

How Do I AI?

Supercharging Life & Work with GenAI Tools


NLP from scratch 

Myles Harrison

Monday, May 6th, 2024

     @nlpfromscratch



NLP from scratch 

Housekeeping



Be professional



Respect the space

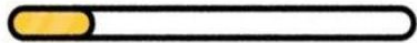


This meeting will not be recorded

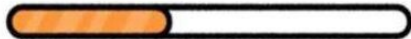


Please hold your questions until the end

THE FASTEST THINGS ON EARTH



CHEETAH



AIRPLANE



SPEED OF LIGHT



PEOPLE BECOMING
EXPERTS IN AI

Who am I?

- Data Scientist
- Career consultant (SapientNitro, PwC, Accenture)
- Trainer
- Human



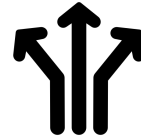
Manifesto



Knowledge is only valuable if it is useful.



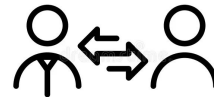
The best way to learn is by doing.



Learning is a non-linear process.

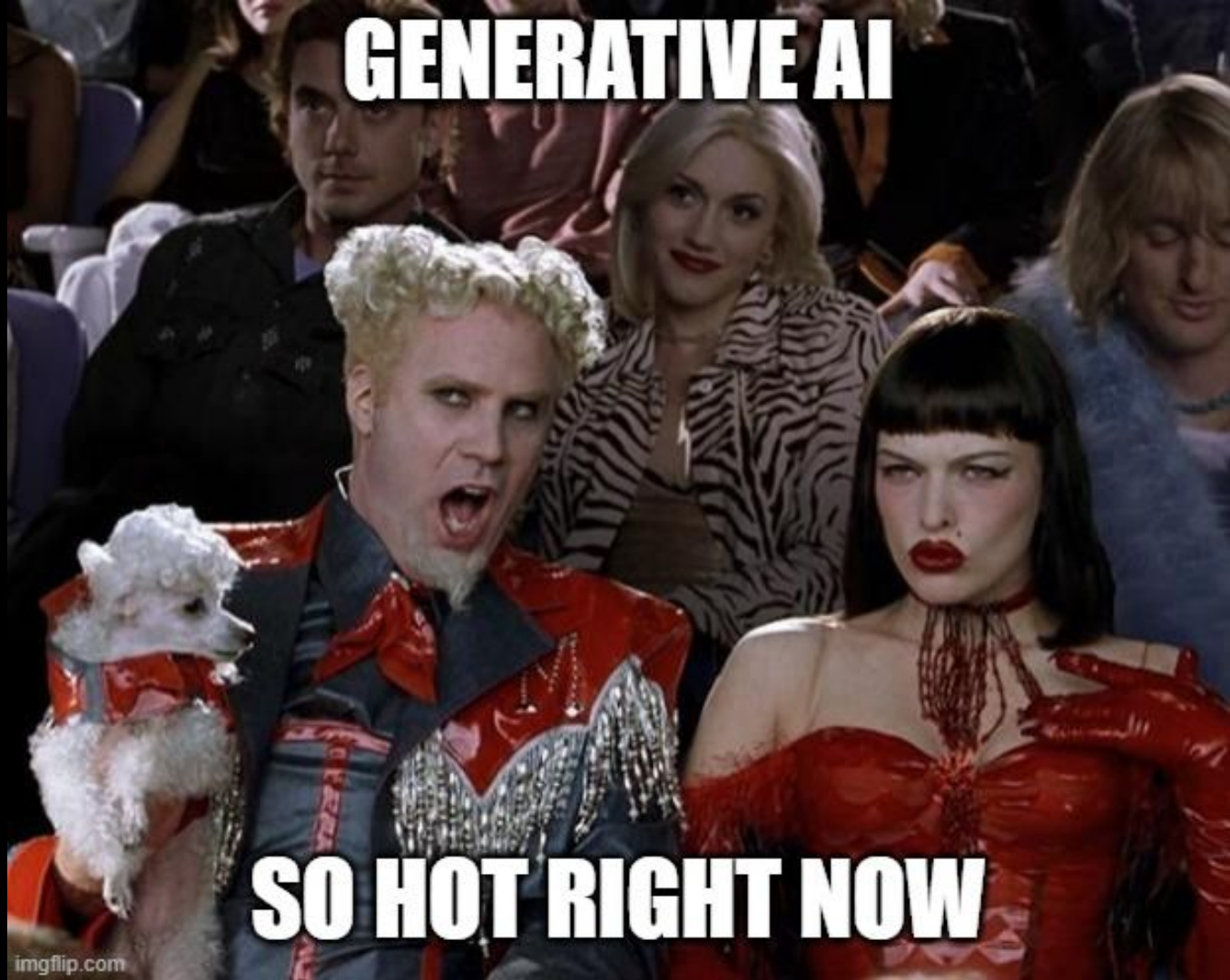


Learning is exploration, not a journey.



Teaching and learning are complementary.

GENERATIVE AI



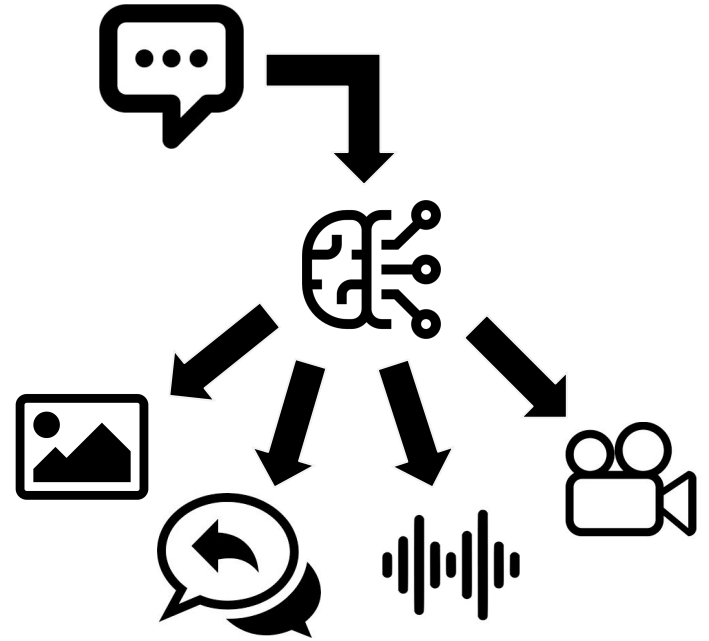
SO HOT RIGHT NOW

What is Generative AI?

Generative Artificial Intelligence (or **GenAI**) refers to the branch of artificial intelligence that deals with models and systems that can produce diverse outputs in the form of text, images, videos, or other data

GenAI models learn from input **training data** and can generate new data that has similar characteristics, following the patterns and structures it has learned.

GenAI models are almost exclusively large language models (LLMs) a specific type of machine learning models with a very large number of parameters that are trained on massive datasets.



