OpenAI's GPT-4 and other large language models (LLMs) have the potential to revolutionize technical communication. However, there are several challenges we must overcome and concepts we must learn to harness their full power. In this session, I will provide an overview of current AI tools and core concepts/technologies, and we will explore real-world examples of how AI can dramatically influence how we create technical content and how people will access and use our technical content.

Overview

How does generative AI work?

- Training feeds the model about a trillion words
- Words become tokens
- Each token become thousands of vectors (lots of numbers--GPT-3 uses 12,288)
- Vectors are used to create vector spaces based on comparison to the training
- Vector spaces are used to identify parts of speech, context, relationships (cat)
- Each token shares all info about itself with all other words in prompt/output
- LLM predicts the next word based on all of the info
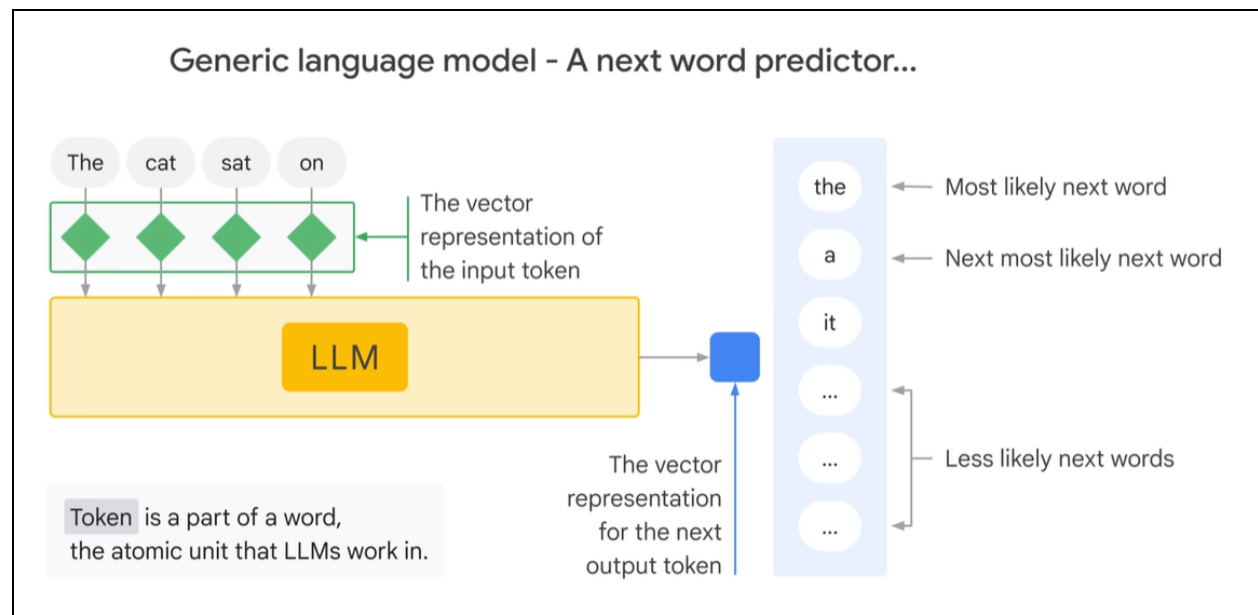
arstechnica.com/science/2023/07/a-jargon-free-explanation-of-how-ai-large-language-models-work

History

1936 Alan Turing

- Turing test - a machine could be considered "thinking" if a conversation with it is indistinguishable from a conversation with a human

- Church–Turing thesis - "implies that a mechanical device can imitate any conceivable process of mathematical deduction"

1957 Frank Rosenblatt

Built first "learning machine" - perceptron

2000s Geoffrey Hinton, Yann LeCun, and Yoshua Bengio

Proved that neural networks built upon multiple layers and a huge number of connections can enable machine learning.

- Neural networks

- Unsupervised learning

2012 Moore's Law

Hardware and data sets advance far enough to support machine learning.

2017 Transformers and attention mechanisms

"Attention Is All You Need"
Attention mechanisms allow neural networks to focus on specific parts of the input to determine and "remember" the syntactic and semantic relationships between words.

- Google Brain team (Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan Gomez, Lukasz Kaiser, Illia Polosukhin)
arxiv.org/abs/1706.03762

2018-2023 Transformer-based Large Language Models (LLMs)

- OpenAI (and now Microsoft) - GPT 1, GPT 2, GPT 3, GPT 3.5, GPT 4

- Anthropic AI - Claude and Claude 2

- Meta & Microsoft - LLaMA and LLaMA 2

- Google - PaLM, PaLM 2, and LaMDA (Bard)

Impact

ChatGPT

- Reached 100 million active monthly users in 2 months

- $10 billion investment from partner Microsoft

Market: current

- 98% of executives believe generative AI will be essential to their strategy going forward.

- Accenture doubling number of AI employees from 40,000 to 80,000 and spending $3 billion.

- Accenture
www.accenture.com/us-en/insights/technology/generative-ai

Market next decade

- Generative AI market will double every 2 years for the next decade.

- 2032 market estimate: $200B.

- Deloitte
www2.deloitte.com/us/en/pages/consulting/articles/generative-artificial-intelligence.html

Disruption

Employees
Generative AI tools like ChatGPT could lead to "significant disruption" in the labor market and affect around 300 million full-time jobs globally.

