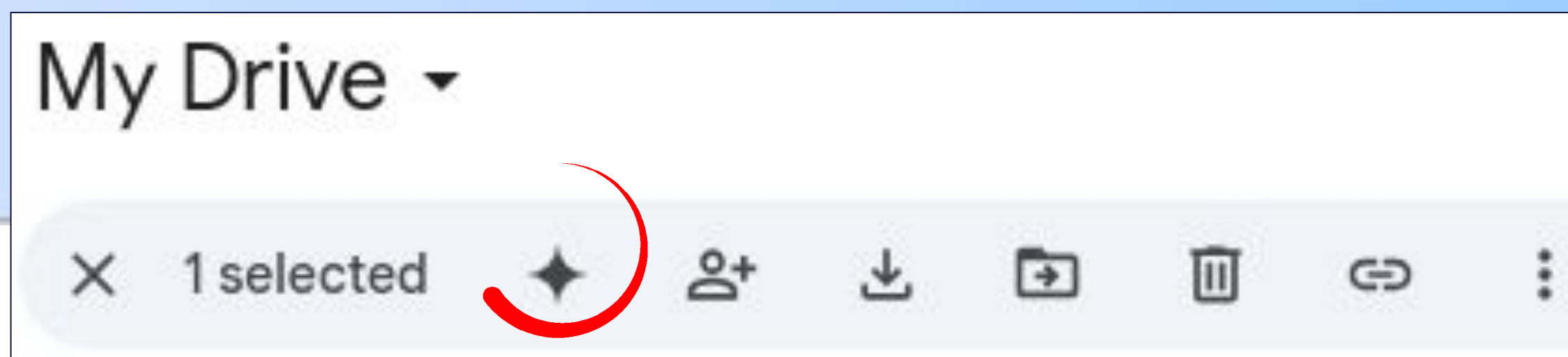
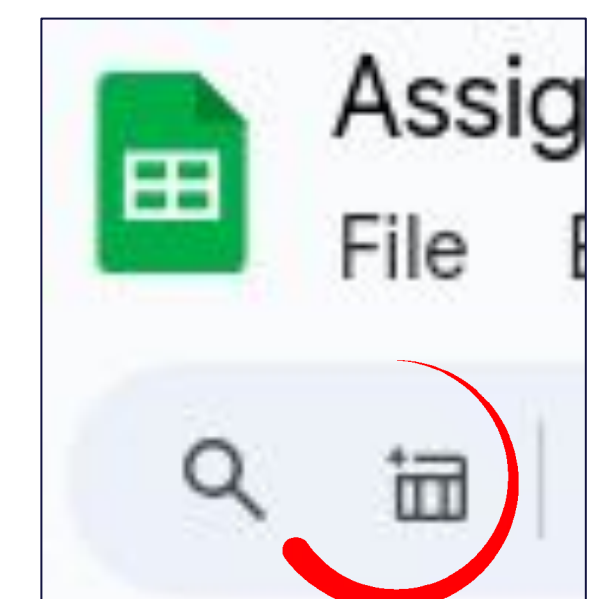
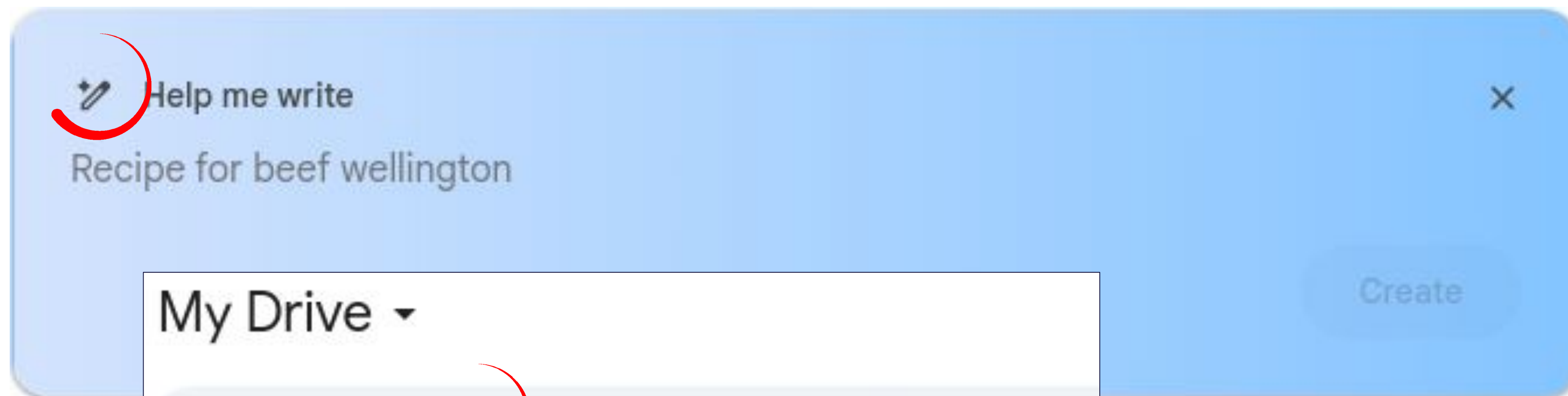
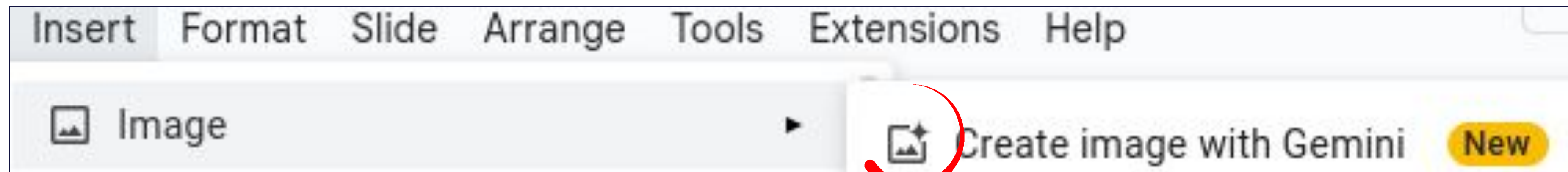
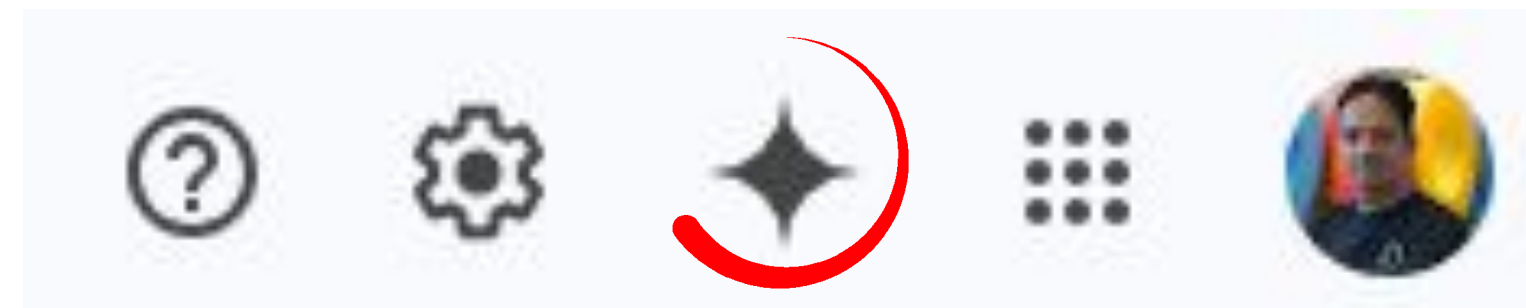
Released on:

