

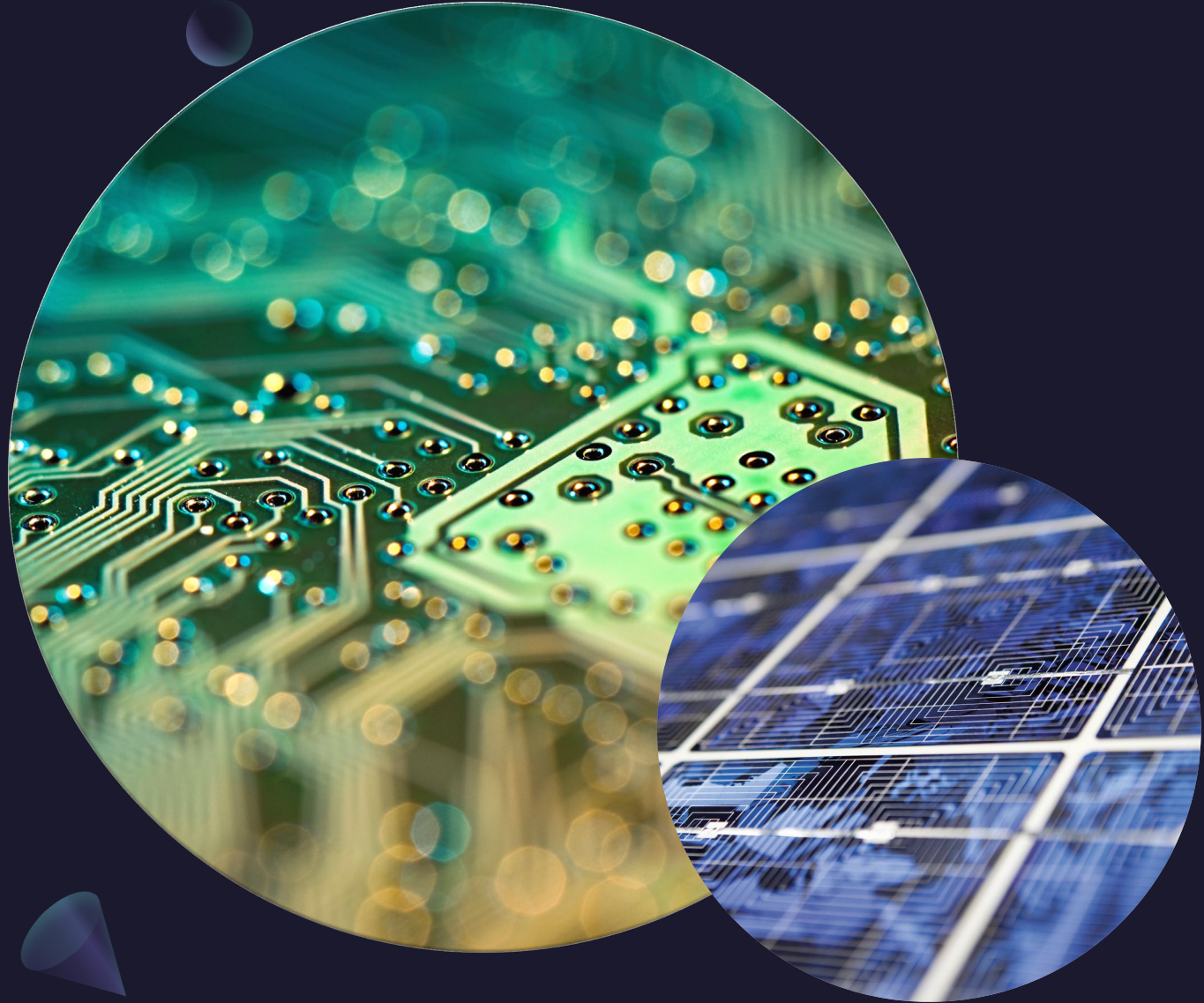


Artificial Intelligence: Balancing the Risks and Rewards of New Technology

Kristi Nickodem, UNC School of Government
NC Local Health Directors' Legal Conference, 2025

Artificial Intelligence:

Computer systems that can perform tasks that usually require human intelligence, such as visual perception, speech recognition, decision-making, problem-solving, and language translation.



Extractive AI:

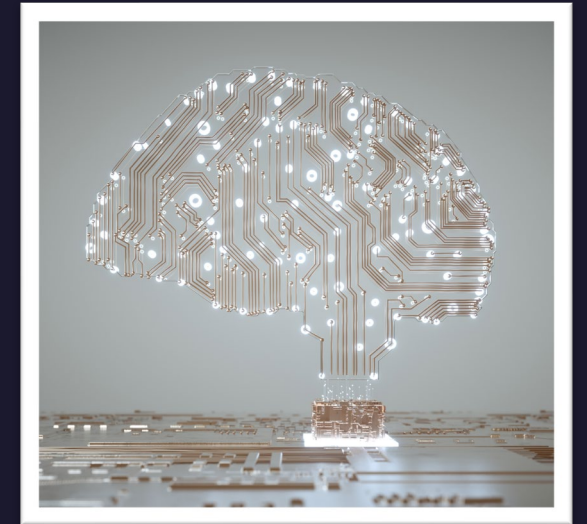
Systems that extract relevant data from a specific document or database in response to user queries.



Predictive AI:

Systems that use statistical analysis and machine learning algorithms to predict present or future events or outcomes based on existing data.

Generative AI: A class of AI techniques that focus on generating new content that resembles human-created content. Gen AI models are trained on large datasets to learn patterns and structures within the data.






