

Artificial intelligence in Executive Education

Trends, challenges and opportunities



Rihana Msadek

CMED Conference 2024 - November 2024

Agenda

01 The Generative AI Landscape

02 Generative AI in Education

03 Opportunities and Threats of leveraging Generative AI

04 How to get started NOW?

05 Q&A

What is Generative AI?

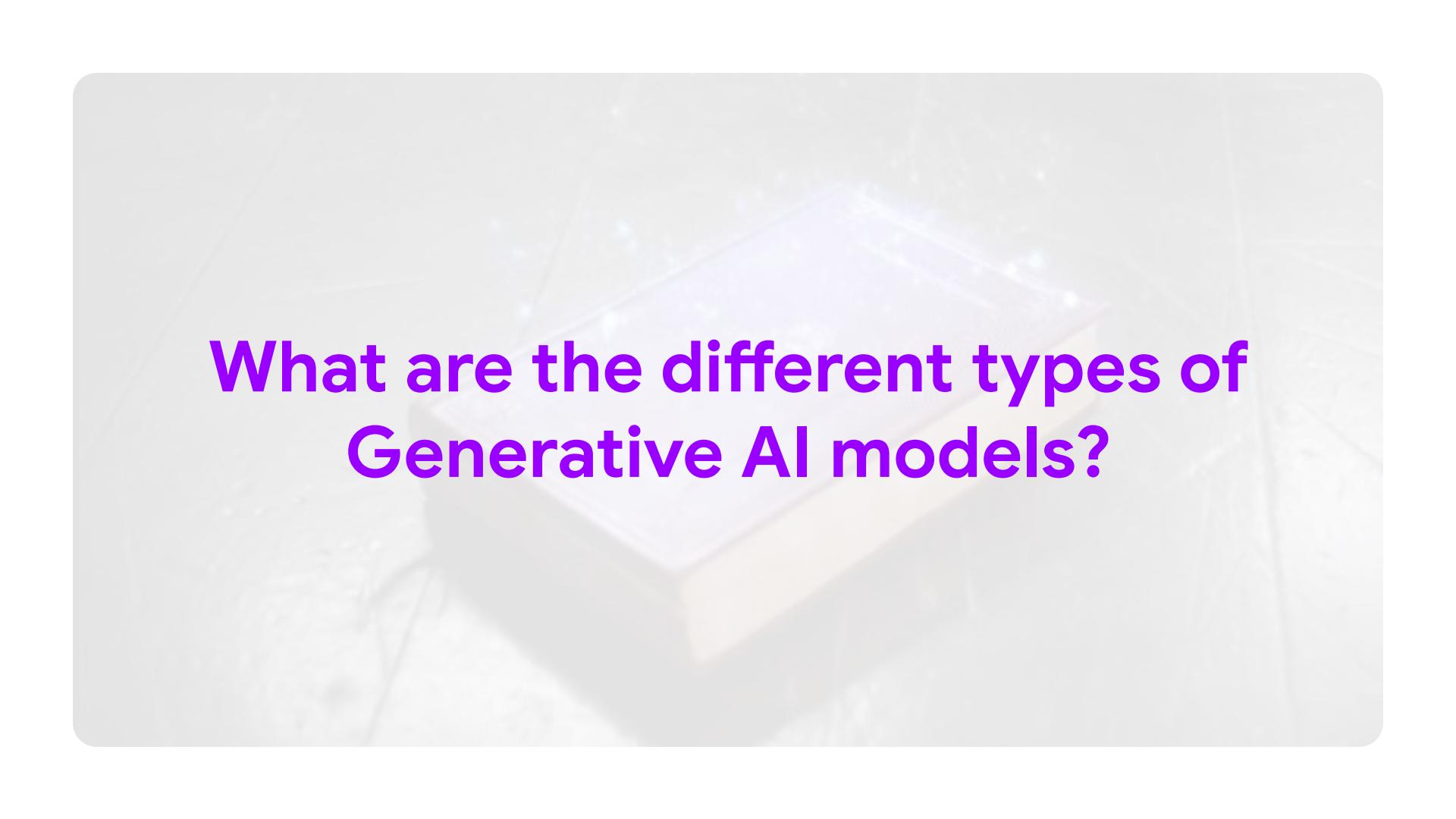
Training a machine learning model is like teaching a kid to recognize colours/objects.



{"Fresh Branzino":
"\$14.99 lb.",
"Fresh Whole Black
Cod": "\$18.99 lb.",
"Fresh Rainbow Trout":
"\$11.99 lb."}



It is a type of artificial intelligence that can **create new content**, such as text, images, audio, and video

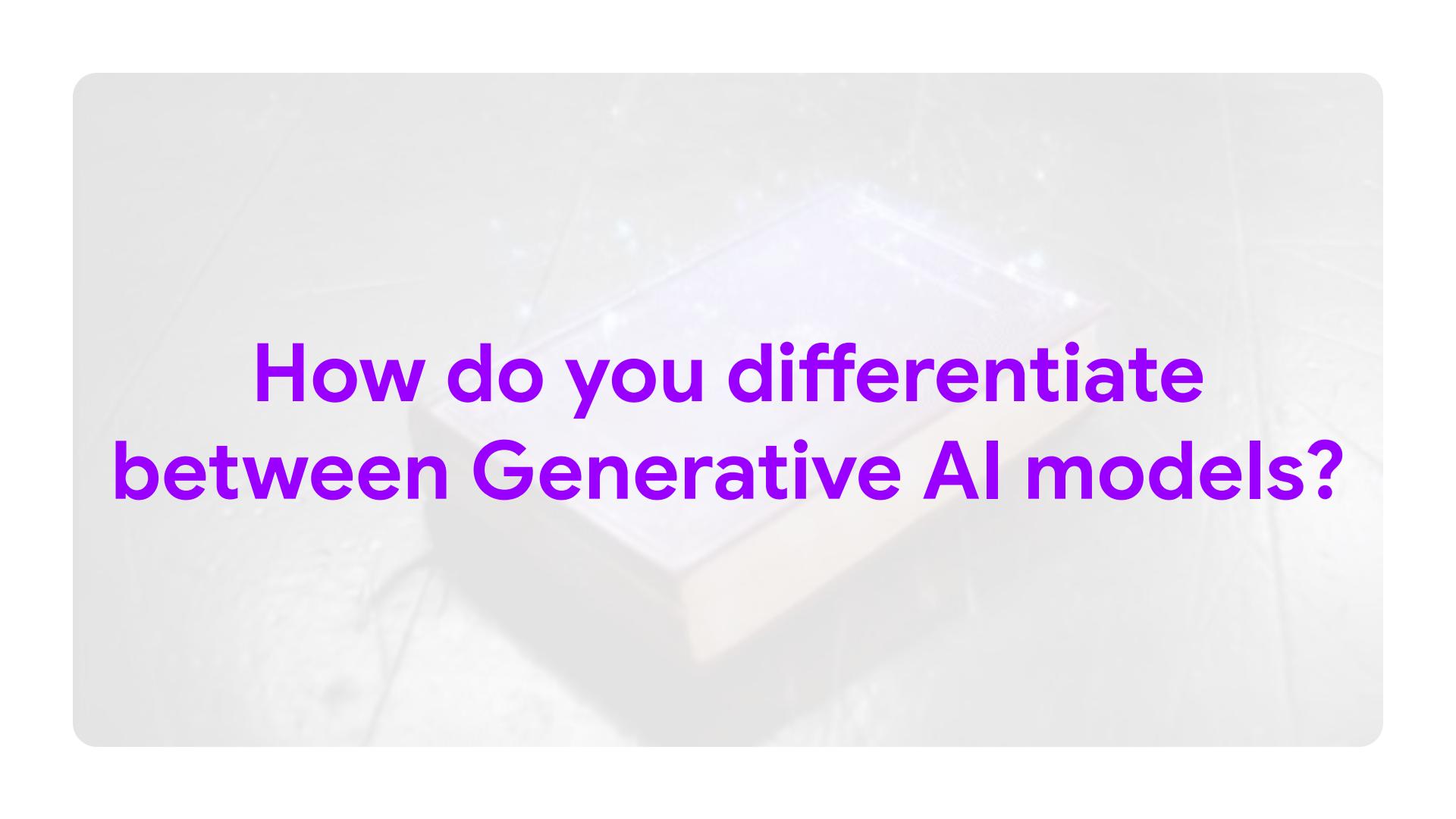
The background of the slide features a subtle, abstract design. It consists of a light gray gradient with faint, radiating white lines that suggest light rays or energy. Overlaid on this are several thin, dark gray geometric shapes, including triangles and hexagons, which create a sense of depth and structure.