- Goldman Sachs
www.businessinsider.com/generative-ai-chatpgt-300-million-full-time-jobs-goldman-sachs-2023-3

Management
"AI may not replace managers, but the managers that use AI will replace the managers that do not."

- Rob Thomas, chief commercial officer at IBM

Corporate: Chegg
- Stock went down 50% in one day because of GPT-4's impact on its subscriber growth.

- Partnered with Open AI to create CheggMate.

Productivity impact

Globally
- AI is projected to increase annual global GDP by $7 trillion.

- AI will increase productivity growth by 1.5% over the next decade.

- Goldman Sachs
www.goldmansachs.com/intelligence/pages/generative-ai-could-raise-global-gdp-by-7-percent.html

Small business
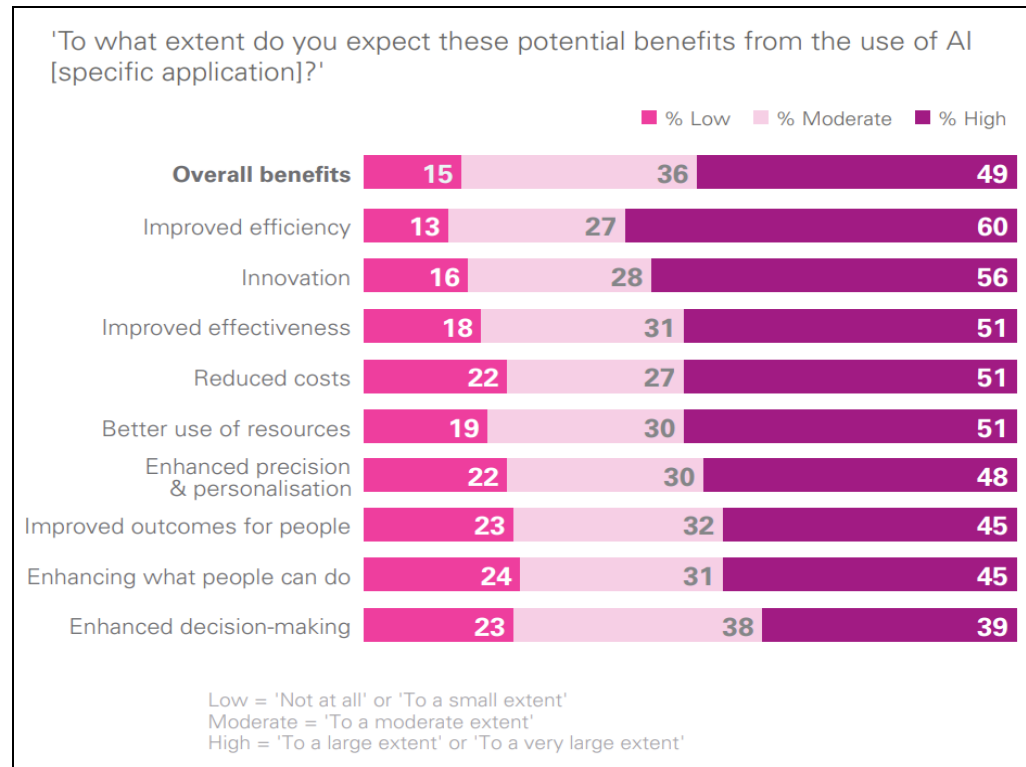- 91% of small business owners using AI say it has made their companies more successful.

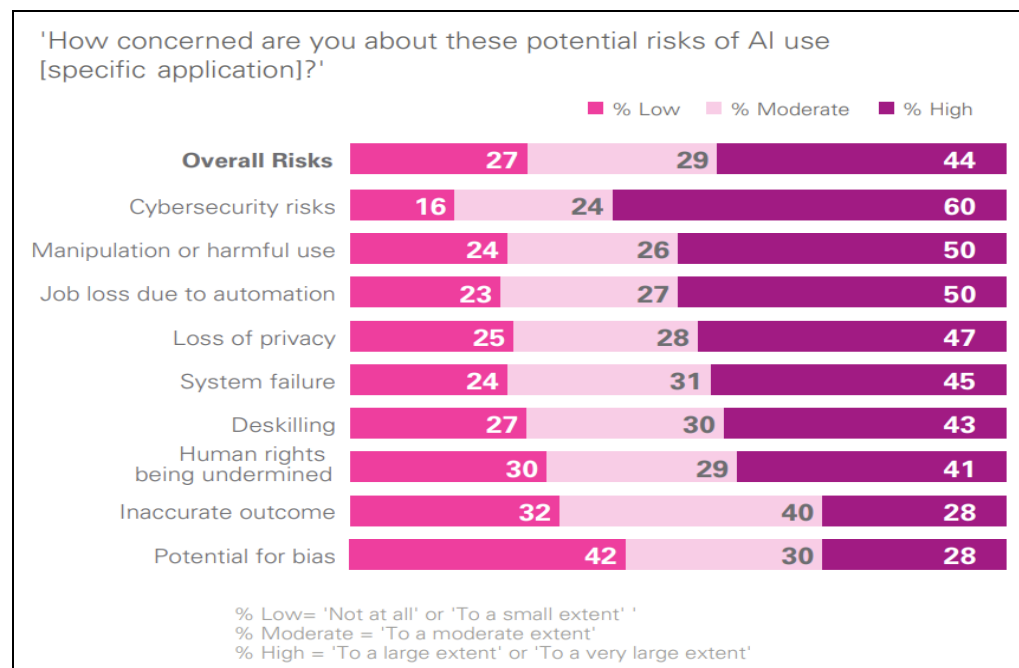- 28% of those respondents said they expect it to save them at least $5,000 over the next year.