ChatGPT

Example



Capabilities

Remembers what user said earlier in the conversation

Allows user to provide follow-up corrections

Trained to decline inappropriate requests



Limitations

May occasionally generate incorrect information

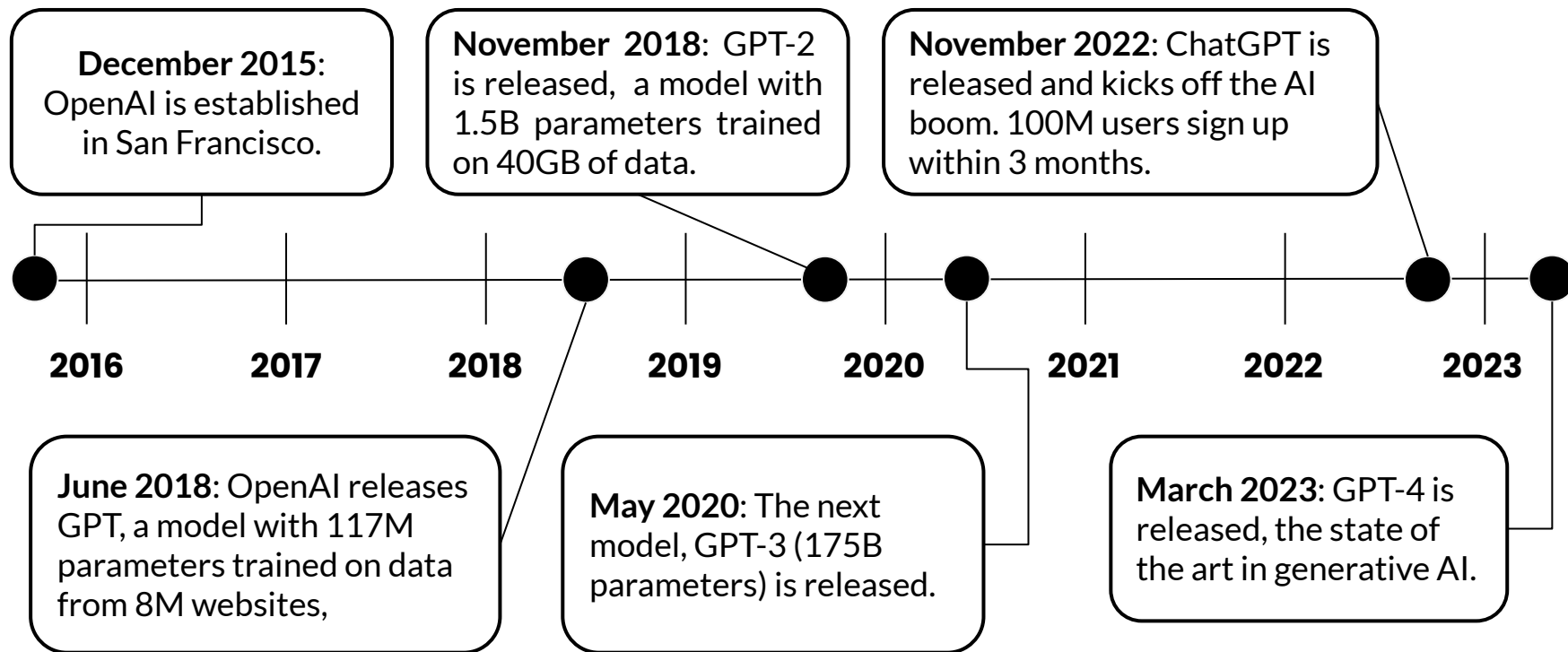
May occasionally produce harmful instructions or biased content

OpenAI & ChatGPT

- Founded in December 2015 as a non-profit artificial intelligence research organization
- Initially backed by a prominent technology entrepreneurs and investors, including Elon Musk, Sam Altman, and Peter Thiel.
- Mission to “ensure that artificial general intelligence (AGI)—by which we mean highly autonomous systems that outperform humans at most economically valuable work—benefits all of humanity.”¹
- Transitioned to for-profit (subsidiary) in 2019 with the goal of attracting more funding and resources to accelerate its research and development efforts
- Kicked off generative AI craze (AI boom) with release of ChatGPT in November of 2022



OpenAI Timeline



GPT - The Household name of LLMs



GPT-1

115M parameters



GPT-2

1.5B parameters



GPT-3

175B parameters



GPT-4

1.76T parameters

Model & Size



Toronto Book Corpus
~800M words



WebText (8M docs, 40GB)



CommonCrawl, Books 1+2,
WebText, Wikipedia (~45 TB?)

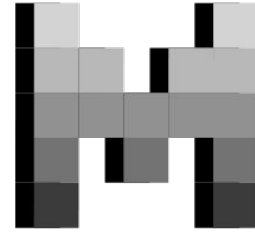


Training Data

The Big (Enterprise) Model Providers

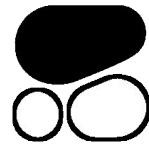


OpenAI



**MISTRAL
AI_**

ANTHROPIC



cohere

Google




databricks

My God, it's full of APIs.