What are the different types of Generative AI models?

This image is a collage of various screenshots from mobile applications, likely related to food and nutrition. The screenshots are arranged in a grid-like pattern across the screen.

- Top Left:** A user profile page featuring a profile picture of a woman, a bio section, and a "Follow" button.
- Middle Left:** A list of meal plans or recipes, each with a thumbnail image and a title like "Breakfast Smoothie" and "Lunch Box Ideas".
- Bottom Left:** A user profile page with a photo of a person holding a bowl of fruit, a bio section, and a "Follow" button.
- Top Center:** A meal planning interface showing a meal plan for "Breakfast" with items like "Oatmeal" and "Fruit Smoothie". It includes a "Edit Plan" button and a "Share Plan" button.
- Middle Center:** A large purple circular logo, possibly a watermark or app icon.
- Bottom Center:** A detailed meal plan entry for "Breakfast Smoothie" with a list of ingredients and nutritional information.
- Top Right:** A user profile page featuring a profile picture of a man, a bio section, and a "Follow" button.
- Middle Right:** A user profile page featuring a profile picture of a woman in a pink dress, a bio section, and a "Follow" button.
- Bottom Right:** A user profile page featuring a profile picture of a woman in a red dress, a bio section, and a "Follow" button.

In fact, there are **1,121,515**
AI models in the world
today..



How do you differentiate between Generative AI models?

Models can be classified by **Modalities**

Some of these modalities are..

Image & videos

Generate, analyze and customize studio-grade images and videos at scale

Audio

Speech-to-Text language captioning and voice assistance

Code

Customized code generation and completion

Image generation

A family of four at **disneyland**, with a dad wearing a blue polo shirt, mom wearing a **green dress and a straw hat**, and kids wearing disney themed costumes



Imagen 3



Stable Diffusion 3 L



OpenAI Dall E 3

Video generation : Generate promotional videos for your learning paths.

Prompt: moody shot of a central European alley film noir cinematic black and white high contrast high detail

Model : Veo



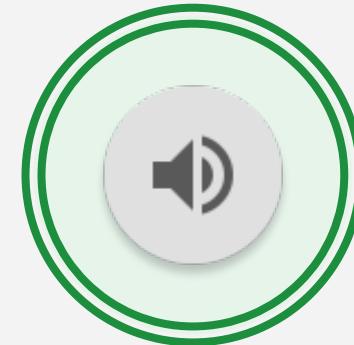
Audio Transcription

Generic STT Output

Good afternoon **of our if I want an umbrella** 5,000 and we have whiskey, **remember 851 tanker. Prominent own approach.** Good afternoon. Expect a visual approach. Runway, seven left. **Hydro** expect. The visual 47 left, thanks

Advanced STT Output

Good afternoon, **N851TB, 5000 and we have whiskey. N851TB, detour and approach,** good afternoon, expect a visual approach runway 7L. **Roger,** we'll expect a visual for 7L, thanks



Models can be classified by Industry



Legal

Can support in contract analysis, legal research, and predicting case outcomes.



Medical (MedLM)

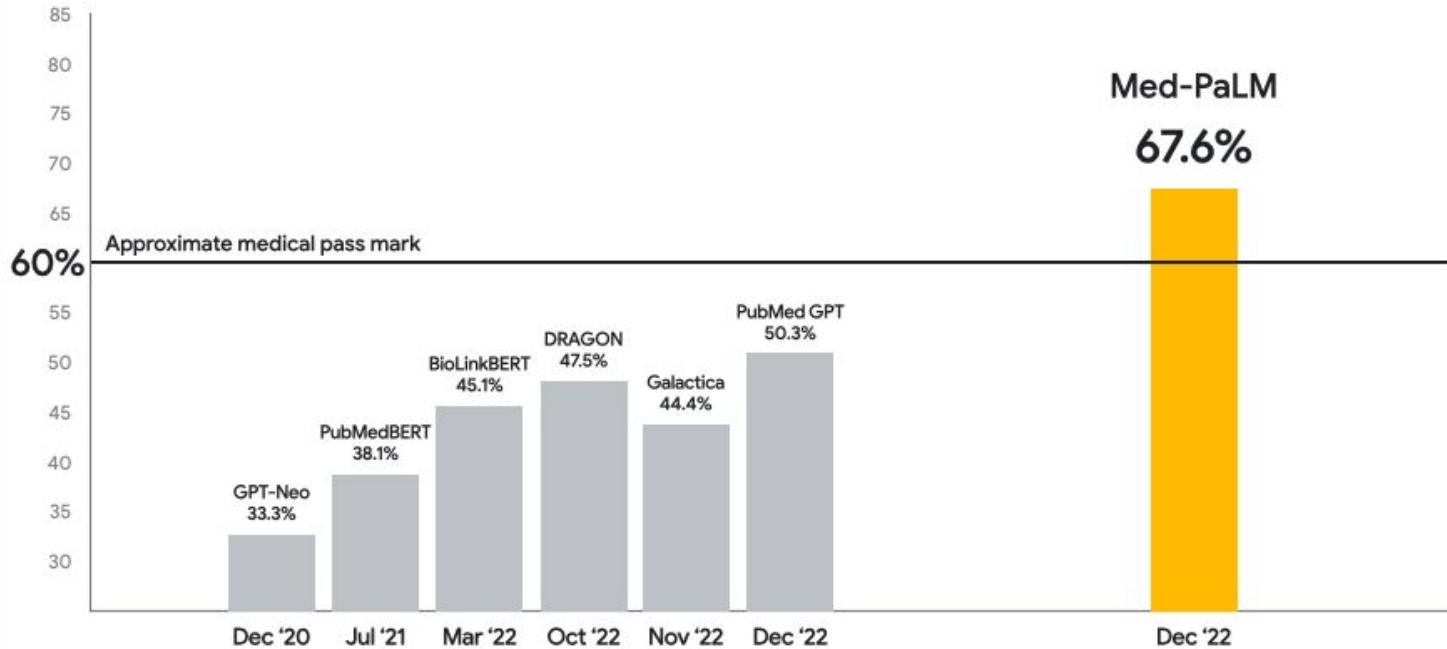
can be used for diagnosis assistance, personalized treatment plans, and drug discovery.