December 23, 2023

<https://gemini.google.com/>

LLM

Gemini for Google Workspace





Copilot



CHATBOTS



Copilot

Your everyday AI companion



Ask me anything...



0/2000



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

LLM

Developed by:



Microsoft

Released on:

February 27, 2023



Where knowledge begins

Ask anything...

≡ Focus ⊕ Attach

☐ Pro



→ Try searching

Rule of thirds in photography

What is carbon fiber used for?

Are billboards still effective?

The best dog breed for apartments

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

LLM



Chat with any PDF

Chat with any PDF

Join millions of students, researchers and professionals to
instantly answer questions and understand research with
AI



Drop PDF here

Browse my Computer

From URL

<https://www.chatpdf.com/>



MagicSchool

MagicStudent

Search

All

Planning

Content

Questions

Intellectual Prep

Student Support

Communication

Community Tools

**Custom Chatbot** NEW!

☆

Create a custom chatbot to interact with based on any criteria that you choose!

**Multiple Choice Assessments**

☆

Create a multiple choice assessment based on any topic, standard(s), or criteria!

**Report Card Comments**

☆

Generate report card comments with a student's strengths and areas for growth.

**Lesson Plan**

☆

Generate a lesson plan for a topic or objective you're teaching.

**Text Rewriter**

☆

Take any text and rewrite it with custom criteria however you'd like!

**YouTube Video Questions**

☆

Generate guiding questions aligned to a YouTube video.

**Informational Texts**

☆

Generate original informational texts for your class, customized to the topic of your choice.

**Rubric Generator**

☆

Have AI write a rubric for an assignment you are creating for your class in a table format.

<https://app.magicschool.ai/>



MagicSchool

MagicStudent

Search



Raina for Students
Ask questions or get ideas through prompting Raina, the AI chatbot for students.



Chatbot Builder
Build a chatbot from scratch to interact with!



Writing Feedback
Get feedback on your writing.



Research Assistant
Find information and sources for a research project.



Song Generator
Write a custom song about any topic to the tune of the song of your choice!



Translate It!
Take any text and translate it into any language instantly.



Character Chatbot
Chat with any historic figure, author, or recognizable character from a story.



Create a Skit!
Create a skit for class or for fun!



Tutor Me with AI
Get tutored by Raina on any topic or subject you are learning.



5 Questions
Get AI to ask 5 questions to push your creativity and deepen your thinking on a topic.



<https://app.magicschool.ai/>



⚡ conker

1

Enter topic

2

Customize

3

Generate

Create a Conker quiz ✨

Enter a learning topic to get started

C programming

×

Next

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



Vocal Remover



Vocal Remover and Isolation

Separate voice from music out of a song free with powerful AI algorithms



<https://vocalremover.org/>



Canva

The screenshot displays the Canva homepage interface. At the top, a blue navigation bar contains eight circular icons with labels: 'For you' (star icon), 'Docs' (document icon), 'Whiteboards' (board icon), 'Presentations' (screen icon), 'Social media' (heart icon), 'Videos' (video camera icon), 'Websites' (web icon), and 'More' (three dots icon). Below this bar, the text 'You might want to try...' is followed by five design template cards. Each card shows a preview of a design and a label below it: 'Doc' (a document titled 'Design Visual Docs'), 'Whiteboard' (a board titled 'Get ideas flowing'), 'Facebook Post (Landscape)' (a post titled 'INSPIRE YOUR FEED'), 'Facebook Ad' (an ad titled 'Inspire and uplift'), and 'Academic Certificate' (a certificate for 'James K. Stevenson').

You might want to try...

- Doc**: Design Visual Docs
- Whiteboard**: Get ideas flowing
- Facebook Post (Landscape)**: INSPIRE YOUR FEED
- Facebook Ad**: Inspire and uplift
- Academic Certificate**: ACADEMIC ACHIEVEMENT AWARD, James K. Stevenson

<https://www.canva.com/>



Interview Warmup



interview warmup

A quick way to prepare for your next interview in

IT Support

Practice key questions, get insights about your answers, and get more comfortable interviewing.

Start practicing



<https://grow.google/certificates/interview-warmup/>



Explainpaper

Welcome to Explainpaper

Upload a research paper to start reading it.

<https://www.explainpaper.com/dashboard>

Upload PDFs

Upload PDF

 Drag & drop files
Or Browse

OR UPLOAD WITH URL

<https://example.com/file.pdf>



AudioPen

AudioPen

Go from fuzzy thought to clear text. *Fast.*



<https://audiopen.ai/>



Claude



Good evening, Sushil

What can I help you with?