**Could AI Help Bust Medicaid Scammers?
Minnesota May Find Out**

**New Mexico Schools Use AI to Track Student
Absences**

**Denver launches government info
AI-powered chatbot**

**Washington Police Agencies Tap AI to Review
Body Cam Footage**

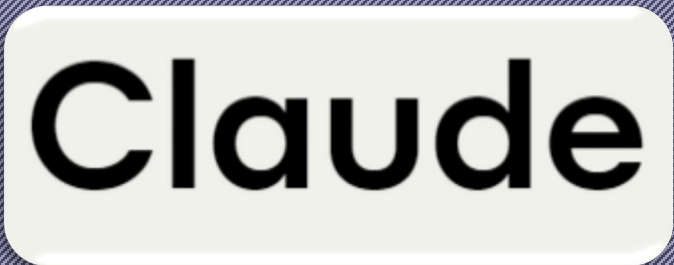
**Austin Responds to Inflammatory AI-Generated
Public Comment**



Bill Gates: Within 10 years, AI will replace many doctors and teachers—humans won't be needed 'for most things'

Published Wed, Mar 26 2025•9:05 AM EDT

What is generative AI?



What can I help with?

Please provide some examples of how local health directors can use generative AI in their daily work.



Think



Search



1. Public Communication & Outreach

- **Automated Health Alerts and Messages:** Quickly generate public advisories, newsletters, or social media posts during outbreaks (e.g., COVID-19, flu, water contamination).
- **Multilingual Translation:** Instantly translate health messages into multiple languages to reach diverse communities.
- **Simplifying Medical Language:** Convert technical reports into easy-to-understand summaries for public distribution.

2. Grant Writing & Reporting

- **Drafting Proposals:** Create first drafts of grant applications using templates and prompts, tailored to specific funding opportunities.
- **Reporting Assistance:** Summarize health program data and outcomes into progress reports or impact summaries for stakeholders or funders.

3. Policy Development & Internal Documentation

- **Policy Drafting:** Generate templates or initial drafts for public health policies or internal protocols (e.g., emergency preparedness, vaccination policies).
- **Meeting Summaries:** Automatically summarize meeting notes or generate action items from transcripts.

4. Data Analysis Support

- **Narrative Insights:** Turn epidemiological data into narrative reports for decision-makers or the public.
- **Forecasting:** Collaborate with AI tools that simulate disease spread scenarios based on current data inputs (e.g., flu season projections).

5. Training and Education

- **Training Materials:** Generate customized presentations or training content for staff on topics like infection control or data entry.
- **Q&A Assistants:** Develop AI chatbots to answer frequently asked questions by the public or staff (e.g., vaccine info, clinic hours).

6. Community Engagement

- **Survey Design:** Use AI to help draft community health surveys or analyze free-text responses from residents.
- **Scenario Planning:** Simulate hypothetical health crises and draft responses for preparedness training.

Would you like examples tailored to a rural vs. urban setting, or for a specific kind of health initiative like opioid response, maternal health, or climate-related public health issues?



Generative AI can be an incredibly valuable tool for directors of local health departments, helping them streamline processes, improve decision-making, and better serve their communities. Here are several examples of how it can be used in their daily work:

1. Data Analysis and Reporting

- **Trend Analysis:** Generative AI can help health department directors analyze public health trends by processing vast amounts of data (e.g., infection rates, hospital admissions, vaccination rates). AI can generate summaries, forecasts, and insights from these data points, helping decision-makers stay ahead of potential health crises.
- **Automated Reports:** AI tools can automatically generate reports, highlighting key data trends, and creating visualizations. This reduces the burden of manual reporting and provides more accurate, timely insights for stakeholders.
- **Predictive Modeling:** AI can generate predictive models to forecast potential outbreaks, health risks, or healthcare resource needs based on historical data.

2. Public Communication and Outreach

- **Automating Health Messaging:** AI-powered chatbots or natural language generation (NLG) tools can help create personalized health information for the public. This could include COVID-19 updates, vaccination campaign reminders, or seasonal flu prevention tips.
- **Social Media Monitoring:** AI can be used to analyze social media for public health concerns, emerging trends, or misinformation. It can also generate responses to public inquiries in real-time, maintaining a consistent and accurate message.
- **Content Creation:** Generative AI can assist in producing newsletters, articles, or educational materials that help inform the public on health-related topics, with less time and effort spent on content creation.

3. Strategic Decision Making

- **Scenario Simulation:** Directors can use AI to simulate different public health scenarios and predict the outcomes of various interventions. For instance, it could simulate the impact of a new vaccination campaign or predict the effects of a new public health policy on different population groups.
- **Resource Allocation Optimization:** AI can assist in making recommendations for efficient allocation of resources (personnel, vaccines, medical supplies) based on predictive models, historical data, and real-time information.

4. Risk Assessment and Crisis Management

- **Real-time Alerts and Monitoring:** AI can process incoming data from multiple sources (hospital emergency rooms, clinics, labs) to detect unusual patterns that may indicate an emerging public health crisis, such as an outbreak of infectious disease. The AI system can automatically generate alerts for health department staff to take action.
- **Emergency Preparedness Planning:** Using AI tools, health departments can model the potential spread of diseases (like COVID-19 or seasonal flu) to guide emergency preparedness plans, resource deployment, and response strategies.

5. Health Equity and Social Determinants of Health

- **Identifying Health Disparities:** AI can analyze community health data to identify gaps in care or health disparities, such as unequal access to health services based on socioeconomic or geographic factors. This information can help directors develop more targeted programs to address these disparities.
- **Community Engagement:** AI can help design and distribute surveys to collect community feedback on health services or identify needs, allowing directors to adjust programs based on real-time community input.

6. Operational Efficiency

- **Administrative Task Automation:** Many routine administrative tasks, such as scheduling meetings, processing forms, or organizing case files, can be automated with generative AI. This allows health department staff to focus more on high-value activities like program implementation or community outreach.
- **Document Drafting:** AI can assist in drafting policy documents, grant applications, and memos, reducing the time it takes to produce high-quality written materials. It can also suggest edits to improve clarity and effectiveness.