Education (LearnLM)

can personalize learning pathways, automate grading, and provide real-time feedback to students

MedLM





Turn academic papers
into AI-generated
discussions

Generate a conversation

Papers by Jeff Dean in the last year

(4) Efficient learning of distributed representations

(3) Autoregressive Language Models for Machine Comprehension with Knowledge Graphs

(2) Learning continuous query embeddings: A large-scale study

(1) A fast multi-threaded deep learning library for distributed environments

New items



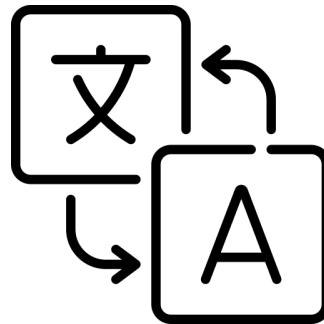
<https://illuminate.google.com/>

Models can be classified by **tasks**



Summarization

Condense lengthy text into concise summaries, extracting key information and main points.



Translation

Convert text or speech from one language to another while preserving meaning and context.

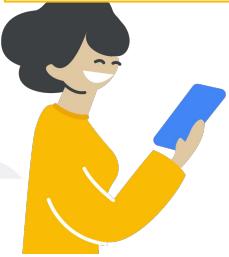


Complex reasoning

Perform tasks requiring advanced cognitive abilities, such as problem-solving, logical deduction, and decision-making based on complex information.

**Other differentiations:
Performance, cost, speed (and
context window).**

But there are also models that are generic, multi-modal and have a long context window.



Complex reasoning :
prompting with a
44-minute movie

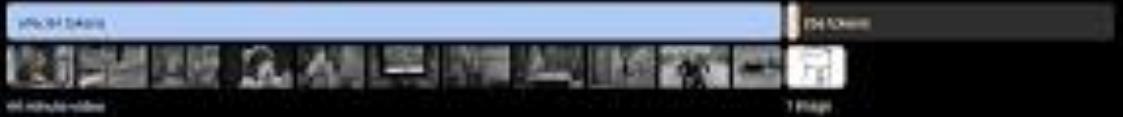
This is a demo of long context understanding, an experimental feature in our newest model, Gemini 1.5 Pro using a 44-minute silent Buster Keaton movie, Sherlock Jr., and a series of multimodal prompts.

Gemini 1.5 Pro

Test: *Sherlock Jr. Movie*
Features: Long context understanding experimental
Data: Recorded Feb 14, 2024
Format: Continuous reprocessing of live model interaction, sequences shortened with response times shown

696,417 tokens

/ 1,000,000 tokens



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Learning and teaching

Faster content creation

At a larger scale than traditional methods

AI can generate various educational materials :

- **Quizzes**
- **Lesson plans**
- **Study guides**
- **Even entire textbooks**

freeing up instructors time for more direct student interaction.

introducing duolingo max, a learning experience powered by gpt-4

AI and education make a great duo.

MAR 14 | DUOLINGO TEAM



Interactive Experiences

Enhancing Accessibility, Engagement, and Learning

- **Enhanced Accessibility:** Tools like **text-to-speech**, **speech-to-text**, and automatic captioning make educational resources more accessible to students with disabilities.
- **Interactive Experiences:** Generative AI facilitates the creation of interactive **simulations**, **role-playing exercises**, and virtual environments, fostering deeper engagement and understanding.
- **Real-time Feedback and Support:** AI-powered platforms provide students with **instant feedback on assignments** and quizzes, enabling them to **identify and correct errors quickly**, enhancing their learning process.

how duolingo uses ai to create lessons faster

Duolingo's human teaching experts are using AI to make new lessons faster than ever!

JUN 22 | PARKER HENRY





Flags

Assign



Algebra basics



UNIT 3: LESSON 3



Multi-step equations



Equations with variables on both ...



Equations with variables on both ...

Not started



Equations with parentheses



Equations with parentheses

Mastered • 100%



Equations with parentheses

CCSS.Math: 8.EE.C.7, 8.EE.C.7b Google Classroom

Solve for m .

$$3 - 2(9 + 2m) = m$$

$$m = \boxed{}$$

Stuck? [Review related articles/videos or use a hint.](#)[Report a problem](#)

Start over

Do 4 problems



Check

Streamlining administrative tasks

Communication & Marketing

What should we **create** today, Rihana?

[Copy](#)[Images](#)[Audio](#)[Insights](#)

NEW

[Ideas](#)

NEW

[Execution](#)[Custom](#)

New Features 🎉

- [Plan on a Page Assistant](#) — Create a Plan on a Page from the official template and out best-practices. Receive tips, feedback, and next steps.
- [Marketing Brief Assistant](#) — Create a Marketing Brief using our official template and best-practices. Start from scratch or receive feedback on an existing brief.
- [Spark Insights](#) — Query ~3,000 marketing research reports from marketing insights teams across Google and create custom summaries to inspire your campaigns.

Hi there! 🌟 Choose one of the options above or start entering a prompt below to get started.

Let's create something amazing together! 🚀

[Style & Tone](#)[en](#)

But how much would that be?