Start Chat ▶

New in Claude

Understand and Work with Images



Recommend style improvements



Convert UI design to front-end code



Transcribe handwritten notes

<https://claude.ai/chats>



schoolAI



<https://app.schoolai.com/>



schoolAI

Spaces

Launch a student activity

Search Spaces

Popular



Sidekick
Give your students managed access to their very own AI assistant.



Find a Space
Discover 1000s of ready-to-launch spaces organized by category.



Create a space
Create a custom space for your students' needs. AI makes it easy!

 Favorites 0

 Shared with me 0

 My creations 1



schoolAI



Lesson Plan

Generate and modify comprehensive lesson plans.

✦ Generate



Course Outline

Outline lesson plans for an entire course or unit.

✦ Generate



Worksheet

Generate a worksheet on any subject or topic.

✦ Generate



Syllabus

Generate a syllabus for a course.

✦ Generate



Multiple Choice Quiz

Generate a quiz on any subject or topic.

✦ Generate



Jokes

Generate customizable jokes to engage your class.

✦ Generate



IEP

Generate an individualized education program.

✦ Generate



BIP

Generate a behavior intervention plan.

✦ Generate

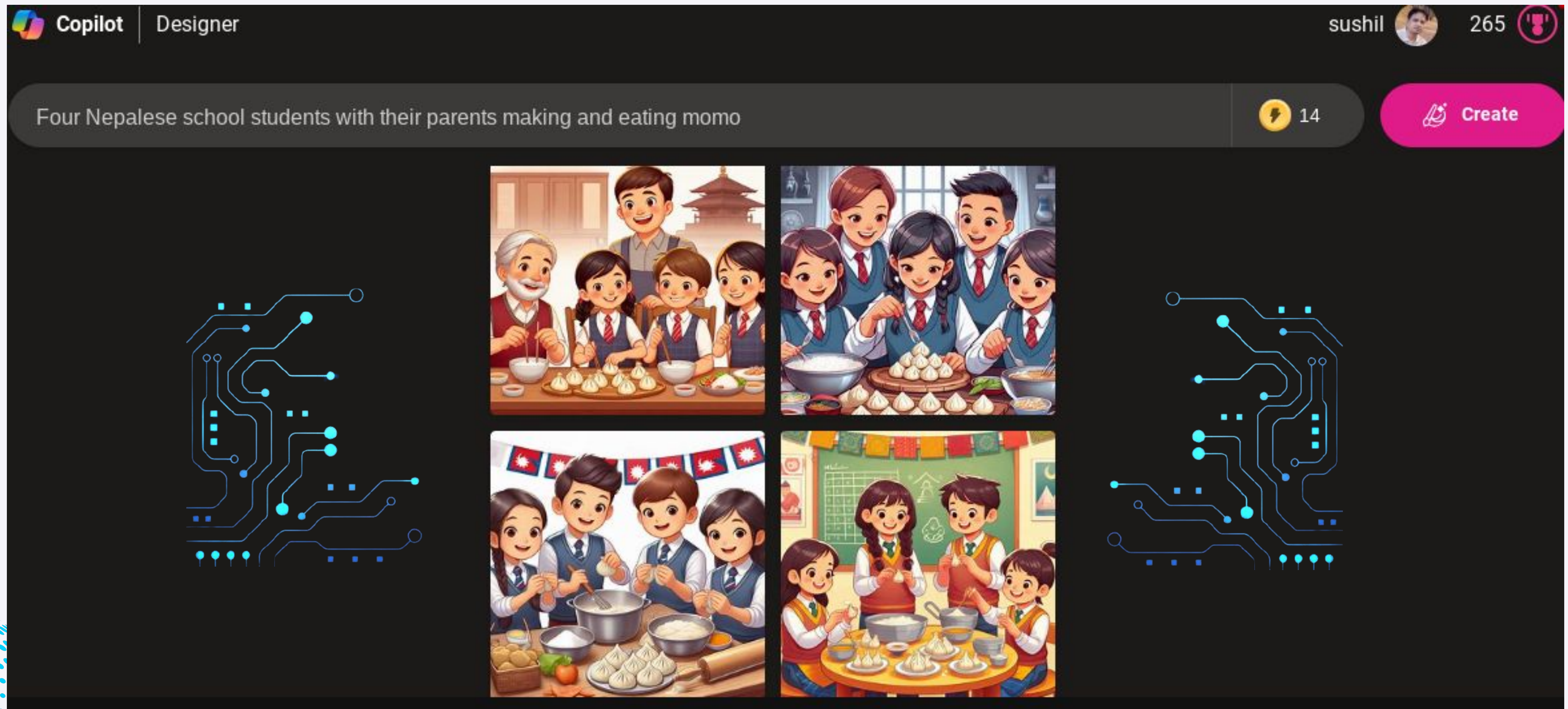


Class Newsletter

Generate a newsletter to share class updates.

✦ Generate

<https://app.schoolai.com/>





Gemini

The majestic Himalayas, visible from the outskirts of Kathmandu, remain a breathtaking backdrop to the city's futuristic skyline:



Enter a prompt here

<https://gemini.google.com/>

Generate
IMAGES
from
Gemini





Brisk Teaching



**BUILT TO
AUTOMATE YOUR
WORKLOAD -
NOT ADD TO IT.**

The ultimate time-saving
Chrome extension for educators,
schools, and districts.

Brisk Teaching

"The best product I have ever seen
in my teaching career of 25 years."
- High School Teacher

**CREATE,
EFFORTLESSLY**

In seconds, create
curriculum, quizzes
administrative tasks,
interventions, and more.

Content created with Brisk
integrates seamlessly with
Google workspace.