- Constant Contact survey
www.constantcontact.com/blog/small-business-now-report

User sentiment

'To what extent do you expect these potential benefits from the use of AI [specific application]?'

	% Low	% Moderate	% High
Overall benefits	15	36	49
Improved efficiency	13	27	60
Innovation	16	28	56
Improved effectiveness	18	31	51
Reduced costs	22	27	51
Better use of resources	19	30	51
Enhanced precision & personalisation	22	30	48
Improved outcomes for people	23	32	45
Enhancing what people can do	24	31	45
Enhanced decision-making	23	38	39

Low = 'Not at all' or 'To a small extent'
Moderate = 'To a moderate extent'
High = 'To a large extent' or 'To a very large extent'

"Trust in Artificial Intelligence: A global study." 2023. KPMG.
assets.kpmg.com/content/dam/kpmg/au/pdf/2023/trust-in-ai-global-insights-2023.pdf

'How concerned are you about these potential risks of AI use [specific application]?'

	% Low	% Moderate	% High
Overall Risks	27	29	44
Cybersecurity risks	16	24	60
Manipulation or harmful use	24	26	50
Job loss due to automation	23	27	50
Loss of privacy	25	28	47
System failure	24	31	45
Deskilling	27	30	43
Human rights being undermined	30	29	41
Inaccurate outcome	32	40	28
Potential for bias	42	30	28

% Low= 'Not at all' or 'To a small extent' '
% Moderate = 'To a moderate extent'
% High = 'To a large extent' or 'To a very large extent'

"Trust in Artificial Intelligence: A global study." 2023. KPMG.
assets.kpmg.com/content/dam/kpmg/au/pdf/2023/trust-in-ai-global-insights-2023.pdf

User expectation

- Google's Search Generative Experience (SGE)
- Microsoft Bing

To install your NETGEAR AX1800 router, you need to [1] [2] :

- Download the Nighthawk app on your mobile phone.
- Attach the antennas (if any) and connect your modem to the Internet port on your router.
- Power on your router and wait for the WiFi LED to light.
- Look on the router label for your router's WiFi network name (SSID) and network key (password).
- Connect your mobile device to the network that is listed on your router's label and enter the password.
- Follow the instructions on the Nighthawk app to complete the setup.

Learn more: 1. kb.netgear.com 2. manuals.plus

Issues

Hype cycle

Generative AI is at the "peak of inflated expectation"
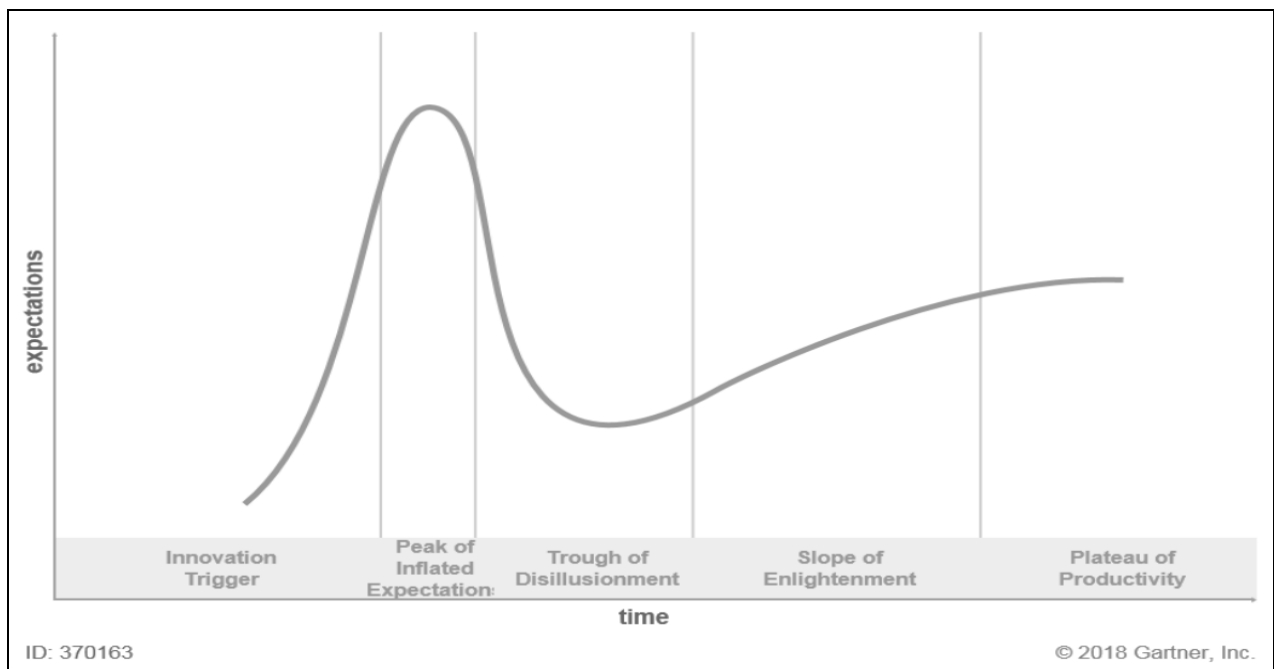
www.gartner.com/en/documents/3887767

Hallucinations

Concern

Generative AI prioritizes providing an answer over providing a factual answer.