7. Training and Development

- **Staff Training Materials:** Generative AI can create customized training modules and materials for public health professionals based on emerging topics or skill gaps. This can ensure that staff are always up-to-date on best practices, new technologies, and health guidelines.
- **Scenario-Based Training:** AI can generate simulated crisis scenarios, allowing health department staff to practice their responses to public health emergencies in a controlled, virtual environment.

8. Policy Development and Advocacy

- **Evidence-Based Policy Drafting:** AI tools can sift through vast datasets of public health research and reports to provide evidence-based recommendations for policy changes or health interventions. This can help directors craft more data-driven, effective policies.
- **Advocacy Material Creation:** AI can assist in creating compelling presentations, reports, and visualizations for use in advocacy efforts, whether at the local government level or in public-facing campaigns, to garner support for health initiatives.

9. Collaboration with Other Agencies

- **Data Integration:** AI can help integrate data from multiple public health agencies, healthcare providers, and community organizations to create a unified picture of community health. It can generate reports that summarize this data and highlight areas requiring attention.
- **Multi-Agency Coordination:** In times of crisis or disaster, AI can help health departments coordinate responses with other local, state, and federal agencies by automatically sharing key data, identifying areas of need, and suggesting collaborative actions.

Incorporating generative AI into the daily workflows of health department directors can lead to more efficient, effective, and equitable public health management, helping them respond quickly to health threats and improve the health outcomes of their communities.

GPT-4 has:

- Passed the Bar Exam
- Scored a 163 on the LSAT
- Scored 1410 out of 1600 on the SAT
- Scored in the 99th percentile on the verbal section of the GRE and 80th percentile of the quantitative section of the exam.
- Received the highest possible score on AP Exams for Art History, Biology, Environmental Science, Macroeconomics, Microeconomics, Psychology, Statistics, US Government, and US History.



Prompt to image generators

“Otter on a plane using wi-fi”

Credit for images:
Ethan Mollick, The Wharton School, U. Penn







Meet S.A.R.A.H.

A Smart AI Resource Assistant for Health

She uses generative AI to help you lead a healthier life

[Talk to Sarah](#)



What would you like to chat about?

Sarah is a prototype of a digital health promoter*, available 24/7 in eight languages via video or text. She can provide tips to destress, eat right, quit tobacco and e-cigarettes, as well as give information on several other health topics. She is not designed to give medical advice.

WHAT INFORMATION ARE WE COLLECTING?

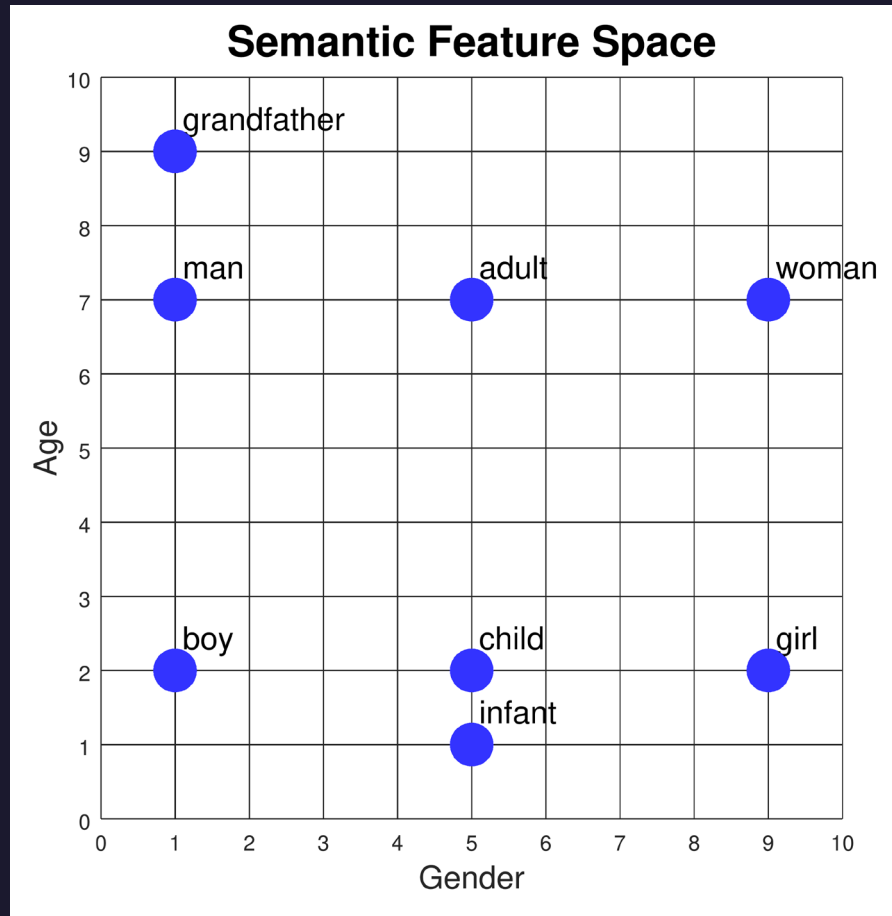
For the Digital Hero to be able to interact with you in an authentic and human way, their Digital Brain™ needs to collect and process information about your expressions.

WHY ARE WE COLLECTING THIS INFORMATION?

We want your experience with the Digital Hero to be as fun, natural and engaging as possible. You can help us do this by allowing the Digital Hero to study and respond to your expressions in order to interpret your emotional response so that they can provide an appropriate answer. It's just like a conversation with a real person where they are not just interpreting what you say, but how you say it.

How does generative AI work?