Brisk Teaching

 **Brisk Teaching**

 briskteaching.com  **Featured** 4.9 ★ (67 ratings)

Extension Education 100,000 users

Add to Chrome for Free

[Chrome Extension Link](#)



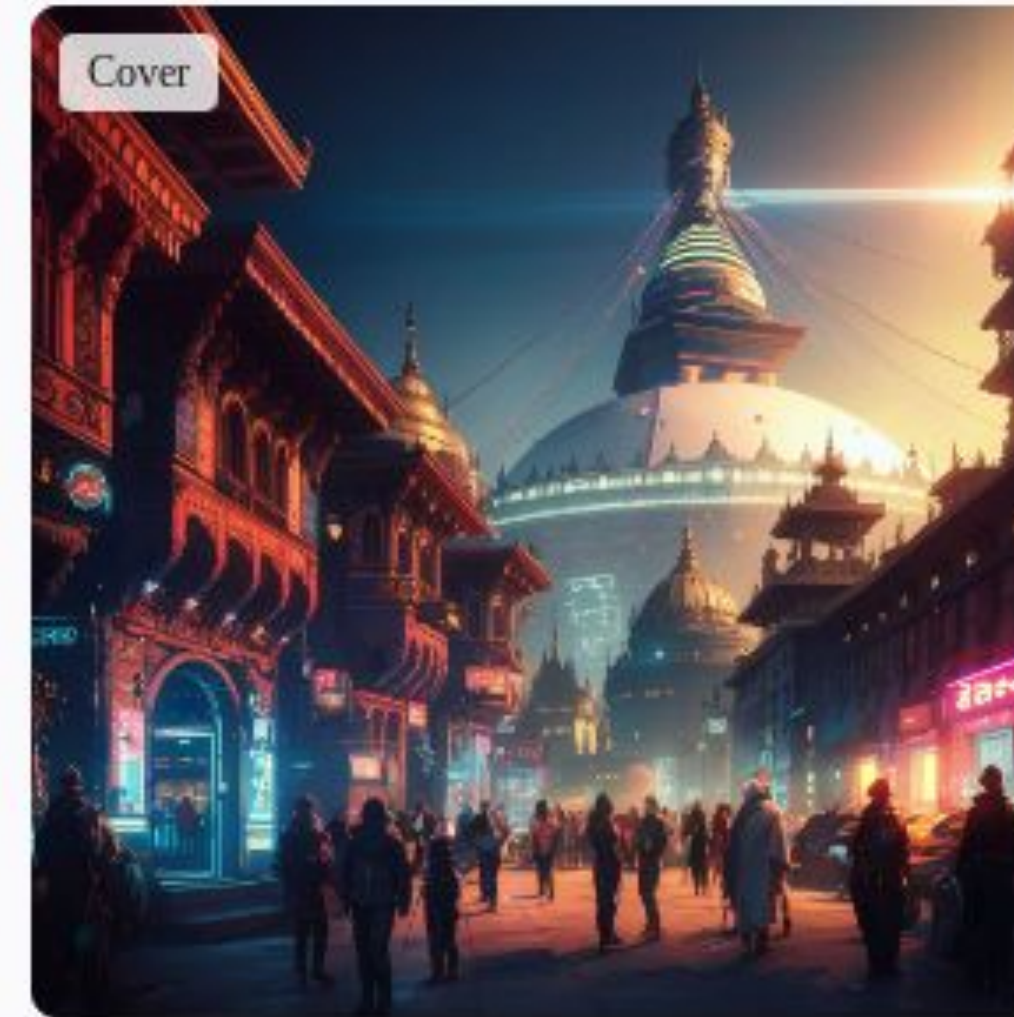
ideogram

Generate futuristic Nepal in a single frame

Generate



Generation completed

[Dismiss](#)

<https://ideogram.ai/t/explore>



AI Test Kitchen

<https://aitestkitchen.withgoogle.com/>

TextFX

Supercharge your writing process with AI-powered language tools made in collaboration with Lupe Fiasco

LAUNCH TEXTFX

WATCH LUPE FIASCO USE THIS TOOL

SPACE - Stars, Planets, Asteroids, Comets and Everything

AA. ALLITERATION - words for describing food starting with a

acetic

al dente

ambrosial

BB. BLENDED - reheated takeout

Soggy, wilted vegetables

The sound of styrofoam squeaking against the microwave

Congeeled sauce that has separated from the rest of the food

CC. CLOCKS - analog clocks

Analog clocks are a dying breed, and that's a shame.

Analog clocks are a pain to read in low light.

ImageFX

Transform text into images and explore endlessly

LAUNCH IMAGEFX

Remix template

PORTRAIT OF DOG DRESSED AS MEDIEVAL ROYALTY IN VINTAGE...