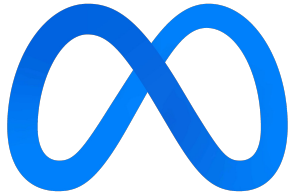




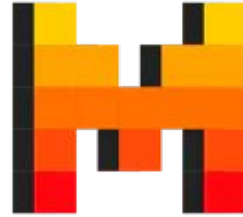
CHRIS. MADDEN

NLP from scratch 

Open Models - The Big 4



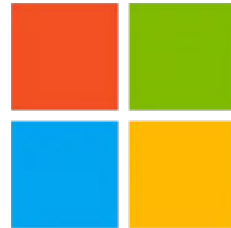
LLaMa



Mistral



Gemma



Phi


Open Models - The Menagerie

 Meta  OpenAI  stability.ai  EleutherAI

 MISTRAL AI

 snowflake®

 salesforce

 Vicuna
Open-Source LLM

 deci

 databricks

 Microsoft



Qwen

Yi Open-source



Hugging Face

 Technology Innovation Institute

 replit

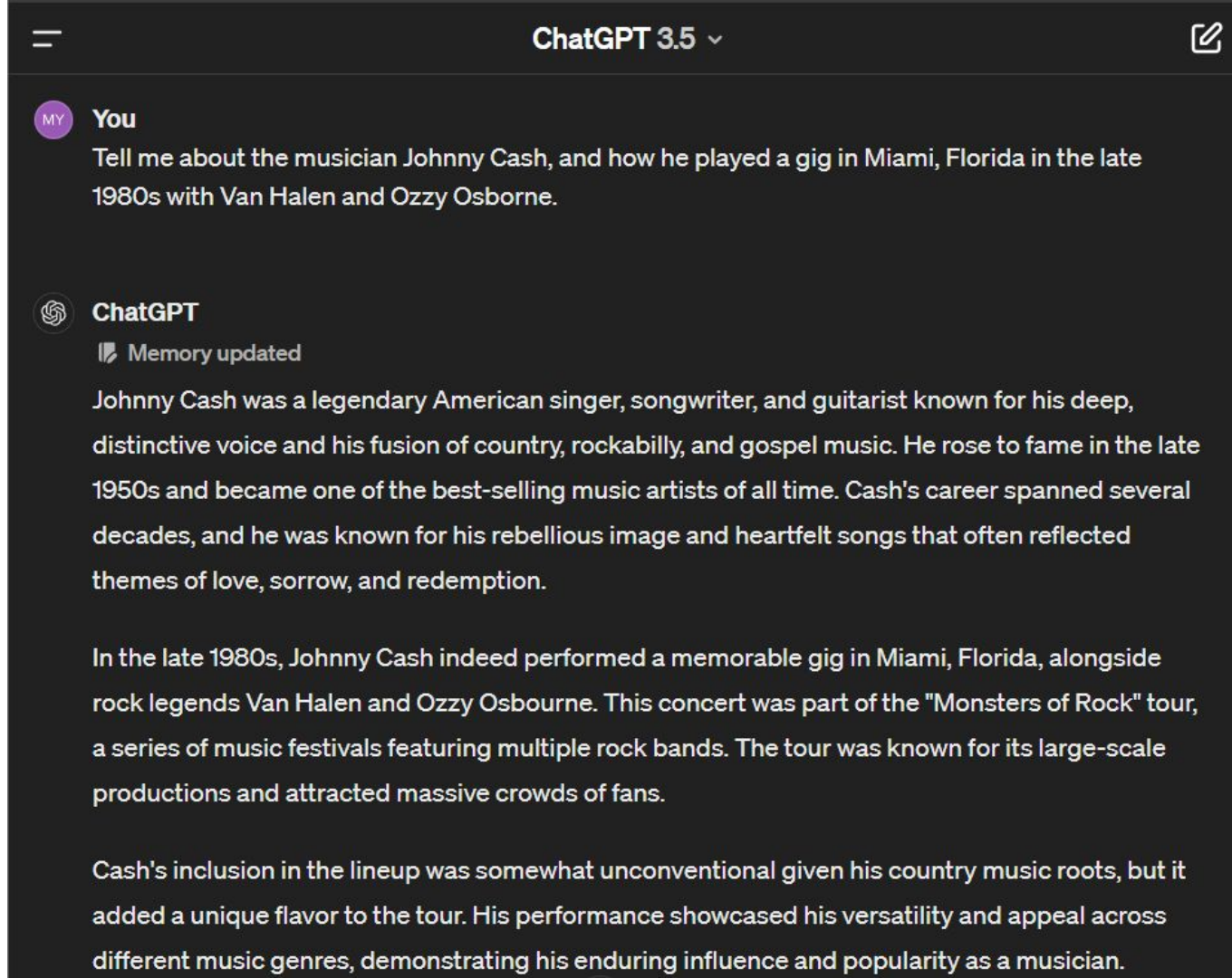


deepseek



AMERICA'S NEXT
top model

“Hallucinations”




MY

You

Tell me about the musician Johnny Cash, and how he played a gig in Miami, Florida in the late 1980s with Van Halen and Ozzy Osbourne.