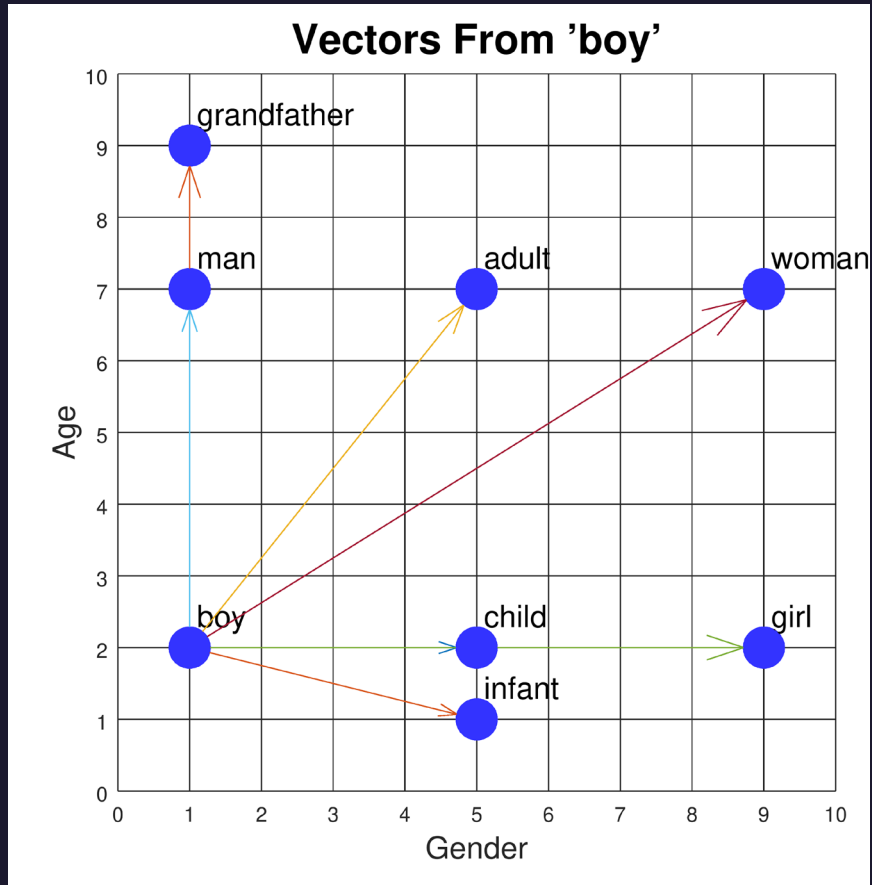
How does this work?



Word Coordinates		
	Gender	Age
grandfather	[1,	9]
man	[1,	7]
adult	[5,	7]
woman	[9,	7]
boy	[1,	2]
child	[5,	2]
girl	[9,	2]
infant	[5,	1]

Image Credit: Carnegie Mellon University Computer Science Academy

How does this work?



Distance from "boy"	
grandfather	7
man	5
adult	6.4031
woman	9.4340
boy	0
child	4
girl	8
infant	4.1231

Image Credit: Carnegie Mellon University Computer Science Academy



How does this work?