MusicFX

Describe a musical idea and hear it come to life

LAUNCH MUSICFX

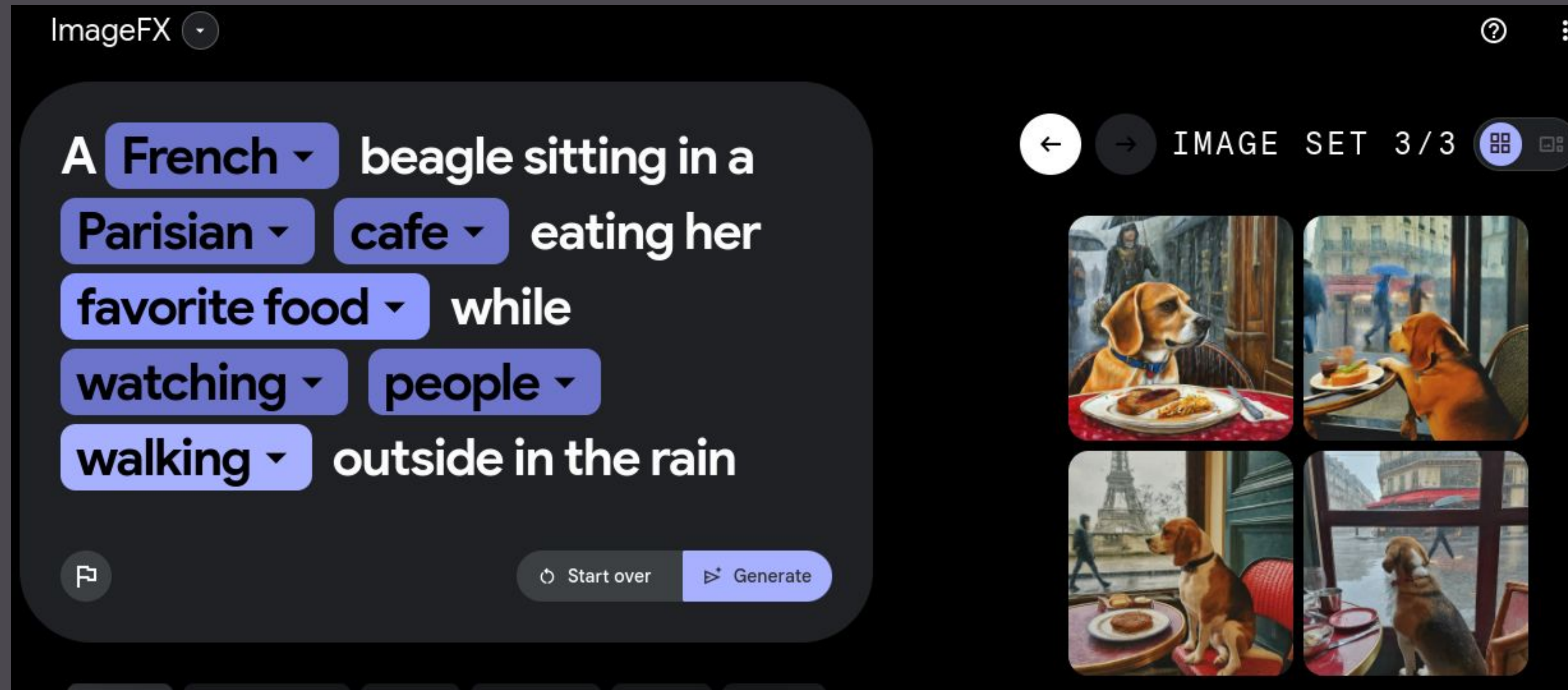
WATCH DAN SEACON USE THIS TOOL

lofi jazz for a quiet rainy day influences from rnb, influences from rnb ...

Remix template

LOFI JAZZ FOR A QUIET RAINY DAY, INFLUENCES FROM RNB WITH A CATCHY MELODY, ATMOSPHERIC

0:00 / 1:20



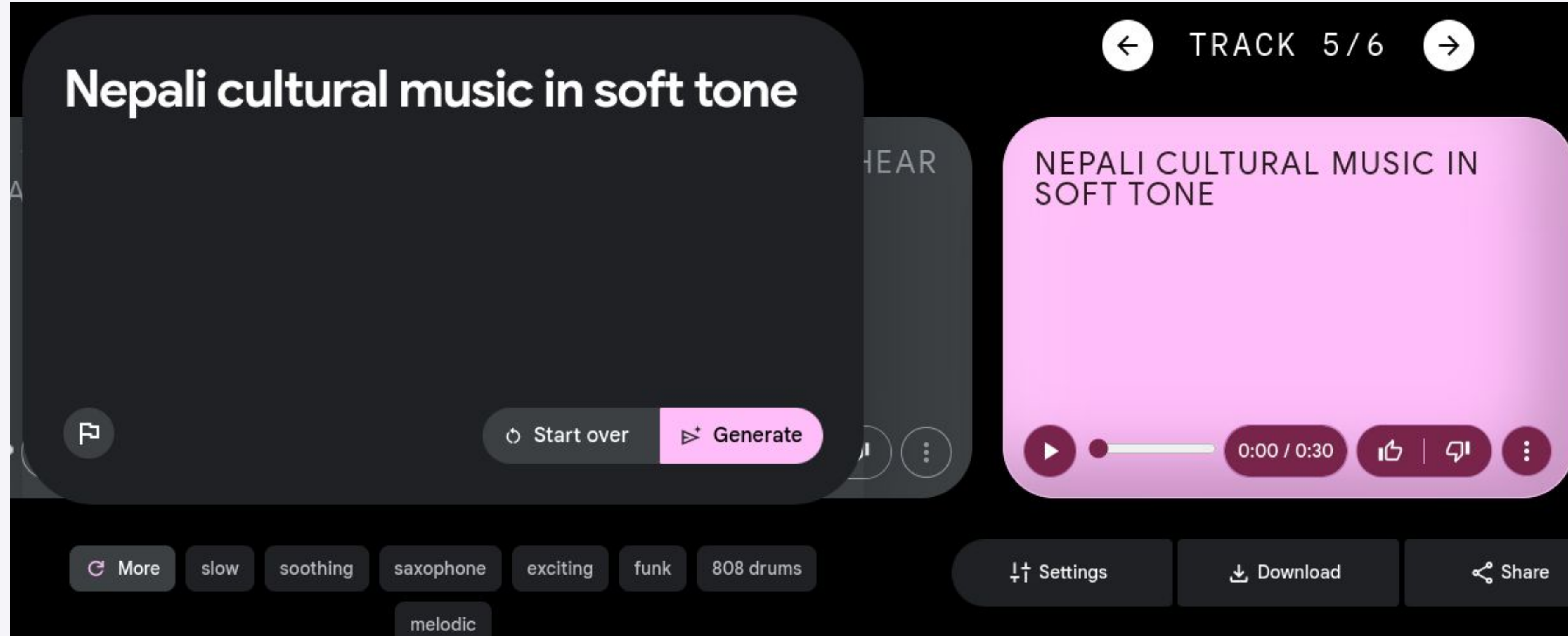
Adjust the
Chips to
modify the
prompt

<https://aitestkitchen.withgoogle.com/tools/image-fx>

A text-to-image generator



MusicFX



<https://aitestkitchen.withgoogle.com/tools/music-fx>

A text-to-music generator





TextFX

R.A.P.
ACRONYM

A.A.
ALLITERATION

CHAIN

/A\
EXPLODE

FUSE

POV

SCENE

A=B
SIMILE

UNEXPECT

/A\
↔

.

/A\
↔

Unfold

Identify words and phrases that contain a given word.

i

MORE INFO

▶

WATCH LUPE USE IT

OUTPUT

All

3 PINNED

DOWNLOAD

/A\
↔

UNFOLD

TEMP 0.7

🚩

↺

↻

star

Hollywood star

morning star

movie star

SHOWING 3/28

VIEW MORE

VIEW LESS

/A\
↔

UNFOLD

TEMP 0.7

🚩

↺

↻

star

falling star

<https://aitestkitchen.withgoogle.com/tools/text-fx>

Google



Gmail

Images



 Search Labs

Experiment with
Search Labs



Welcome to Search Labs!