Solution

Request sources in the prompt.

Drift

Concern

March 2023: GPT-4 84% accuracy identifying prime numbers

June 2023: GPT-4 51% accuracy

Solutions

- Reinforced learning and/or post-training

- User feedback

Chen, L., Zaharia, M., & Zou, J.Y. (2023). How is ChatGPT's behavior changing over time? ArXiv, abs/2307.09009.
arxiv.org/pdf/2307.09009.pdf

Bias

Concern

Incomplete and/or invalid training data, model architecture, or optimization that results in stereotyped and/or discriminatory outputs.

Solutions

- Architecture/optimization adjustments

- Reinforce learning

- Human supervision

Freshness

Concern

ChatGPT doesn't have access to "live" information. It can't even tell you anything about the past several months.

Solution

Plugins

Energy use

Concern

Creating GPT-3:

- 1,287 megawatt hours of electricity consumed

- 552 tons of CO_2 generated: equivalent of 123 gasoline-powered passenger vehicles driven for one year

- Kate Saenko, Scientific American

www.scientificamerican.com/article/a-computer-scientist-breaks-down-generative-ais-hefty-carbon-footprint

Solutions
- Models "training" models
- Reuse

Copyright protection

Concern
- Copyright law
  Does not limit transformative use: analysis, synthesis, parody. Can be used for LLM training.
- Authors Guild v. Google
  Summary judgment for Google to digitize copyrighted works and provide access to snippets through a searchable database.

en.wikipedia.org/wiki/Authors_Guild,_Inc._v._Google,_Inc.

Solution
robots.txt

```
User-agent: GPTBot

Disallow: /
```

```
User-agent: GPTBot

Allow: /directory-1/

Disallow: /directory-2/
```

Domain- and corporate-specific knowledge

Concern
LLMs are trained on public information.

Solution
Retrieval-augmented generation (RAG) - enhancing pre-trained LLMs with enterprise content

Over reliance

Concern
"There is great danger of coming to rely so entirely on [generative AI] that the wheels of initiative will be broken, or at least become rusty from long disuse."

Over reliance

Concern

People will rely on generative AI and lose skills/knowledge.

Solution

We have faced and overcome this issue for over 100 years.

"There is great danger of coming to rely so entirely on **the electric button** that the wheels of initiative will be broken, or at least become rusty from long disuse."

Fisher, D. C. 1916. Self-reliance: A Practical and Informal Discussion of Methods of Teaching Self-reliance, Initiative and Responsibility to Modern Children. United States: Bobbs-Merrill Company.

Supervision

Concern

Generative AI content being used "as is."

Solution

Singapore's AI Governance Framework (2019)

Developed to help organizations adopt AI responsibly and effectively
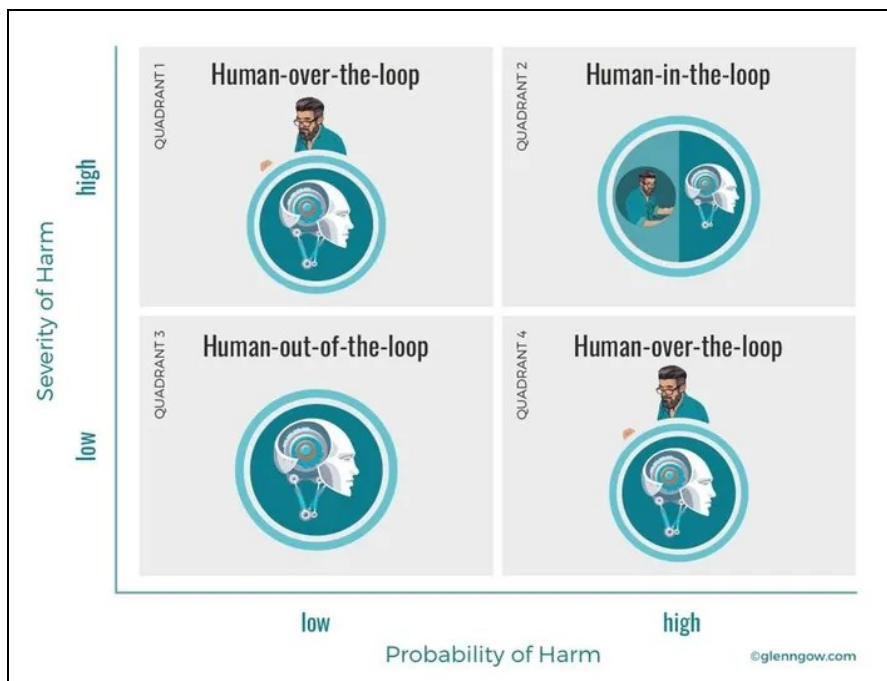
Ethics

"Ethics in the Age of Disruptive Technologies: An Operational Roadmap"

Vatican's Dicastery for Culture and Education in partnership with Santa Clara University's Markkula Center for Applied Ethics

www.scu.edu/institute-for-technology-ethics-and-culture

Google's "Objectives for AI Applications"

- Be socially beneficial.

- Avoid creating or reinforcing unfair bias.

- Be built and tested for safety.

- Be accountable to people.

- Incorporate privacy design principles.

- Uphold high standards of scientific excellence.

- Be made available for uses that accord with these principles.