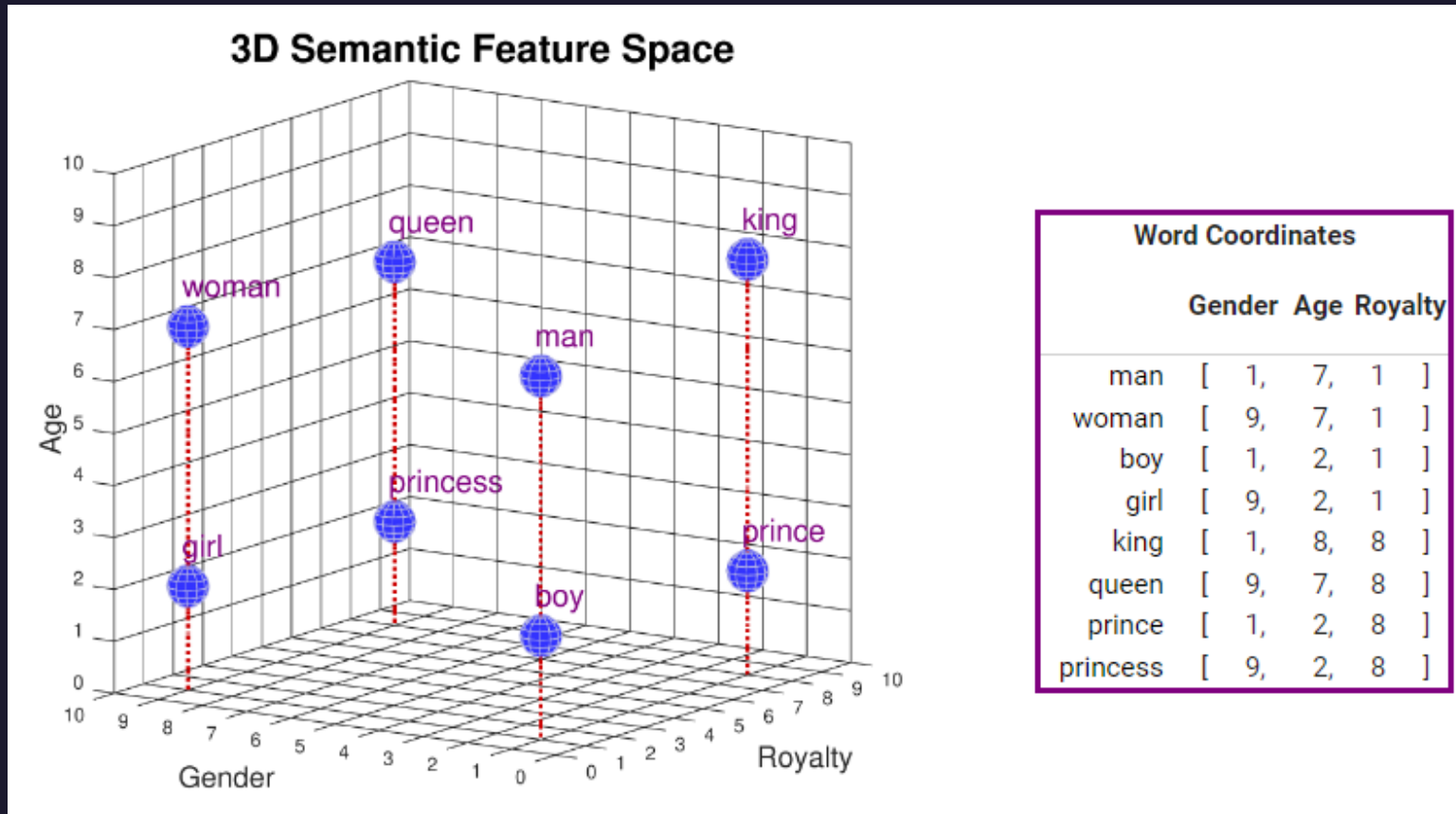
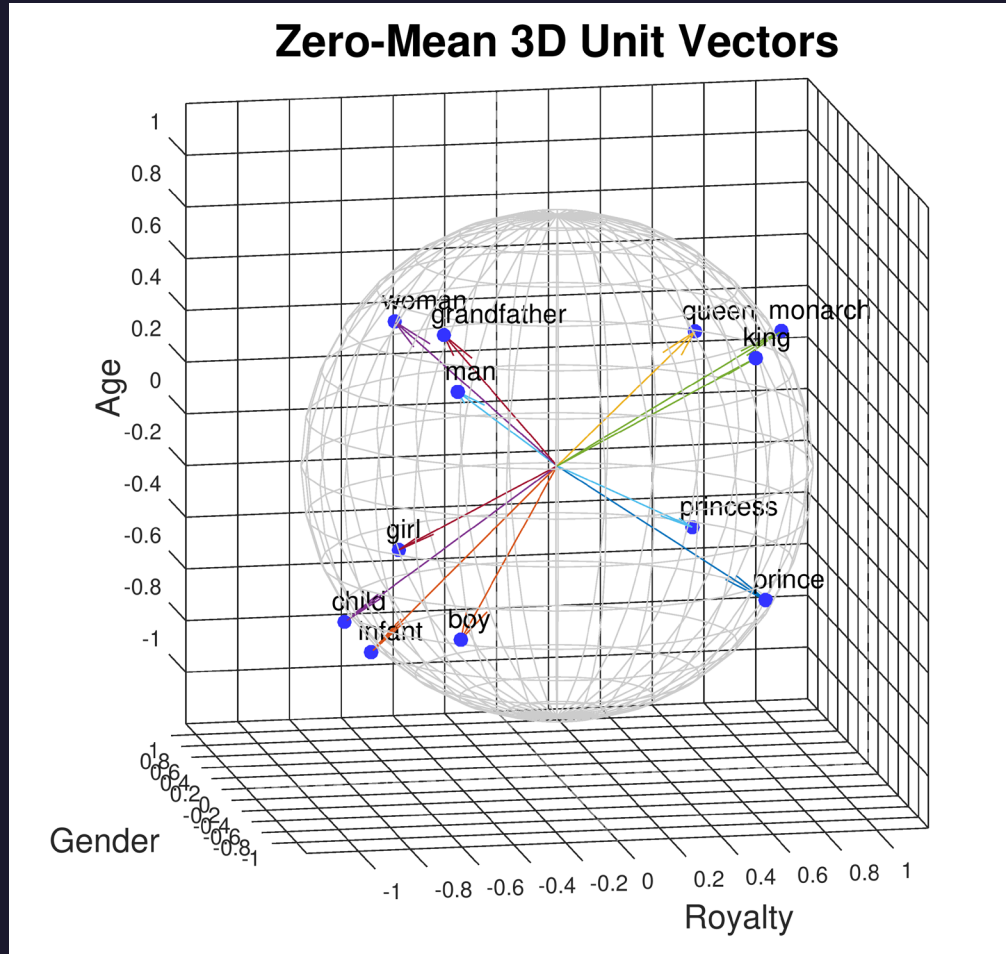


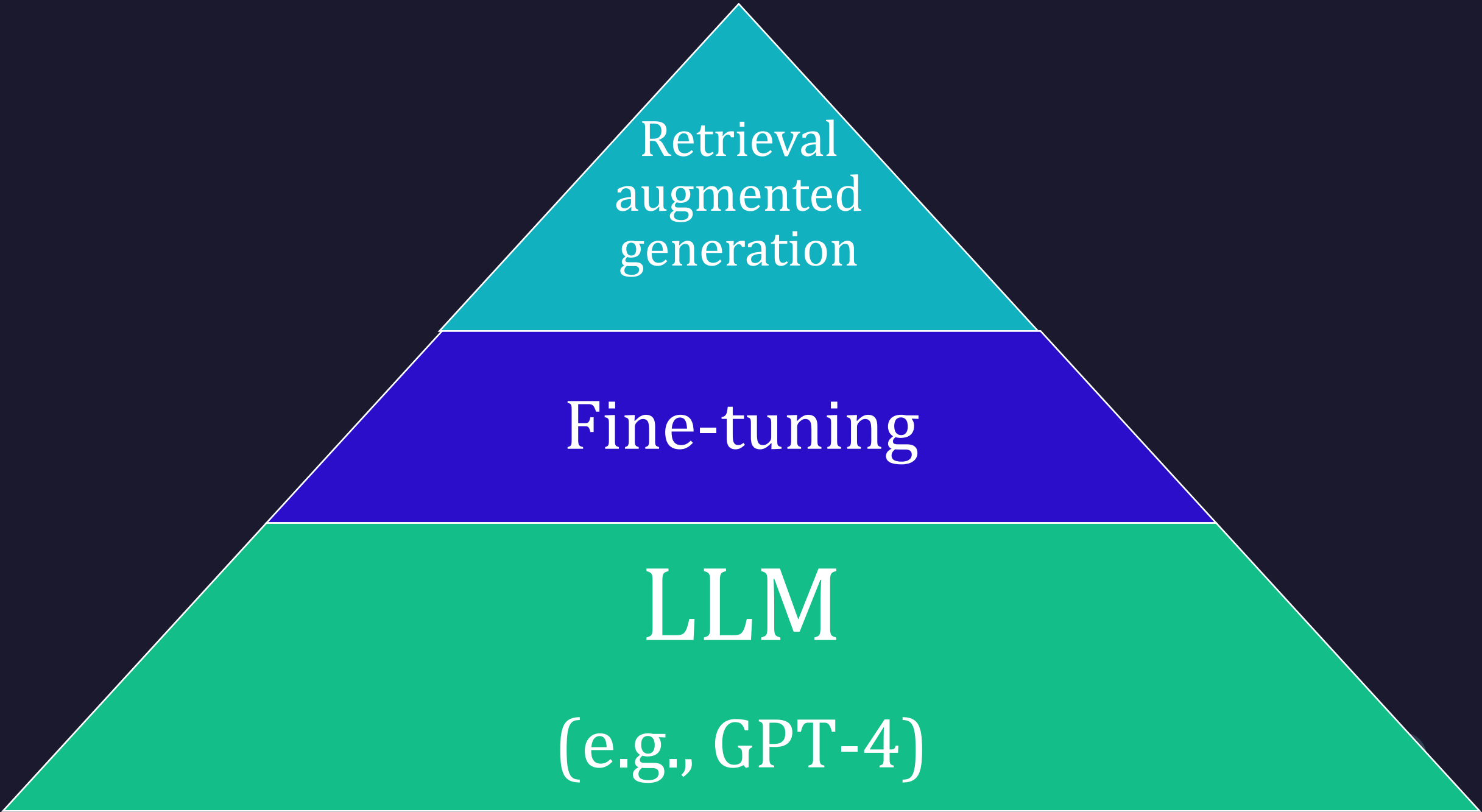
Image Credit: Carnegie Mellon University Computer Science Academy