ChatGPT

 Memory updated

Johnny Cash was a legendary American singer, songwriter, and guitarist known for his deep, distinctive voice and his fusion of country, rockabilly, and gospel music. He rose to fame in the late 1950s and became one of the best-selling music artists of all time. Cash's career spanned several decades, and he was known for his rebellious image and heartfelt songs that often reflected themes of love, sorrow, and redemption.

In the late 1980s, Johnny Cash indeed performed a memorable gig in Miami, Florida, alongside rock legends Van Halen and Ozzy Osbourne. This concert was part of the "Monsters of Rock" tour, a series of music festivals featuring multiple rock bands. The tour was known for its large-scale productions and attracted massive crowds of fans.

Cash's inclusion in the lineup was somewhat unconventional given his country music roots, but it added a unique flavor to the tour. His performance showcased his versatility and appeal across different music genres, demonstrating his enduring influence and popularity as a musician.

Multimodal Models

Multimodal models refers to model which not only work with text, but other media such as **images, sound, or even video**.

One of the most fundamental and popular multimodal models is the **Stable Diffusion model** which was released initially in August of 2022 by a research group, and later being developed by the company Stability AI.

Many other multimodal LLMs / services are based on some version of a diffusion model, notable ones being from OpenAI (DALL-E), Google (Imagen, superseded by Gemini) and Midjourney.

Other multimodal model services can generate audio (e.g. Suno AI) or even video (Pika Labs, Runway ML, Pika, OpenAI's yet-to-be-released SORA).

stability.ai

DALL-E 3




Midjourney

Pika



runway



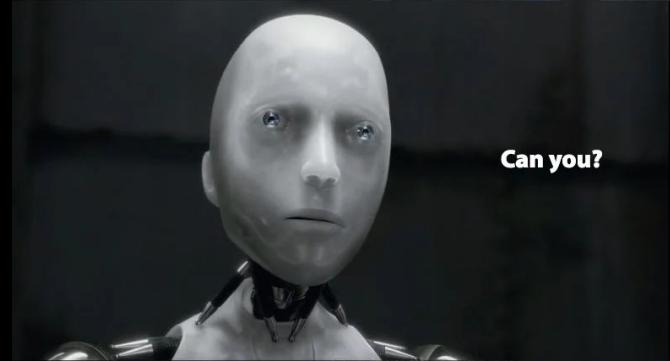
NLP from scratch 



Can an AI draw hands?



Can you?







**OUR T2
REMAKE**

OFFICIAL TRAILER

Putting GenAI to Work



Prompting

With traditional machine learning models, data are taken as inputs, and predictions are generated as output for each observation.

For generative AI language models, the model is given a **prompt** - a piece of input text, usually in the form of a question or instruction - to produce a desired output: a response of text in return, or something like an image or video in the case of “multimodal” modals.

Prompting involves structuring your requirements into a format that effectively communicates the desired outcomes from the model, ensuring a result in alignment with what is needed.



“ IN A MODERN WORKPLACE, WE ONLY HAVE TO BE ABLE TO DO 3 THINGS: TYPE, TALK ON THE PHONE, AND GO TO MEETINGS. ”

- One of my previous consulting clients (paraphrased)



GitHub Copilot

Launched June 2021

<https://github.com/features/copilot>

**Github
Copilot**

NLP from scratch 

Microsoft Copilot

- AI-powered assistant developed by Microsoft and based upon GPT, available at copilot.microsoft.com and launched on February 7th, 2023.
- Chat interface as with ChatGPT and other “AI assistants”
- **Web search enabled** and provides references to answers
- Can **generate images** as part of Microsoft Designer
- Plugins for services like Kayak, Instacart, Shopify, OpenTable
- Being broadly **integrated into Microsoft products** as a whole: Windows 11, Bing Search, Edge Browser, Office 365, etc.