Model	Feature	Type	Price (=< 128K input tokens)	Price (> 128K input tokens)
Gemini 1.5 Flash	Multimodal	Image Input	\$0.00002 / image	\$0.00004 / image
		Video Input	\$0.00002 / second	\$0.00004 / second
		Text Input	\$0.00001875 / 1k characters	\$0.0000375 / 1k characters
		Audio Input	\$0.000002 / second	\$0.000004 / second

1. Estimate average interaction length:

- Assume an average user query (input) is 500 characters (0.5k)
- Assume an average model response (output) is 1000 characters (1k)

2. Calculate the cost of a single interaction:

- Input cost: $0.5\text{k characters} * \$0.00001875/1\text{k characters} = \0.000009375
- Output cost: $1\text{k characters} * \$0.0000375/1\text{k characters} = \0.0000375
- Total interaction cost: $\$0.000009375 + \$0.0000375 = \$0.000046875$

3. Determine the number of interactions for \$1:

- Interactions needed: $\$1 / \$0.000046875 \text{ per interaction} \approx 21,333 \text{ interactions}$

Therefore, it would take approximately 21,333 interactions for one person to achieve \$1 of consumption with the model.

Streamlining administrative tasks

Communication: Generate tailored communications for prospective students, increasing engagement and conversion rates.

Student Performance Analysis: Understanding learning patterns and identifying areas for improvement.

Course Efficacy Evaluation: Assessing the effectiveness of teaching methods and curriculum design.



In less than a year, ChatGPT and generative AI have moved from peripheral awareness to priority focus for many higher education institutions across the country. These tools involve a loop of human-generated questions and AI-generated responses, catalyzing the consideration of multiple potential uses in higher education:

- Students' use for research, content development, and academic assignments
- Administrative staff use for report writing, data analysis, and enhanced student support
- Faculty use to accelerate lesson planning and teaching material development

X

Invite to Executive Briefing

Compose invite

-

Help me write

X

Write to my partner inviting them to a happy anniversary!

Create

Cancel

Data Analysis :

Student performance analysis



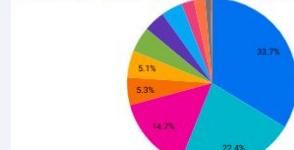
Considering Completed orders , show revenues by each country

13 min



Here is the total revenue generated from completed orders for each country.

China United States Brazil South Korea France
United Kingdom Spain Germany Japan Australia



▼ Insights

Open in report Edit chart type

▼ How was this calculated?

Order Items - Looker Demo Unification

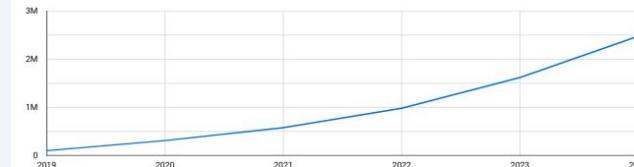


Show revenues by year for the 2 top selling countries

0 min



Here is the total revenue by year for China and the United States from the year 2019 to 2024.



▼ Insights

Open in report Edit chart type

▲ How was this calculated?

Order Items - Looker Demo Unification

- Selected columns Orders Created Year and Order Items Total Sales Price .
- Filtered data for Users Country with values China and United States .
- Calculated the sum of Order Items Total Sales Price for each Orders Created Year to get the Order_Items_Total_Sales_Price .
- Grouped data by Orders Created Year .
- Sorted the results by Orders Created Year in ascending order.



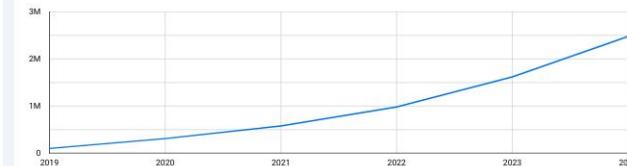
show revenues by year for the 2 top selling countries

Proprietary + Confidential

4 min



Here is the total revenue by year for China and the United States from the year 2019 to 2024.



▼ Insights

Open in report Edit chart type

▼ How was this calculated?

Order Items - Looker Demo Unification

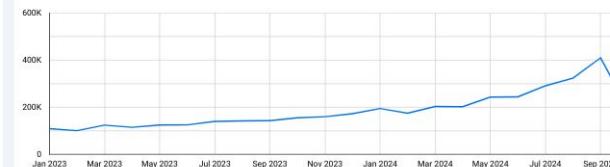


Show by month in the last 2 years

1 min



Here is the total revenue by month for China and the United States from January 2023 to December 2024.



▼ Insights

Open in report Edit chart type

▲ How was this calculated?

Order Items - Looker Demo Unification

- Selected columns Order Items Created Month and Order Items Total Sales Price .
- Renamed Order Items Total Sales Price to Order_Items_Total_Sales_Price .
- Filtered data for Order Items Created Date between 2023-01-01 and 2024-12-31 to only include data from 2023 and 2024.
- Filtered data for Users Country to include China and United States .
- Grouped the data by Order Items Created Month .
- Sorted the results by Order Items Created Month .

Looker - conversational analytics

General efficiency and automation : Insights Extraction

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Opportunities



The ROI of Gen AI

A global survey of enterprise
adoption and value

Gen AI helps fuel rapid financial growth.

74% of enterprises using gen AI report ROI within the first year, with 86% of those reporting increased revenue noting a 6% or more increase.

Gen AI helps boost productivity and business performance.

45% of organizations that report improved productivity have seen employee productivity double or more as a result of gen AI, while 63% report that gen AI has directly driven business growth. 85% of those who report an improved user experience also report measurable improvement to user engagement.

Shared C-level sponsorship helps maximize gen AI's potential.

91% of organizations with robust C-level support that also report increased revenue estimate a 6% or more increase.

With the speed of business picking up, gen AI helps companies keep pace.