Discover AI and more



<https://labs.google.com/search/login?source=hp&authuser=7&is=so>

Google



Google Labs

EXPERIMENT WITH THE FUTURE OF AI

<https://labs.google/>

The screenshot shows the Google Labs homepage with a pink background. At the top left is the 'LABS.GOOGLE' logo. In the center, a man with glasses and a beard is working on a laptop, with the text 'EXPERIMENT WITH THE FUTURE OF AI' above him. Below this, a 'NEW' badge is next to the 'TEACHER X LLMS' experiment, which includes a description: 'With NYU Prof. Daniel Shiffman we explore how AI can help learners on their creative coding journey.' To the left, a yellow badge for 'IMAGEFX' (Product) says 'Turn text into images' and 'TRY IT NOW'. Below that is a green badge for 'INSTRUMENT PLAYGROUND' (Google Arts & Culture) with a 'TRY IT NOW' button. To the right, a white badge for 'GEMINI EXTENSIONS' (Feature) has a 'TRY IT NOW' button. Further right is a large blue badge for 'DJ MODE IN MUSICFX' (Latest Drop) with a 'TRY IT NOW' button. At the bottom right is a light blue badge for 'MUSICFX RADIO' featuring 'RAINBOW GRADIENTS' and playback controls. An orange button at the top right says 'SUBMIT AN EXPERIMENT'. A black button at the bottom left says 'I'm Feeling Lucky'.



ALL ARTS & CULTURE EXPERIMENTS



PASSAGE OF WATER



CULTURAL ICONS



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Wondershare
Virbo

Wondershare Virbo | [Go to Virbo >](#)

1.4 min

Talking Photo

Talking Portraits Online - Bring Your Photos to Life.