ChatGPT

Four things ChatGPT will not do:

- Predict the future

- Advise or assist in criminal activities

- Provide private data

- Create malware

AI & Technical Writing

General writing AI tools

- canva.com

- copy.ai

- grammarly.com

- hemingwayapp.com

- jasper.ai

- quillbot.com

- writesonic.com

Impact: management opinion

"When you think about an organization like ours, we have 360,000 people, we have lots of tools and capabilities built in the more than 100 years of our history. But that **knowledge is** distributed now. You can't really touch it. It's **the soul of our organization**, but it's immaterial. If you could systematize it into an ontology and make it part of a technology solution, you can increase enterprise value significantly."

- Nicola Morini Bianzino, Global CTO, EY
venturebeat.com/ai/chatgpts-killer-enterprise-use-case-will-be-managing-knowledge-says-ey-cto

Impact: our opinion

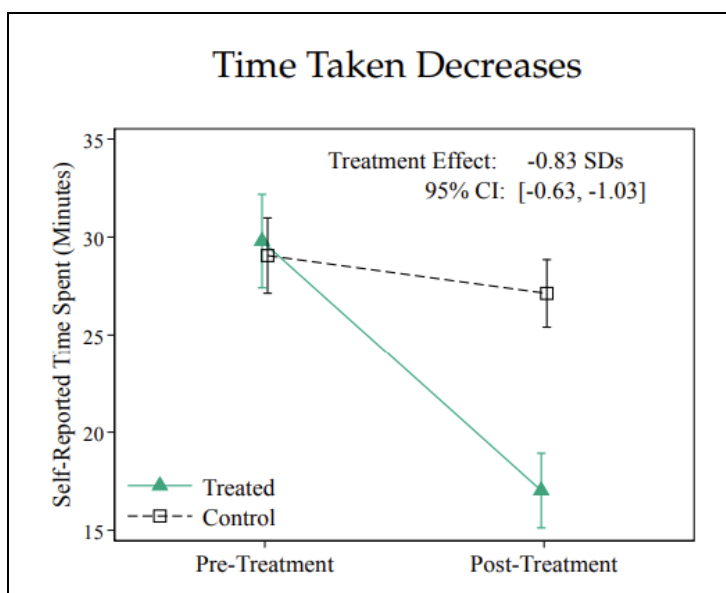"How likely is it that AI tools will have a transformative impact on tech comm?"
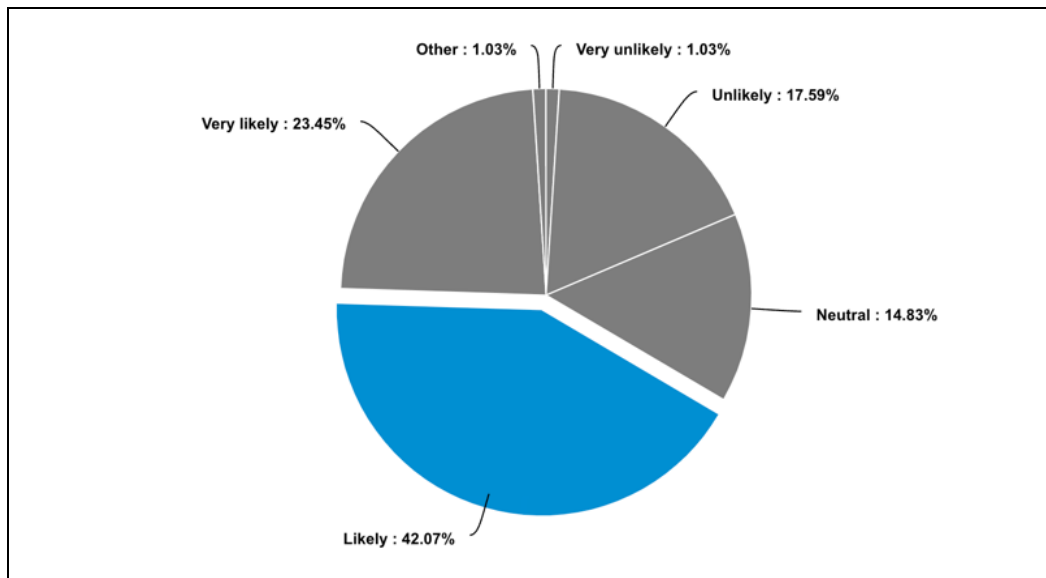
idratherbewriting.com/blog/survey-analysis-tech-writers-on-ai