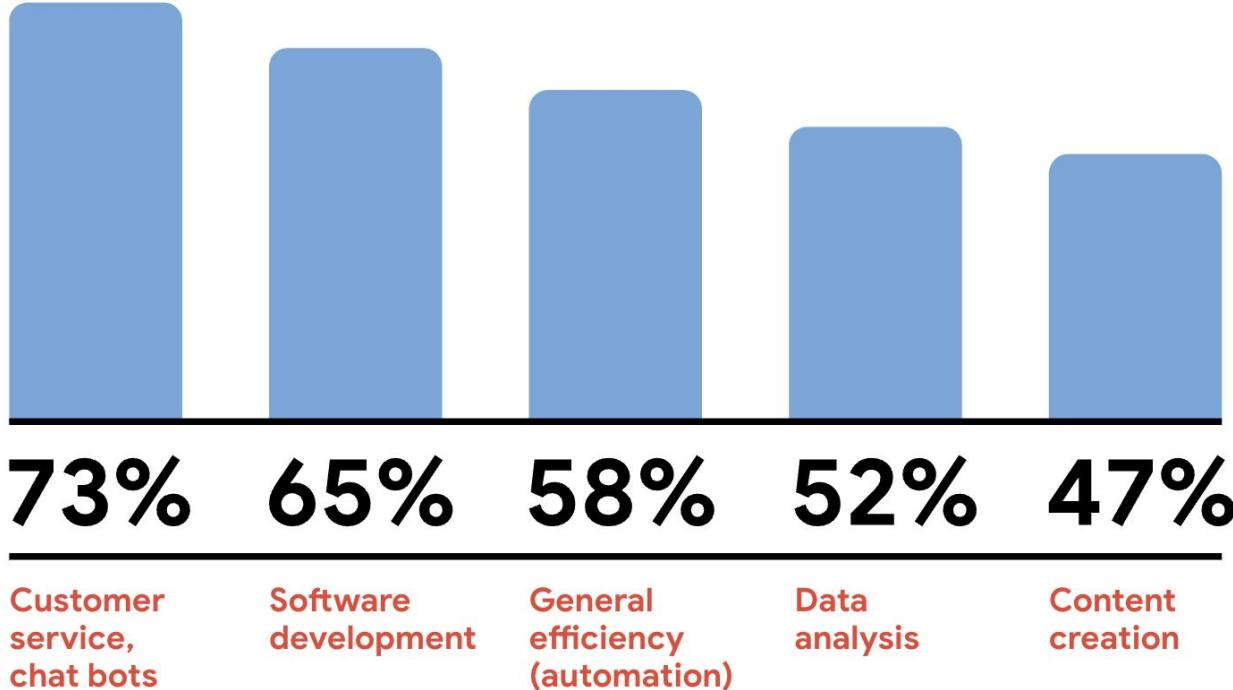
84% of organizations can move a gen AI use case from idea to production in less than six months. This can enable CEOs to see revenue increases within a year, and it can also significantly shorten the innovation cycle and enhance agility in responding to market demands.

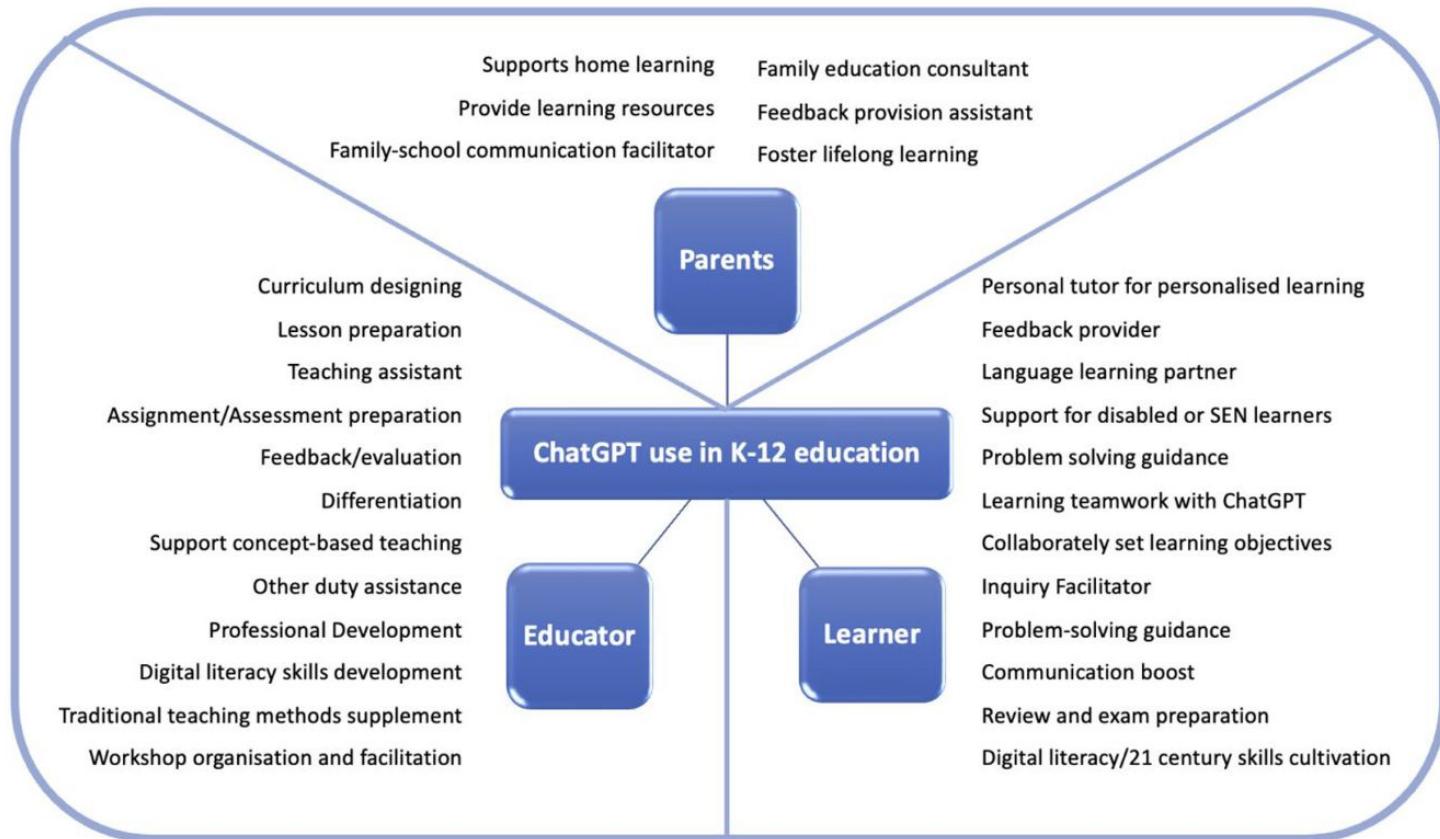
84% of organizations are getting Gen AI projects up and running in less than 6 months

74% are already seeing a return on their investment

Companies using Gen AI are reporting revenue increases of **6% or MORE!**

What are the top Generative AI use-cases that we've seen in the past 2 years?





Source : A systematic review of ChatGPT use in K-12education

Challenges

Consumers & enterprises have different needs....

Consumers

Plan a 3-day trip
to Patagonia

Create a
valentine poem

Generate a picture of a
panda playing yahtzee

Enterprises

How do we
control our data?

How will we
manage **costs**?

How to ensure data
accuracy and **security**?