Step 1/2 | Upload your photo or choose a template

All

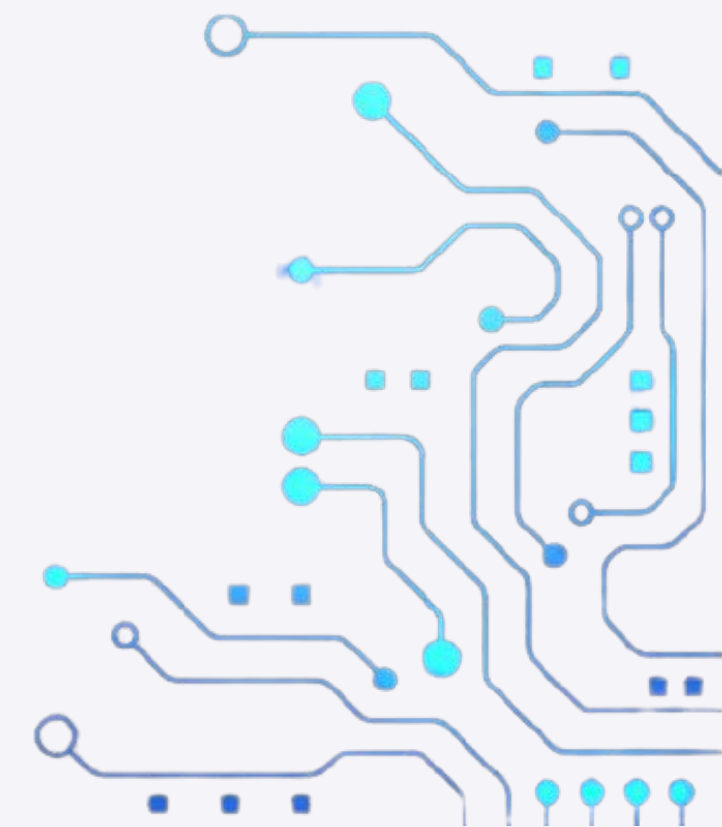
Uploaded

Templates

Upload Photo

My Creations >

Next



<https://virbo.wondershare.com/app/talkingphoto/>



Wondershare
Virbo



<https://virbo.wondershare.com/app/talkingphoto/>

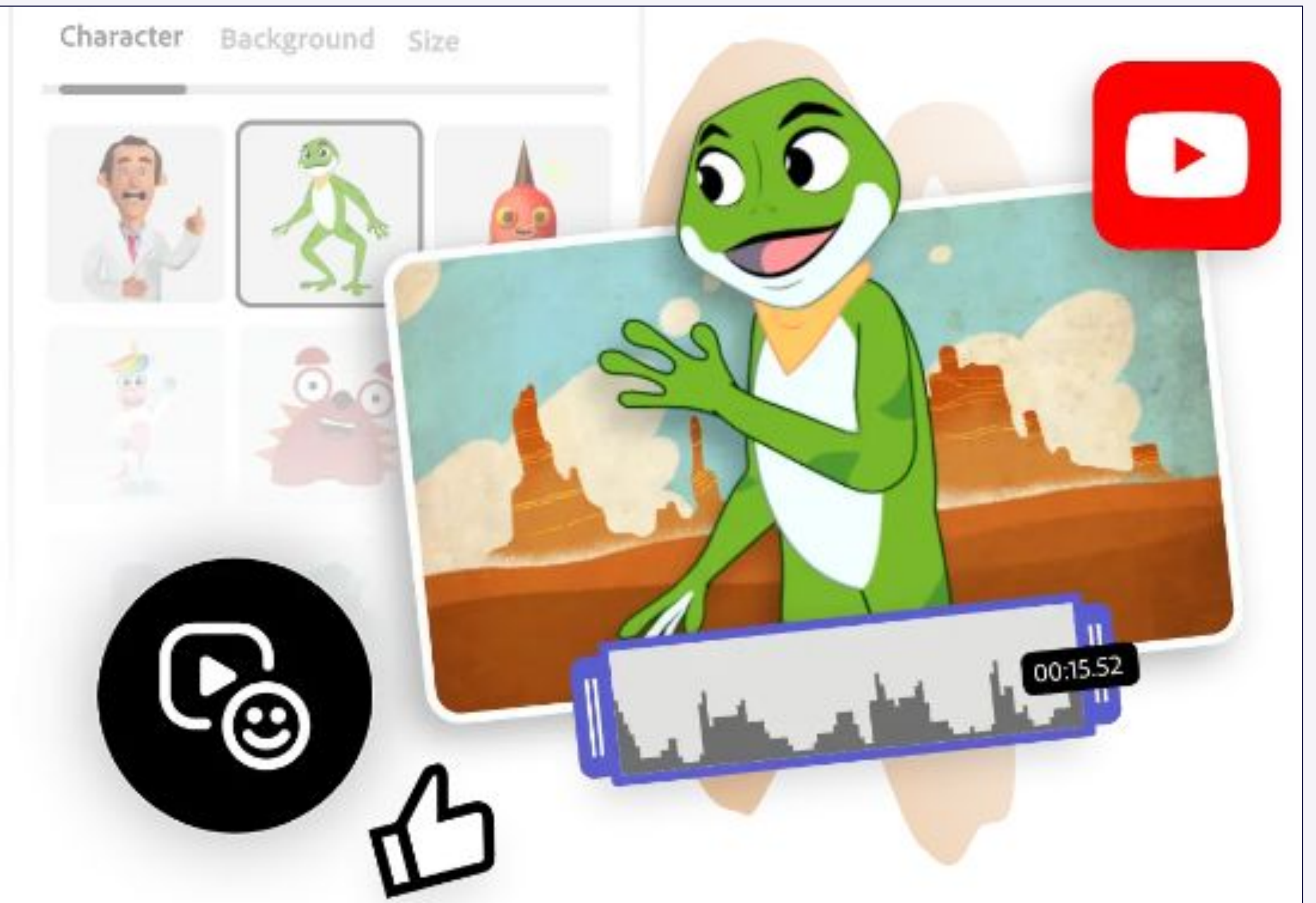


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<https://quizizz.com/home/quizizz-ai>



Class Companion

Generate an assignment

Format

☒ Short answer ☐ Essay

Type

Select type of assignment



Focus

Provide specific details to the AI regarding the assignment you would like to generate.

e.g. "President Lincoln's stance on slavery", "Impact of the Trail of Tears on the Seminole tribe"

Generate

Free for teachers

Free AI tool for instant,
personalized
feedback on written
assignments



<https://classcompanion.com/>



enlightenAI

Supported by **NewSchools** Venture Fund

Your personalized AI Grader

Give your best feedback, faster.
A product built for teachers, by teachers.

Assignments

+ Create New Assignment

In Progress

Assigned to Students

Graded

All Assignments

Assignment Title

Topic

Class

Section

Created Date

Due Date

Pro

Demo: Opinion on AI in Grading ar

Demo: English Language Arts

Period 1

02/27/24

03/12/24

Free for teachers

AI-powered
tool to **grade**
student
written work,
reflecting
your **style**
and
guidance.