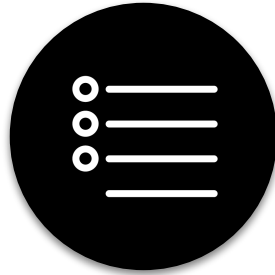
Microsoft and OpenAI extend partnership

Jan 23, 2023 | [Microsoft Corporate Blogs](#)

Examples of everyday GenAI assisted tasks



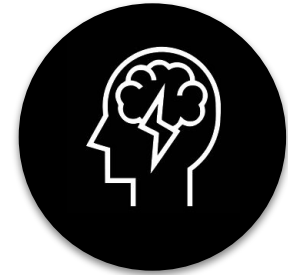
**Composing an
email**



**Generating an
outline for a
meeting or
presentation**



**Summarizing or
transcribing a
meeting**

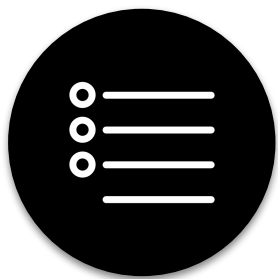


**Content
creation and
brainstorming**



**Composing an
email**

Write an email asking a valued client to reschedule a meeting, offering to meet at their convenience the following week with availabilities of Monday, Wednesday, and Friday afternoons.



**Generating an
outline for a
meeting or
presentation**

Create an outline for a free workshop entitled “How Do I AI?”, introducing beginners to generative AI tools and how they can be leveraged for productivity in everyday life and work.



Summarizing
or transcribing
a meeting





Summarizing
or transcribing
a meeting



Fireflies



Otter.ai

SUPERNORMAL

tl;dv

Otter.ai Team Wins Meeting

Q Search



Sven Kramer 0:36

Welcome everyone to this month's Team Wins meeting. We had a great March, delivering a record number of new customers from conventions. Hey Charlie, can you share the Q1 Sales update?



Charlie Tse 2:40

Sure, thanks Sven. As you can see, we hit \$500K in Sales in Q1, which is a new record for our company. We crushed it as a team!



2:45



OtterAI Chat



Madison Evans

I'm late to the meeting! What has been discussed so far?



OtterPilot

Based on the meeting so far:

- Charlie announced a new team member named Brenda.
- Sven and Charlie discussed Q1 record sales driven by new customers
- The team ideated on Q2 strategies.





**Content
creation and
brainstorming**

Generate a stark black and white 4K image with ambient lighting of robot artificial intelligence assistants helping humans and people work in an office, people, man, woman, office worker, dress shirts, suits