Hallucinations

Air Canada Held Responsible for Chatbot's Hallucinations

Air Canada's chatbot gave a traveler wrong airfare information. The traveler sued when the airline refused to give a refund



Deborah Yao, Editor
February 20, 2024

⌚ 2 Min Read



AIR CANADA



**Get Forrester's
Budget Planning
Guide 2025**

Boost revenue growth

Latest News





Tune

RLHF
Distillation



Augment

Grounding
Retrieval Augmented
Generation
Extensions



Evaluate

Automatic
side-by-side

Indemnification

Accuracy of results

Opt for Evaluation tools :

1

Automatic Metrics

rougeLSum	0.1345
bleu	0.763

Assess the performance of a model with task-specific metrics computed based on reference data

- Fast and efficient
- Standard method used in academia and many open benchmarks

2

AutoSxS

model_a_win_rate	0.35
model_b_win_rate	0.65

Compare the performance of 2 models with an arbiter model

- Consistent performance with human evaluation, while being faster, cheaper, available on demand

3

Safety Bias

Safety attribute: Toxicity	
GenderID: female	0.89
GenderID: male	0.12
GenderID: transgender	0.02
GenderID: non-binary	0.67

Understand if the safety profile of your model is biased against a certain identity group.

Privacy & security

BREAKING

Samsung Bans ChatGPT Among Employees After Sensitive Code Leak

Siladitya Ray Forbes Staff

Siladitya Ray is a New Delhi-based Forbes news team reporter.

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Help keep your data secure, private, sovereign



Customer
managed
encryption keys



VPC service
controls



Access
transparency



IAM
permissions

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5 simple steps :

Empower your people



Invest in the right use cases



Track KPIs and measure ROI



Pick the right tools



Use Partners to scale



Empower your people





Andrej Karpathy ✅

@karpathy

...

The hottest new programming language is English

9:14 PM · Jan 24, 2023 · 2.7M Views



590



3,649



22.9K



1,625





Harrison Kinsley

@Sentdex

...

AI is advancing so fast that if you try to stay completely up to date and explore everything, you'll likely not actually get anything done.

5:42 PM · Sep 16, 2023 · **105.2K** Views



51



116



1,034



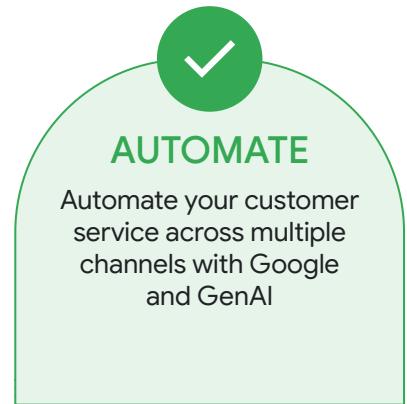
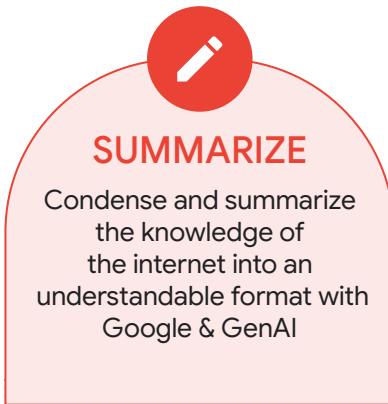
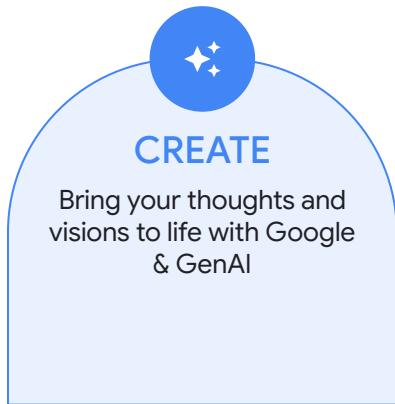
53



Invest in the right use cases



Potential GenAI use cases can be bucketed in 4 areas



Use cases

- Generate descriptions from images
- Improve images
- Code generation

Use cases

- Video summarization
- Intra-Knowledge Q&A

Use cases

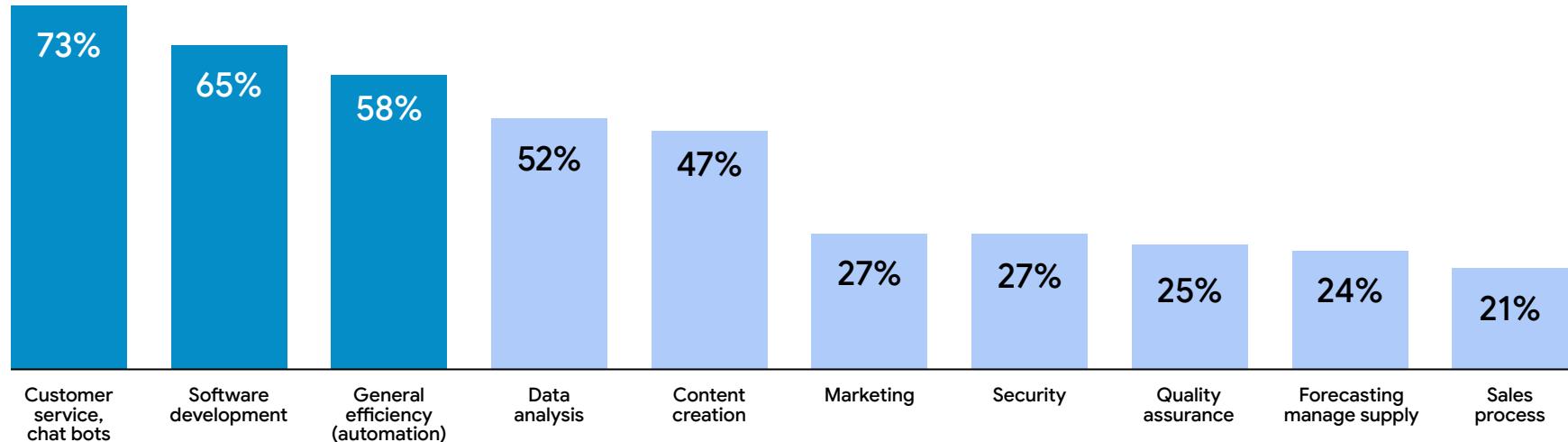
- Search for a document
- Machine generated event monitoring

Use cases

- Contract extraction & classification
- Feedback classification and ticket creation