How does this work?



Zero-Mean 3D Unit Vectors			
	Gender	Age	Royalty
grandfather	[-0.5426,	0.6412,	-0.5426]
man	[-0.7191,	0.4576,	-0.5230]
woman	[0.7741,	0.4168,	-0.4764]
boy	[-0.6971,	-0.5070,	-0.5070]
girl	[0.7543,	-0.4642,	-0.4642]
king	[-0.5570,	0.5064,	0.6583]
monarch	[0.0676,	0.4730,	0.8785]
queen	[0.6608,	0.3558,	0.6608]
prince	[-0.5846,	-0.4252,	0.6909]
princess	[0.6484,	-0.3990,	0.6484]
child	[0.0733,	-0.5866,	-0.8066]
infant	[0.0642,	-0.7057,	-0.7057]

Image Credit: Carnegie Mellon University Computer Science Academy



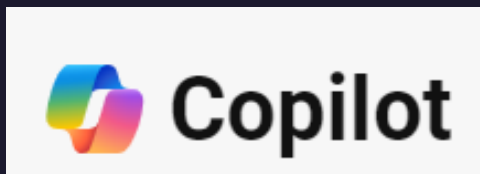
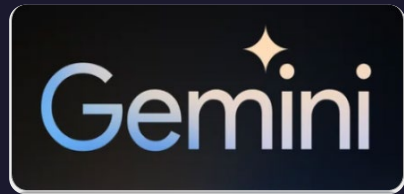
Retrieval
augmented
generation

Fine-tuning

LLM

(e.g., GPT-4)

Working with Text Generation Tools



Role/Persona

Specific Task

Focus/Tone

Aim/Goal

Limitations

Example (Persona, Task, Focus)

Act like an experienced local health director in North Carolina. Write a memo to the board of county commissioners explaining how the local health department helps to protect public health in the county. Focus on how the health department helps to ensure clean water, safe food, and communicable disease control.

To: Board of County Commissioners
From: [Your Name], Health Director
Date: April 8, 2025
Subject: Role of the Health Department in Protecting Public Health

Dear Members of the Board,

I would like to take a moment to update you on the critical work our local health department performs in safeguarding public health within our county. The department plays a fundamental role in ensuring that our community remains healthy and safe, focusing on clean water, safe food, and communicable disease control. These efforts are essential to maintaining the well-being of our residents and are often carried out through preventive measures, monitoring, education, and enforcement of public health regulations.

Ensuring Clean Water

One of the most basic yet vital services we provide is ensuring that the water supply remains safe and free from contamination. Our Environmental Health Division conducts routine inspections of public water systems, wells, and other water sources throughout the county. We work closely with local utilities to ensure compliance with state and federal water quality standards, such as those outlined by the North Carolina Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA).

In addition to monitoring and inspecting, we provide education to residents on well water testing and maintenance. We also investigate any waterborne illness outbreaks, rapidly responding to any indications of contamination to protect public health.

Food Safety and Protection

Another cornerstone of our mission is food safety. Our Environmental Health team oversees food establishment inspections to ensure that local restaurants, grocery stores, and other food vendors adhere to strict food safety standards set by the North Carolina Food Code. These inspections include checks for proper food handling, storage, sanitation, and staff training. Regular inspections reduce the risk of foodborne illnesses, which can have serious public health consequences.

Moreover, we also collaborate with local farmers' markets, food pantries, and community organizations to ensure safe handling of food donations and the education of consumers on proper food safety practices.

Communicable Disease Control

The health department's role in controlling communicable diseases is perhaps one of the most visible and crucial aspects of our work. We are responsible for monitoring, investigating, and controlling outbreaks of diseases such as influenza, tuberculosis, COVID-19, and other infectious diseases. Our communicable disease team is highly trained in tracking and responding to outbreaks, providing rapid response measures to prevent the spread of disease.

We collaborate with local healthcare providers, schools, and community organizations to promote vaccination, provide educational campaigns, and ensure access to testing and treatment. In cases of outbreak, we coordinate isolation protocols, contact tracing, and quarantines as necessary to reduce the risk of transmission.