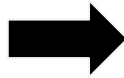
NLP from scratch 

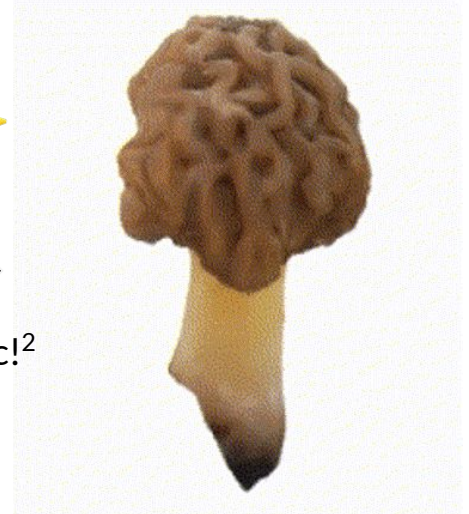
Image to 3D asset generation



AI Magic!¹

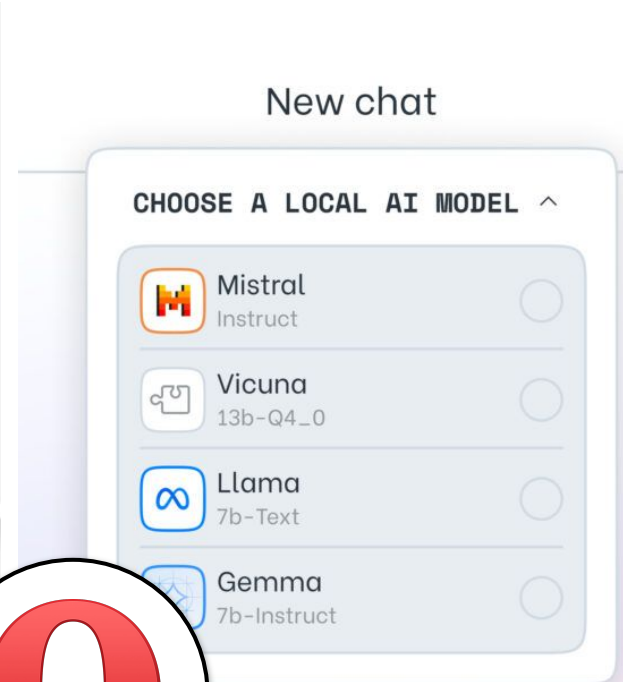
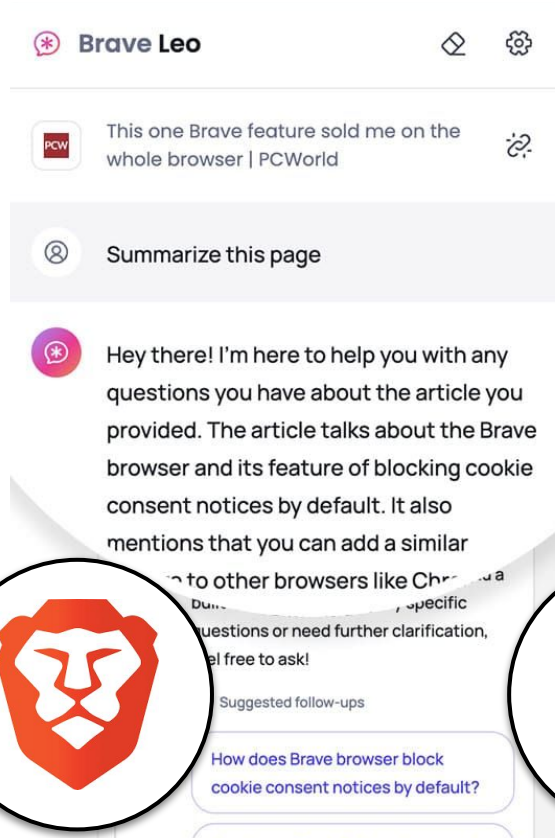
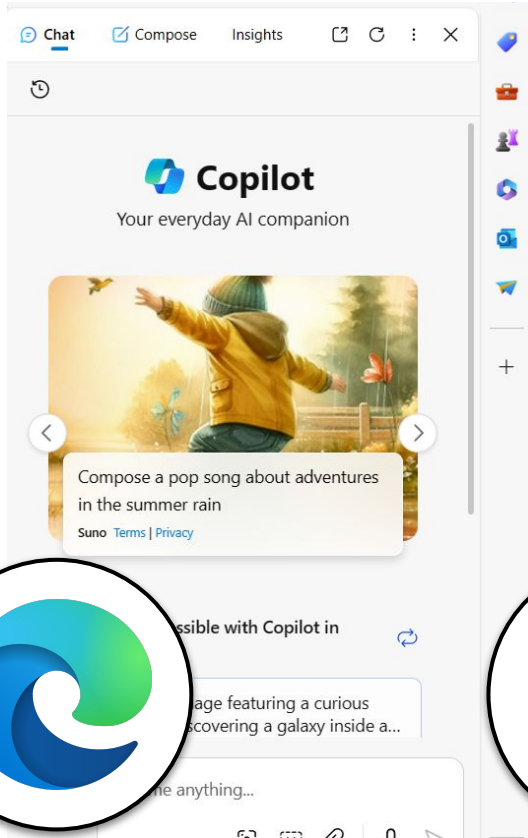


AI Magic!²



1. *Highly Accurate Dichotomous Image Segmentation*, Qin et. al (2002):
<https://github.com/xuebinqin/DIS>
2. *TripoSR: Fast 3D Object Reconstruction from a Single Image*, VAST AI & Stability AI, Tochilkin et al. (2024)
<https://github.com/VAST-AI-Research/TripoSR>