Top use cases: bots, coding and efficiency*

2024 Priority use cases



*Based on pre-event survey of 113 of Next'23 Leaders Circle attendees

9 steps for launching your first use-case



Step 1

Identify a specific domain

Step 2

Select a persona

Step 3

Determine data sources

Step 4

Create a tiger team

Step 5

Step 6

Step 7

Step 8

Step 9

Define your goals

Design prompts with tiger team

Build UX and UI

Expand to more users

Build an LM operations plan

Track KPIs and measure ROI



Some KPI examples



Accuracy



Productivity



Customer satisfaction



Cost savings



Turnaround time



Quality of output



Error rate



Business impact



Training time and cost



Human-in-the-loop metrics



Scalability



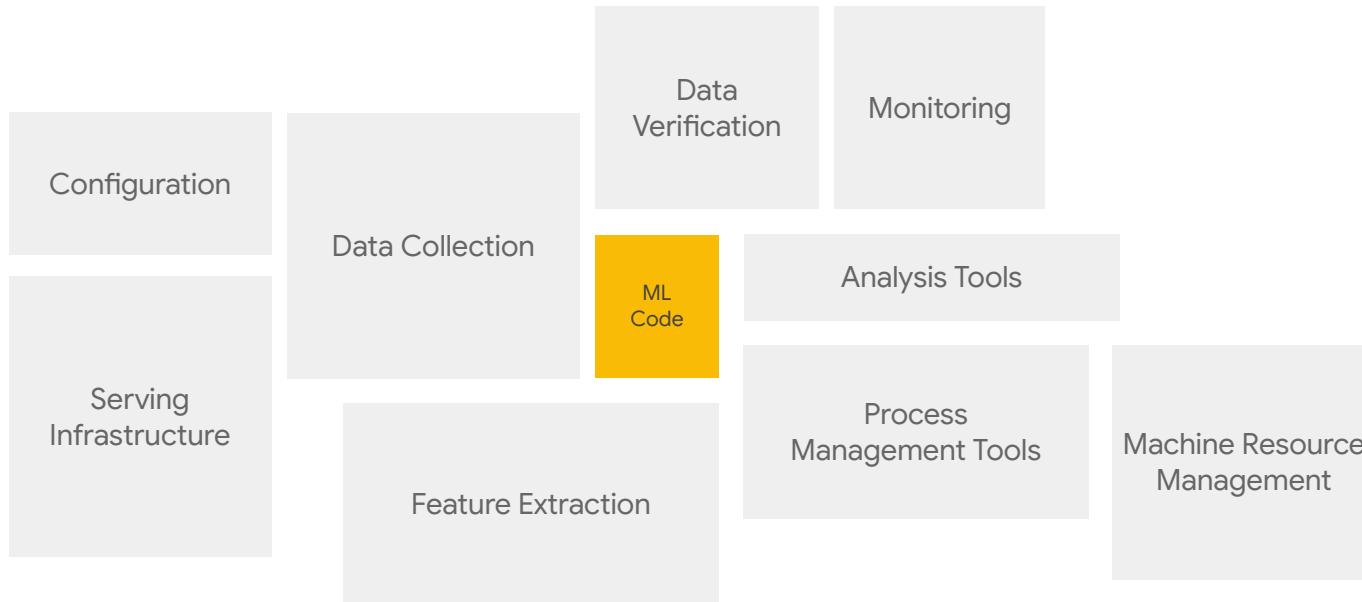
Regulatory compliance

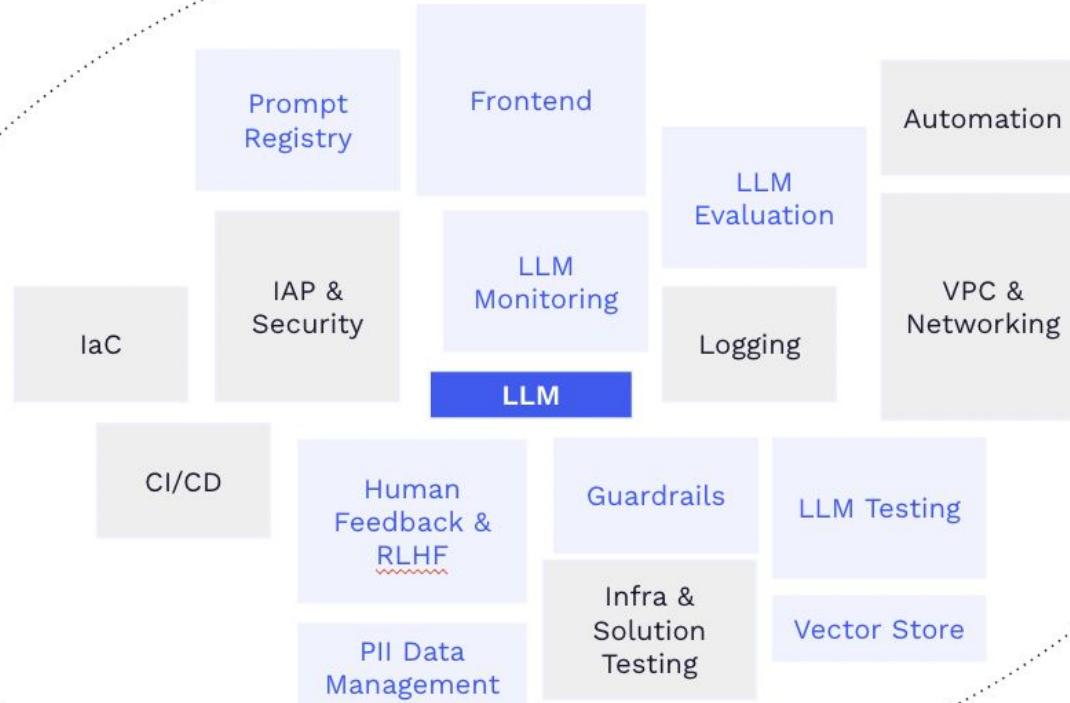
Pick the right tools



Operationalizing Traditional ML is more than just the model

Only 36% of enterprise models graduate to production - IDC AI Strategies View 2020





Use partners to scale



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Conclusion & QA

Thank you!

For any questions..



Rihana Msadek (She/Her)

AI Customer Engineer @ Google | Guiding Senior Leaders in AI Adoption

Top Artificial Intelligence (AI) Voice

Canada · [Contact info](#)

11,649 followers · 500+ connections

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Rihana Msadek

AI Customer Engineer @ Google | Guiding Senior Leaders in AI Adoption



A circular portrait of Rihana Msadek, a woman with long brown hair and glasses, smiling at the camera. She is wearing a patterned jacket and a necklace. The background shows a restaurant or cafe with other people and a cityscape view.