Results
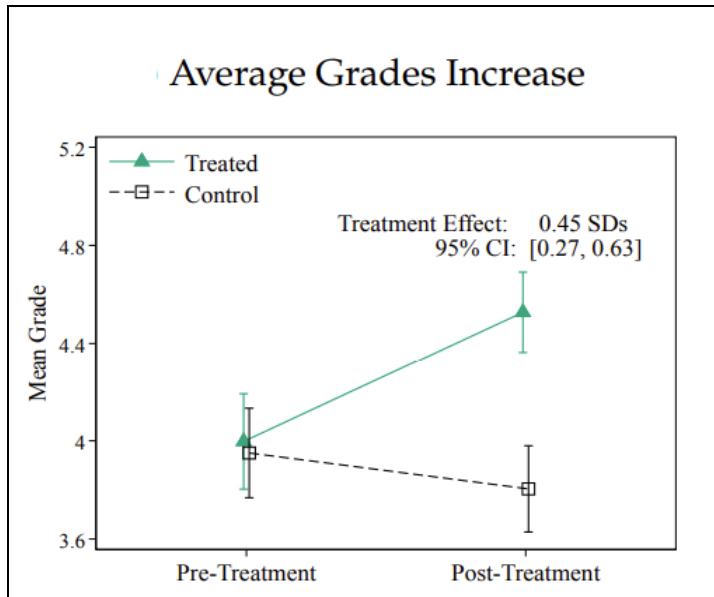
Reduce task time

40% less time to complete policy reports
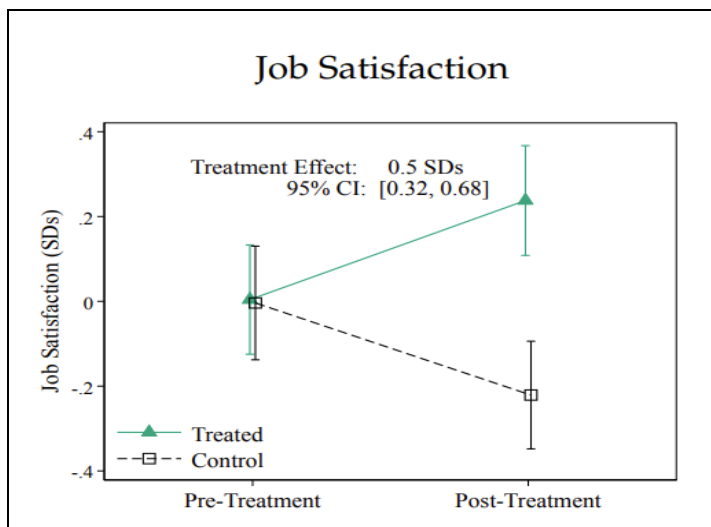

Shakked Noy, Whitney Zhang. 2023. "Experimental evidence on the productivity effects of generative artificial intelligence." *Science* 381,187-192.
economics.mit.edu/sites/default/files/inline-files/Noy_Zhang_1.pdf

Increase quality

18% increase in quality

Average Grades Increase

Shakked Noy, Whitney Zhang. 2023. "Experimental evidence on the productivity effects of generative artificial intelligence." *Science* 381,187-192.

economics.mit.edu/sites/default/files/inline-files/Noy_Zhang_1.pdf

Increase job satisfaction

20% increase in job satisfaction

Job Satisfaction

Shakked Noy, Whitney Zhang. 2023. "Experimental evidence on the productivity effects of generative artificial intelligence." Science 381,187-192.

economics.mit.edu/sites/default/files/inline-files/Noy_Zhang_1.pdf

New career option: prompt engineer

"The hottest new programming language is English."

- Andrej Karpathy, former Chief of AI, Tesla, now with OpenAI

"It's not a science. It's 'let's poke the bear in different ways and see how it roars back.'"

- Shane Steinert-Threlkeld, linguistics professor at University of Washington

Tasks

- Write prompts to test and validate AI
- Look for bias and hallucinations and test AI reasoning
- Determine which words generate the best response
- Test, experiment, iterate.

Skills

- Strong verbal and written communication skills
- Programming proficiency or understanding
- AI and general technology knowledge
- Data and information analysis

Salaries

Anthropic: US$250-335K

twitter.com/swyx/status/1616541173996482560

Example uses

Meetings

Otter AI Chat - otter.ai

Zoom AI Companion - blog.zoom.us/zoom-ai-companion

Research

Troubleshooting

Bing Chat: "What are common troubleshooting tips for an Omnia hearing aid?"
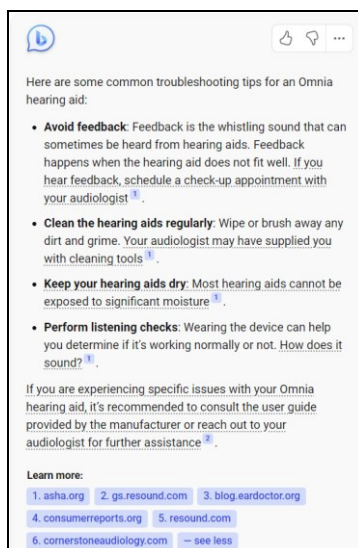
Competitor research (motor graders)

"Create a table comparing the top five motor graders rated by the five most important features."

Create a table comparing the top five motor graders rated by the five most important features.

Alright! Here's a comparison table of the top five motor graders based on the five most common features:

Motor Grader	Engine Power (HP)	Operating Weight (tons)	Blade Width (ft)	Fuel Efficiency (hours/tank)	Control Features
Caterpillar 140M3	250	42	14	10	Advanced joystick controls, Automated blade assist
Komatsu GD675-7	218	38	13.5	11	Proactive Dozing Control, Dual mode transmission
John Deere 872GP	275	44	14.3	9.5	JDLink telematics, Adaptive Load Control
Volvo G946C	260	43	14.2	10.5	Single lever control, On-board weighing
CASE 885B	220	39	13.8	10	Advanced Instrument Cluster, Proportional control

Please note that the above numbers and features are hypothetical and for illustrative purposes only. Actual specifications may vary based on the specific model, region, and updates by the manufacturer. Always refer to the manufacturer's official specifications when making a purchasing decision.

Outline & draft

"You are a professional technical writer creating a user manual. Create a detailed outline for a Tinnitus Sound Generator (TSG) Module."

You are a professional technical writer creating a user manual. Create a detailed outline for a Tinnitus Sound Generator (TSG) Module.