Additionally, we work to ensure compliance with state and federal regulations regarding immunization requirements for schoolchildren and adults to protect public health across all sectors of our community.

Conclusion

The local health department's work is multifaceted, and our efforts in ensuring clean water, safe food, and the control of communicable diseases are foundational to the public health infrastructure of our county. By focusing on these critical areas, we help prevent illness, promote wellness, and create a safer living environment for all of our residents.

I welcome any questions or concerns you may have regarding these services and look forward to continuing our work together in keeping our county healthy and thriving.

Sincerely,

[Your Name]
Health Director
[County Health Department]



Use natural language,
not keywords

Use multiple prompts

More context is
better

Not good for research



ARTIFICIAL INTELLIGENCE

50 ChatGPT Prompts for State and Local Government

This AI guide for public servants offers 50 curated example prompts to increase efficiency, eliminate manual administrative work, and enhance day-to-day tasks using generative AI technologies like ChatGPT.

An abstract graphic on the right side of the slide, consisting of a complex network of white lines connecting numerous small white dots, resembling a molecular structure or a data network, set against a dark blue background.

Potential Risk: *Accuracy Problems*

When A.I. Chatbots Hallucinate

Proliferating 'news' sites spew AI-generated fake stories

OpenAI Hit With First Defamation Suit Over ChatGPT Hallucination

These lawyers used ChatGPT to save time.
They got fired and fined.

Gen AI's Accuracy Problems Aren't Going Away Anytime Soon, Researchers Say

AI-generated nonsense is leaking into scientific journals

Mycologists warn of 'life or death' consequences as foraging guides written with A.I. chatbots crop up on Amazon



Mata v. Avianca,

No. 22-CV-1461 (PKC) (S.D.N.Y.)

Mr. Schwartz testified at the sanctions hearing that...he was “operating under the false perception that this website [i.e., ChatGPT] could not possibly be fabricating cases on its own.”

He stated, “I just was not thinking that the case could be fabricated, so I was not looking at it from that point of view. My reaction was, ChatGPT is finding that case somewhere. Maybe it’s unpublished. Maybe it was appealed. Maybe access is difficult to get. I just never thought it could be made up.”



Write the same memo, but please incorporate references to the North Carolina General Statutes that refer to these responsibilities of the health director or health department

Communicable Disease Control

Our health department is also tasked with controlling and preventing the spread of communicable diseases, in accordance with NCGS § 130A-134 and § 130A-135. These statutes grant the health director the authority to investigate reports of communicable diseases, implement control measures, and take emergency actions to prevent outbreaks. The health department is responsible for monitoring diseases such as influenza, tuberculosis, COVID-19, and other infectious diseases.

We work closely with healthcare providers, schools, and community organizations to promote vaccination, provide educational outreach, and ensure that residents have access to testing and treatment. When outbreaks occur, NCGS § 130A-136 enables the health director to implement measures such as isolation, quarantine, and contact tracing to limit the spread of disease.

Furthermore, NCGS § 130A-156 requires the health department to enforce vaccination requirements for schoolchildren and adults, ensuring the continued protection of our community through immunization programs.

Air Canada found liable for chatbot's bad advice on plane tickets

An AI chatbot pushed a teen to kill himself, a lawsuit against its creator alleges

**The A.I. Defamation Cases Are Here:
ChatGPT Sued for Spreading Misinformation**

An aerial photograph of New York City, showing the dense urban landscape of Manhattan. The image captures the city's skyline, including numerous skyscrapers and buildings, extending to the horizon. In the foreground, the lush greenery of Central Park is visible, with a winding path and a body of water. The sky is a pale, hazy blue, suggesting a clear day. The overall scene is a wide-angle, high-altitude view of the city.

A cautionary tale for cities embracing AI: NYC's chatbot is advising businesses to break the law

Coates' Canons NC Local Gov't Law Blog

<https://canons.sog.unc.edu/>

Unpacking the Potential Risks of Generative AI Chatbots on Local Government Websites

Published: 05/01/24

Author Name: [Kristi Nickodem](#)

 Print

Epic to Integrate GPT-4 into Its EHR Through Expanded Microsoft Partnership

Epic is welcoming generative AI's entrance into healthcare. The company is expanding its existing collaboration with Microsoft by integrating OpenAI services, such as GPT-4, into its EHR. The partners have already begun piloting OpenAI services at a few health systems, including UC San Diego Health, UW Health and Stanford Health Care.

HEALTH

Is your doctor using AI?

“ [An] AI tool misheard Dr. Lauren Bruckner when she told a teenage cancer patient it was a good thing she didn't have an allergy to sulfa drugs. The AI-generated note said, “Allergies: Sulfa.” The tool “totally misunderstood the conversation,” said Bruckner, chief medical information officer at Roswell Park Comprehensive Cancer Center. “That doesn't happen often, but clearly that's a problem.”....

In Colorado, a patient with a runny nose was alarmed to learn from an AI-generated message that the problem could be a brain fluid leak. (It wasn't.) A nurse hadn't proofread carefully and mistakenly sent the message.

An abstract graphic on the right side of the slide, consisting of a complex network of white lines connecting numerous small white dots, resembling a molecular structure or a data network, set against a dark blue background.

Potential Risk: *Disclosure of Confidential Information*



Conversations may be reviewed by our AI trainers to improve our systems.



Please don't share any sensitive information in your conversations.



Scoop: Congress bans staff use of Microsoft's AI Copilot

Samsung Bans Staff's AI Use After Spotting ChatGPT Data Leak

Amazon stops employees from using generative AI tools like ChatGPT

Michigan Senate Limits Lawmaker Access to ChatGPT, AI Tools

New policy from the Michigan Senate Information Services blocks senators, employees and interns from using Senate-issued devices to access some artificial intelligence tools. This includes ChatGPT.