Rihana Msadek

- 7 years of experience in Machine learning designing and deploying cutting-edge AI solutions for businesses across Canada and the US.
- AI Implementer : had the chance to implement ML solutions for 100+ customers at IBM and Google.
- Trusted advisor : provides strategic guidance for senior leaders on AI adoption and navigation for complex AI landscapes.
- Currently works as AI Customer Engineer at **Google**.
- Part time : Generative AI instructor at **McGill University's School of Continuing Studies (SCS)**

Lab link :

<https://github.com/rihanamsaddek/AI-applications-lab>

Appendix

How AI helps us create lessons

AI is nothing new at Duolingo. In fact, we've been using an [AI model called "Birdbrain"](#) to make sure the exercises you see on Duolingo are at the perfect difficulty level based on your strengths and weaknesses. Until now, every single exercise chosen by Birdbrain was written, reviewed, edited, and translated by human experts who constantly think about maximizing both the entertainment and learning value of every Duolingo lesson.

Today, we've moved into using AI to create these exercises. The Large Language Model can learn a lot from seeing the examples of Duolingo content we learning experts have already created, but it still needs a lot of help from us humans—in fact, we're constantly adjusting the instructions we give the model. Think of AI as a wind up toy. If you move it, it will move, but if we want it to go in the right direction, we've got to build

FORBES > LEADERSHIP > CAREERS

Generative AI In Classrooms: Cheating Or The Future Of Education?

Nirit Cohen Contributor 

Nirit Cohen covers the Future of Work, bridging trends with solutions.

Follow

2

Sep 22, 2024, 10:15am EDT

Updated Sep 23, 2024, 11:03am EDT

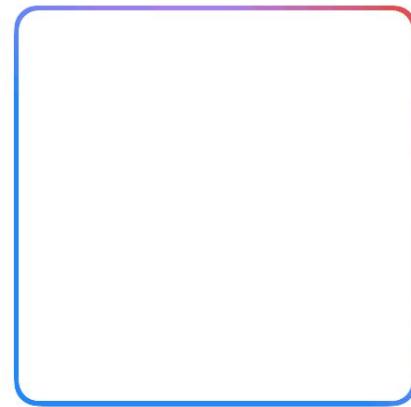
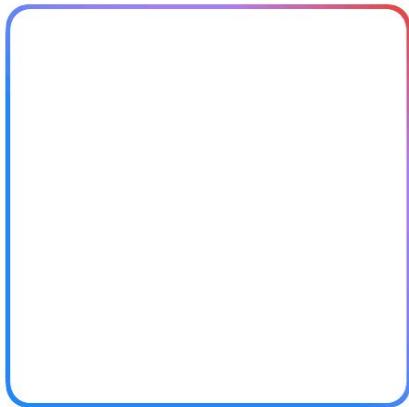


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- Administrative staff use for report writing, data analysis, and enhanced student support
- Faculty use to accelerate lesson planning and teaching material development

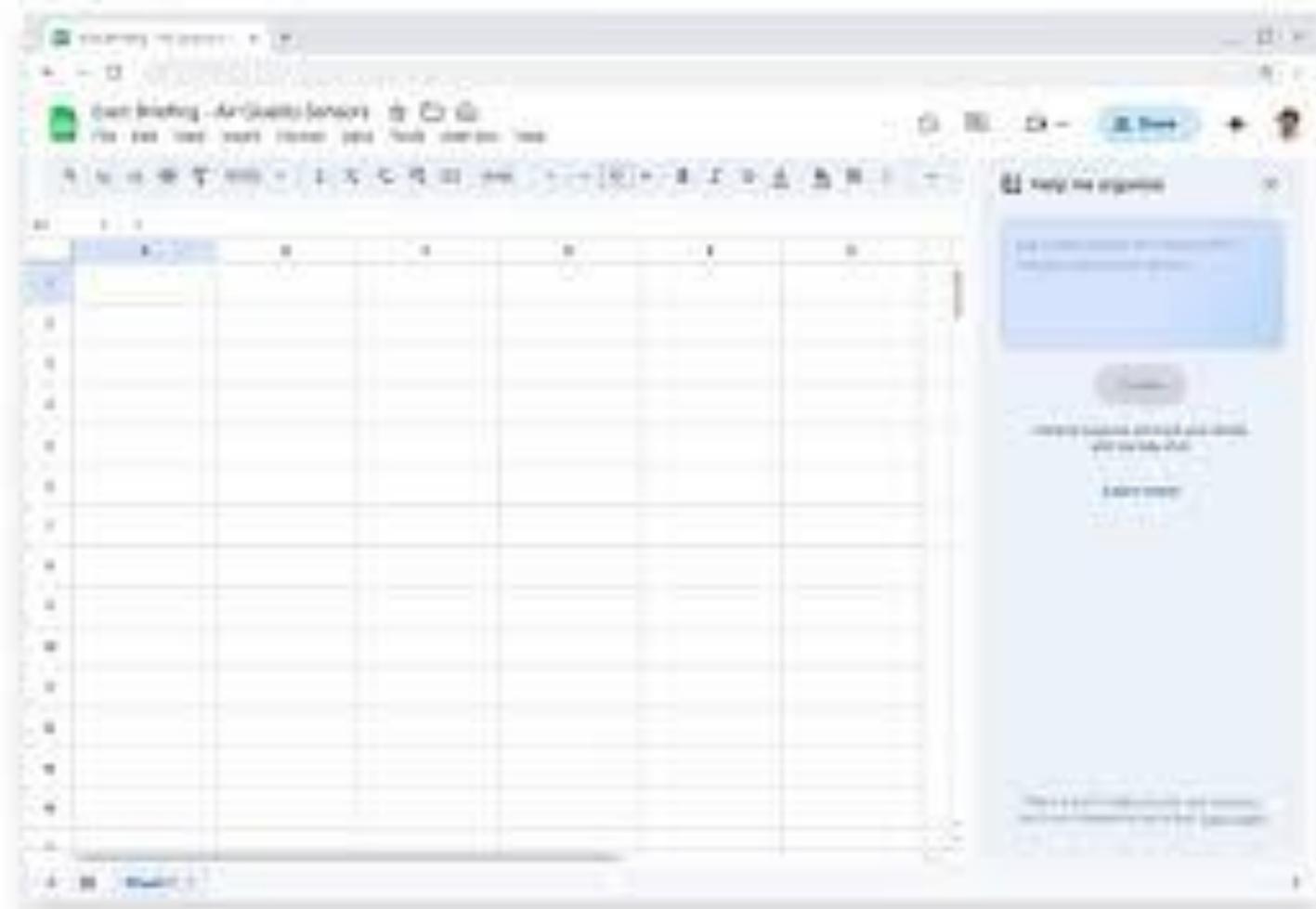
Image Generation

Generate high quality images for your content



Control around style and aesthetics | improved targeting and performance | customize with your own images





Add a style



No style



Photography



Illustration



Flat lay



Background



Clipart