Tinnitus Sound Generator (TSG) Module User Guide

Outline:

1. Introduction
   * What is a Tinnitus Sound Generator (TSG) Module?
   * Purpose and Benefits of the TSG Module
2. Safety Precautions
   * General Safety Guidelines
   * Contraindications and Warnings
3. Package Contents
   * List of Items Included
   * Overview of Each Component
4. Getting Started
   * Initial Setup
   * Battery Installation/Charging (if applicable)
   * Turning the Device On/Off
5. Basic Operations
   * Adjusting Volume
   * Selecting Sound Profiles
   * Using the Timer Function
6. Advanced Features
   * Customizing Sound Profiles
   * Connecting to Other Devices (e.g., smartphones, hearing aids)
   * Software Updates
7. Maintenance and Care
   * Cleaning the TSG Module
   * Storing the Device
   * Replacing Parts (e.g., earbuds)
8. Troubleshooting
   * Common Issues and Solutions
   * Resetting the Device
9. Technical Specifications
   * Sound Frequency Range
   * Battery Life
   * Connectivity Options
10. Warranty and Support
    * Warranty Information
    * Contacting Customer Support
11. Frequently Asked Questions (FAQs)
12. Glossary of Terms

If you need more detailed examples or have specific requirements, please let me know!

Summarize

wikiwand

www.wikiwand.com/en/Inductive_charging

Inductive charging

Type of wireless power transfer / From Wikipedia, the free encyclopedia

Wireless power transfer   History of mobile phones   Battery charger   ...

🤖 DEAR WIKIWAND AI, LET'S KEEP IT SHORT BY SIMPLY ANSWERING THESE KEY QUESTIONS: ...

Can you list the top facts and stats about Inductive charging?   ⌄

Summarize this article for a 10 years old   ⌄

SHOW ALL QUESTIONS ⌄

Inductive charging (also known as **wireless charging** or **cordless charging**) is a type of wireless power transfer. It uses electromagnetic induction to provide electricity to portable devices. Inductive charging is also used in vehicles, power tools, electric toothbrushes, and medical devices. The portable equipment can be placed near a charging station or inductive pad without needing to be precisely aligned or make electrical contact with a dock or plug.

Inductive charging is named so because it transfers energy through inductive coupling. First, alternating current passes through an induction coil in the charging station or pad. The moving electric charge creates a magnetic field, which fluctuates in strength because the electric current's amplitude is fluctuating. This changing magnetic field creates an alternating electric current in the portable device's induction coil, which in turn passes through a rectifier to convert it to direct current. Finally, the direct current charges a battery or provides operating power.[1][2]

Greater distances between sender and receiver coils can be achieved when the inductive charging system uses resonant inductive coupling, where a capacitor is added to each induction coil to create two LC circuits with a specific resonance frequency. The frequency of the alternating current is matched with the resonance frequency, and the frequency is chosen depending on the distance desired for peak efficiency.[1] Recent improvements to this resonant system include using a movable transmission coil (i.e., mounted on an elevating platform or arm) and the use of other materials for the receiver coil such as silver-plated copper or sometimes aluminum to minimize weight and decrease resistance due to the skin effect.

Primary Coil in Charging Plate

Secondary Coil in Device
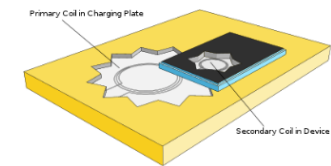
The primary coil in the charger induces a current in the secondary coil in the device being charged.

Multimedia

Captions

simonsaysai.com

Subtitles

aegisub.org

Dub

papercup.com

FAQs

"What are common questions about using Adobe InDesign?"

What are common questions about using Adobe InDesign?

Adobe InDesign is a professional desktop publishing software used primarily for creating layouts for print and digital publishing. Here are some common questions users might have about using Adobe InDesign:

1. **Getting Started:**
   * What is Adobe InDesign used for?
   * How do I set up a new document in InDesign?
   * Can I open and edit PDFs with InDesign?
2. **Working with Text:**
   * How do I link text boxes so that the text flows between them?
   * How can I apply styles to text?
   * How do I wrap text around images or other objects?
3. **Graphics and Images:**
   * How do I import images into an InDesign document?
   * What is the difference between linking and embedding images?
   * How can I ensure my images are of print-quality resolution?
4. **Layout and Design:**
   * How can I use master pages to create consistent layouts?
   * What are grids and guides, and how can I use them effectively?
   * How do I create interactive elements for digital publications?
5. **Output and Exporting:**
   * How do I prepare a document for print?
   * What file formats can I export my document to?
   * How do I create a PDF with interactive elements?
6. **Working with Other Adobe Software:**
   * How do I integrate InDesign with Adobe Illustrator or Photoshop?
   * Can I open an InDesign file in Adobe XD or vice versa?
   * How does InDesign work with Adobe's Creative Cloud?
7. **Advanced Features:**
   * How do I use data merge to create personalized documents?
   * Can I automate tasks in InDesign using scripts?
   * What are GREP styles and how can I use them?
8. **Troubleshooting:**
   * Why are some of my images appearing pixelated or in low quality?
   * Why is my text being cut off in the exported PDF?
   * How do I recover a corrupted InDesign file?
9. **Updates and Versions:**
   * What are the new features in the latest version of InDesign?
   * Do I need to update InDesign regularly? If so, how?
   * How can I ensure compatibility between different versions of InDesign?
10. **Learning and Resources:**
    * Are there any official tutorials or courses from Adobe on InDesign?
    * What books or online resources do you recommend for learning InDesign?
    * How can I join the InDesign community to ask questions and share knowledge?