OpenAI launches ChatGPT Gov for U.S. government agencies



Photo credit: Carlos Barria | Reuters

Be mindful
when using AI
transcription
and
summarization



TECHNOLOGY

Researchers say an AI-powered transcription tool used in hospitals invents things no one ever said

OpenAI's Transcription Tool Hallucinates. Hospitals Are Using It Anyway

In health care settings, it's important to be precise. That's why the widespread use of OpenAI's Whisper transcription tool among medical workers has experts alarmed.

An abstract graphic of a network or web structure, composed of numerous white dots (nodes) connected by thin white lines (edges). The network is dense and complex, with many interconnected nodes and lines, creating a sense of a large, interconnected system. The background is a solid dark blue.

Potential Risk: *Faulty Decision-making*

Amazon ditched AI recruitment software because it was biased against women

Racial Bias Found in a Major Health Care Risk Algorithm

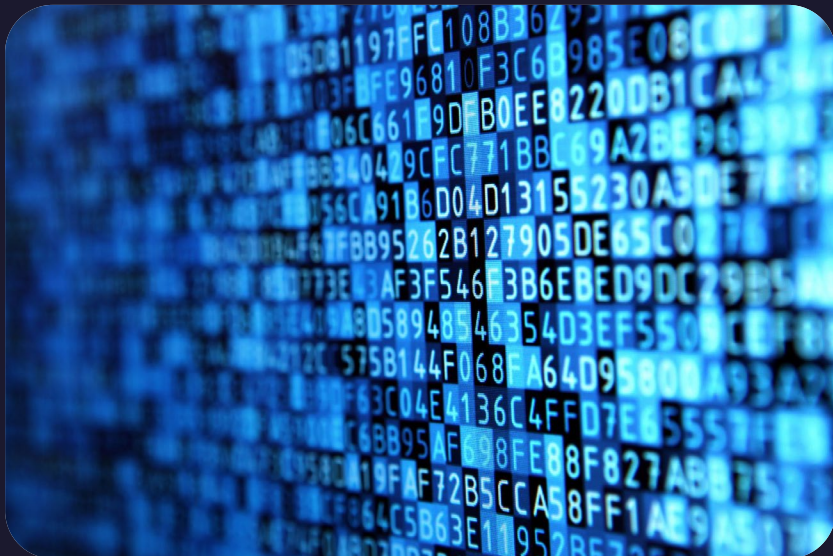
Black patients lose out on critical care when systems equate health needs with costs

Dutch scandal serves as a warning for Europe over risks of using algorithms

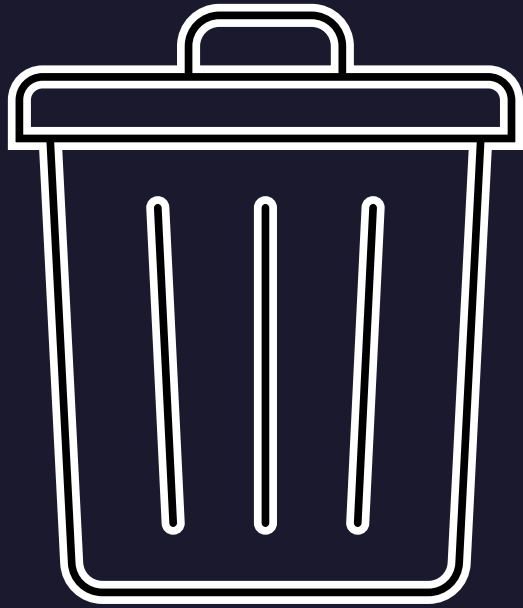
AI tool used to spot child abuse allegedly targets parents with disabilities



Michigan Makes Amends for Falsely Accusing Thousands of Unemployment Fraud



AI ban ordered after child protection worker used ChatGPT in Victorian court case



GIGO

Limited or skewed data set

Bad proxy/assumption

History of poor human
decisionmaking

Technological failure

Using Generative AI Responsibly

Doctors Told Him He Was Going to Die. Then A.I. Saved His Life.

Scientists are using machine learning to find new treatments among thousands of old medicines.

Harnessing AI to model infectious disease epidemics

AI outperforms radiologists in diagnosing and predicting interstitial lung disease

AI-powered tool helps doctors detect rare diseases

A new UCLA medical school graduate co-created an algorithm that combs through electronic health records for faster diagnoses.

Use AI to
help you
think, not
think for you



Proceed with caution when using generative AI for...

- Decision-making
- Direct external communication (chatbots)
- Impersonating a real person
- Recording or transcription without consent
- Research



Coates' Canons NC Local Gov't Law Blog

<https://canons.sog.unc.edu/>

Developing Guidelines for the Use of Generative Artificial Intelligence in Local Government

Published: 03/14/24

Author Name: [Kristi Nickodem](#)

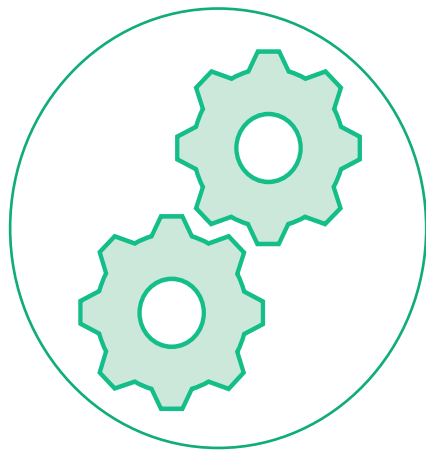
 Print

Vet tech vendors carefully





What data was
used to train the
tool?



What
mechanisms
ensure the tool
will be accurate?
Has the vendor
tested accuracy
rates?



Will data we
input into the
tool be secure?
How does the
vendor use the
data we input?



At what point in
the process will
a human be
involved
(if at all)?



Does the tool
actually do what
the vendor says
it can do?



Training
and self-
education
are key





Expect change

Questions?

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