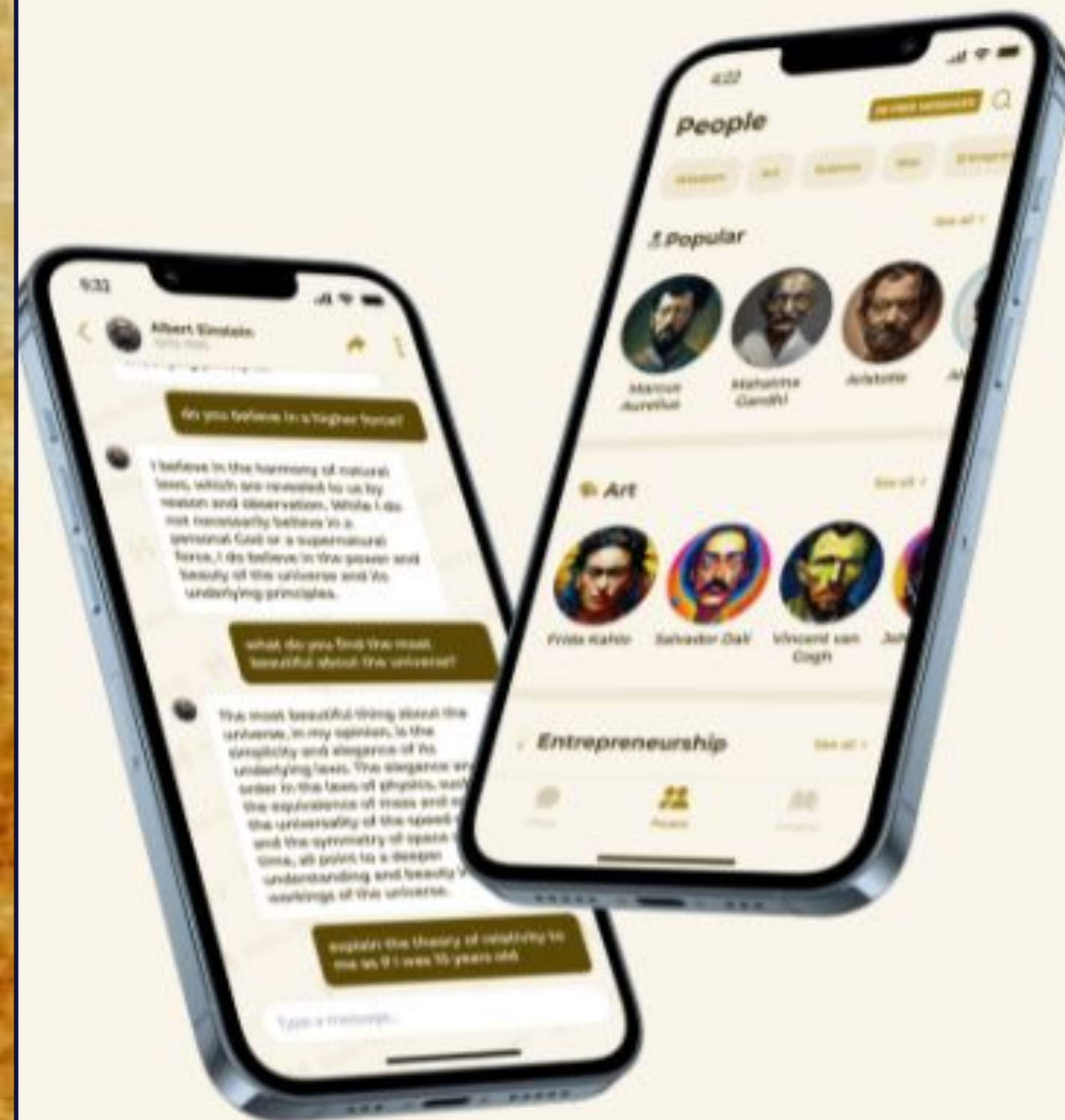
<https://enlightenme.ai/>



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MIZOU



Sushil Upreti

1

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0

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Following

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My ChatBots

All

By Me

By The Community

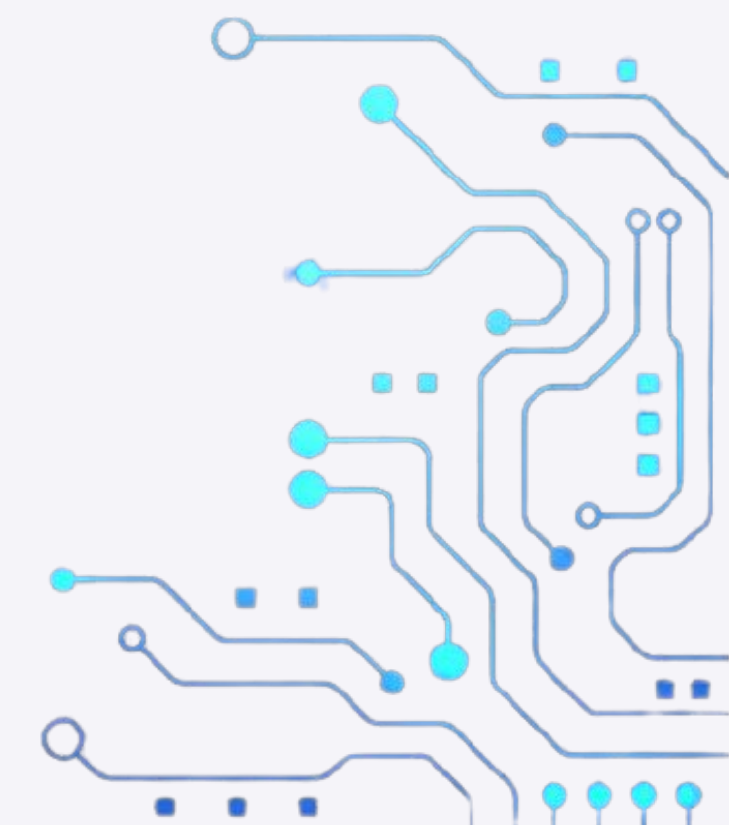
Order by

Creation date

Search...

 Build a Chatbot

Sessions	Students	
1	1	...
	Ended	
	0	



<https://mizou.com>

← Exit

Share



Great! Let's get started.

Question 1: Which tool is best suited for creating interactive presentations in a mathematics class?

- A) Microsoft Excel
- B) Prezi
- C) Google Forms
- D) Adobe Illustrator

What's your choice?



Info

Security

Explore



ICT Integration in STEAM

by [Sushil Upreti](#)

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Good for



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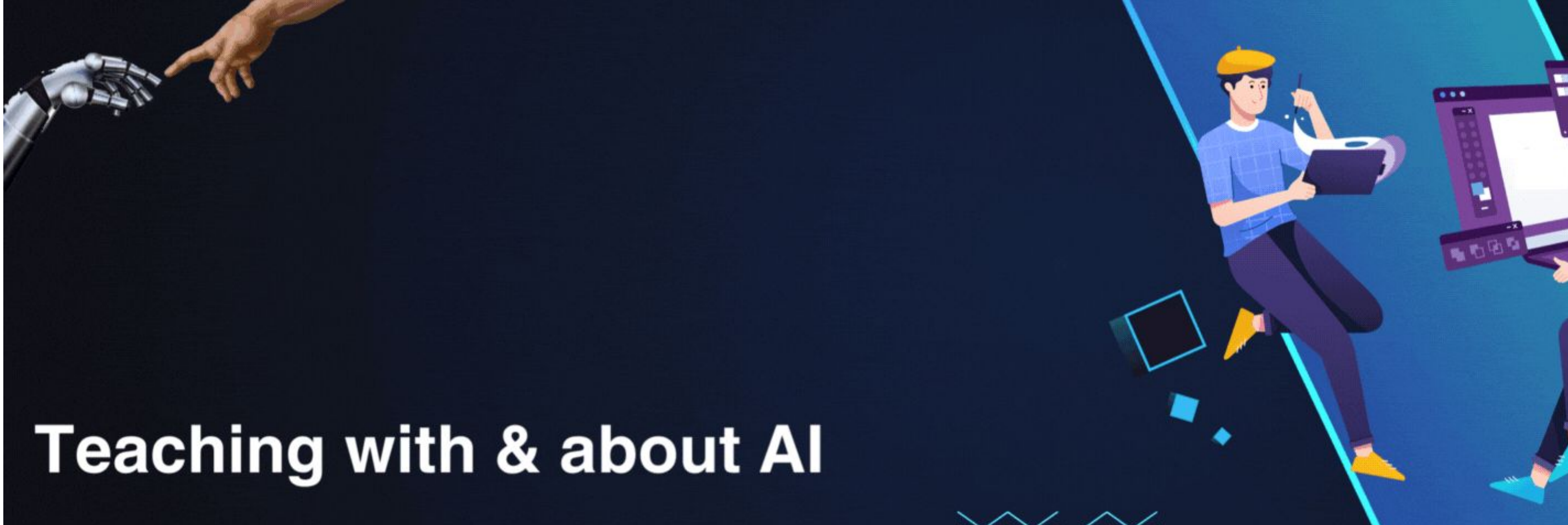
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- ✓ Scheduled Live Sessions



Future Tools

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Futurepedia

<https://futurepedia.io/>



AllThingsAI

<https://allthingsai.com/>

THERE'S AN AI FOR THAT

<https://theresanaiforthat.com/>



Sushil Upreti

📞 977-9851037892



sushil.upreti@gmail.com



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