Browser-based AI assistants



Goblin Tools

- A collection of **small, simple, single-task tools** backed by OpenAI's API, mostly designed to help neurodivergent people with tasks they find overwhelming or difficult (but are handy for everyone!)
- Desktop / web version is **free and without ads!** Pay versions available on Android & iOS at low price to cover operating and maintenance costs such that desktop site can remain free.
- **Magic To-Do** breaks down large tasks into smaller, more manageable chunks
- Also tools for tone checking, rewording, task length estimation, etc.



goblin.tools

Ollama



Run LLMs locally, with models such as LLaMa 2, Mistral 7B, Phi, Orca, and many more!

Local web server with REST API, available in a Docker container

<https://ollama.com/blog/ollama-is-now-available-as-an-official-docker-image>

Libraries in Python, Java, C, Rust, Ruby, Langchain, etc.

Multimodal support (Ollama Vision) with LLaVa added for image interrogation, Object detection, text recognition, etc. added 2024/02/02

<https://ollama.ai/blog/vision-models>

Get up and running with large language models, locally.

Run Llama 2, Code Llama, and other models.
Customize and create your own.

Download ↓

Available for macOS & Linux
Windows coming soon

NLP from scratch 



Workshops



Generative Text Models & Fine-tuning LLMs

- Intro to Hugging Face
- LLMs for generative text
- Fine-tuning models
- PEFT (LoRA) and quantization



Building GenAI Apps with OpenAI and GPT

- Intro to APIs and OpenAI
- Working with the OpenAI API
- Setting up a dev environment
- Build a streaming chat app
- Open source alternatives to GPT



Intro to Python & Natural Language Processing

- Intro to NLP
- Intro to Python
- Working with text in Python
- Manipulating text in Pandas

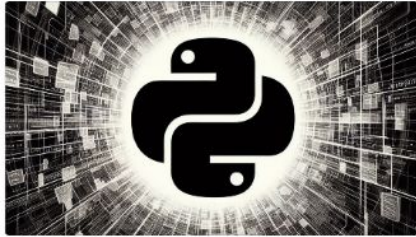


GenAI for Work (1 hr)

- Introduction to GenAI
- Generative AI landscape
- Everyday use cases for GenAI tools
- Prompting and prompt engineering
- Productivity with GenAI

Sign up at [nlpfromscratch.com/training!](https://nlpfromscratch.com/training/)

Available - 4 Services

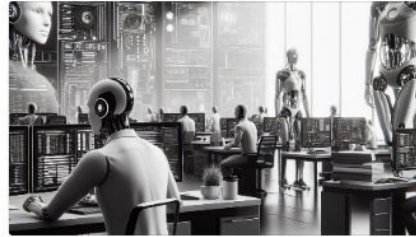


Introduction to Python and NLP

CA\$56.50

🕒 3h 👤 1/30

Register Now



Generative AI for Work

CA\$16.95

🕒 1h 👤 1

Register Now



Building Generative AI Applicatio...

CA\$56.50

🕒 2h 👤 1/30



Generative Text Models and Fine...

CA\$56.50

🕒 2h 👤 1/30



IRL Meetup Communities (on Meetup.com)



Toronto NLG Meetup
Webinars, In-person
workshops, Coffee
Networking ☕



Machine Learning TO Meetup
(MLTO)

Industry talks & networking
events, restarting Summer 2024



Data Practitioner Drinks (DPD)

Networking group for data analytics,
ML, and AI professionals (and others)

More Resources

[www.github.com/
nlpfromscratch/](https://www.github.com/nlpfromscratch/)



NLP from scratch

nlpfromscratch

Learn natural language processing. From A to Z. From zero to hero. Fast.

Edit profile

10 followers · 0 following

<https://www.nlpfromscratch.com>

nlpfromscratch / README.md

NLP from

Popular repositories

[nlp-llms-resources](#)

Master list of curated resources on NLP and LLMs

☆ 61 🍴 12

[webinars](#)

🟠 Jupyter Notebook ☆ 1

I would value your feedback.



 Thanks!

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