These are just a selection of common questions about Adobe InDesign. As with any software, users will have a wide variety of questions based on their specific needs and the tasks they are trying to accomplish.

Code examples

"Write a Django code example."

"Write a Django code example."

Certainly! Here's a simple Django code example that demonstrates the creation of a model, a view, and a URL pattern for a basic blog application:

1. **Model (`models.py`):**

```python
from django.db import models

class BlogPost(models.Model):
    title = models.CharField(max_length=200)
    content = models.TextField()
    pub_date = models.DateTimeField('date published')

    def __str__(self):
        return self.title
```

1. **View (`views.py`):**

```python
from django.http import HttpResponse
from .models import BlogPost

def index(request):
    latest_posts = BlogPost.objects.order_by('-pub_date')[:5]
    output = ', '.join([p.title for p in latest_posts])
    return HttpResponse(output)

def detail(request, post_id):
    post = get_object_or_404(BlogPost, pk=post_id)
    return HttpResponse("You're looking at post %s." % post.title)
```

1. **URL Patterns (`urls.py`):**

```python
from django.urls import path
from . import views

urlpatterns = [
    path('', views.index, name='index'),
    path('<int:post_id>/', views.detail, name='detail'),
]
```

This is a very basic example. In a real-world scenario, you'd likely use Django's generic views and templates to render the blog posts in a more structured and styled manner.

If you need more detailed examples or have specific requirements, please let me know!

GitHub Copilot
- Users accept 26% of all code completions
- 27% of GitHub Copilot users' code files are generated by GitHub Copilot (Python was 40%)

API documentation
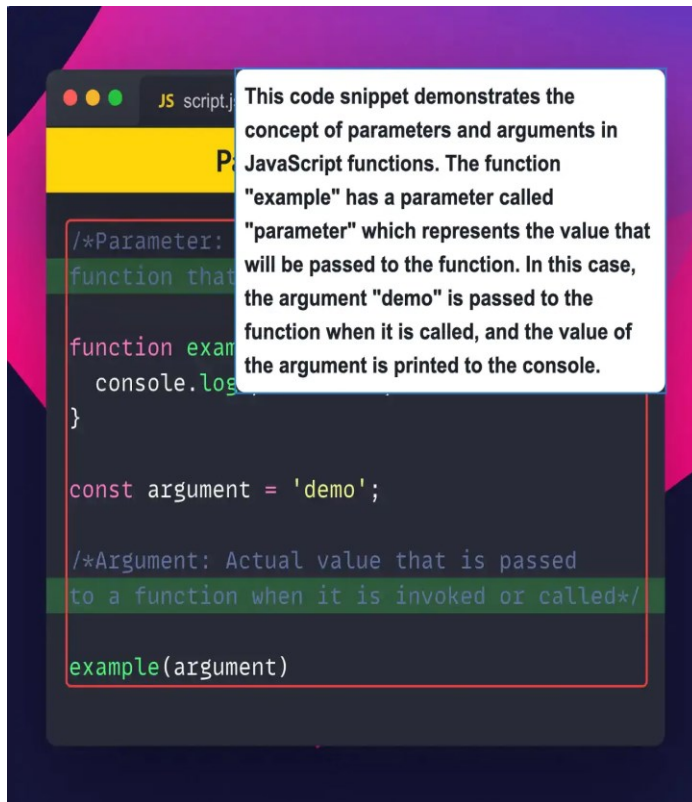
Custom documentation

Database-driven documentation

Simplified example based on real-world complex client project:

Create HTML files for each row in the file. Name the files using the "code" column. For example, "Street Lighting.htm." In each file, include the following content "name" column formatted as an h1 tag, "levelType" column formatted as a p tag, and "Description" column as a p tag.

GPT-4's custom instructions

How can I use generative AI?

Search integration

- Google Search Generative Experience (SGE) - google.com
- Bing Chat - bing.com

Chatbots

- Bard - bard.google.com
- ChatGPT - chat.openai.com
- Chatbot Arena - chat.lmsys.org

Replace Siri with chatGPT

www.imore.com/iphone/how-to-replace-siri-with-chatgpt-ai-on-your-iphone

Enable in Windows 11

www.digitaltrends.com/computing/how-to-enable-disable-chatgpt-windows-taskbar

Learning more

"Free" courses

- "Generative AI Learning Path" - Google
  www.cloudskillsboost.google/journeys/118

- "AI For Business Specialization" - University of Pennsylvania
  www.coursera.org/specializations/ai-for-business-wharton

- "Big Data, Artificial Intelligence, and Ethics" - UC Davis
  www.coursera.org/learn/big-data-ai-ethics

- "AI Foundations for Everyone Specialization" - IBM
  www.coursera.org/specializations/ai-foundations-for-everyone

About the presenter

Scott DeLoach is the CEO of Click**Start**, an STC Fellow, and an ATD Certified Professional in Talent Development (CPTD). He has over 30 years of experience as a content strategist, technical writer, instructional designer, trainer, and UX architect. At Click**Start**, Scott provides content strategy development, design, consulting, and training services for technical documentation, P&P, knowledgebase, and eLearning projects.

You can reach Scott at www.clickstart.net or by email at scott@clickstart.net.