



# EYES on AI

Navigating the Emergent  
Possibilities of Tomorrow for  
Educators of Blind and Low  
Vision Learners

Joe Dlugo

Dall-E3: An image of a woman holding a white cane while looking off in the distance with futuristic smart glasses.



# Joe Dlugo

TSVI | COMS | CATIS

- Outreach Access Services
- Lead State Mentor
- Access technology consultant



# The algorithm

- The backstory
- What is AI?
- What can it do for you? Exploring AI technologies
- The impact
- Considerations & limitations
- Washington State guidance/policy

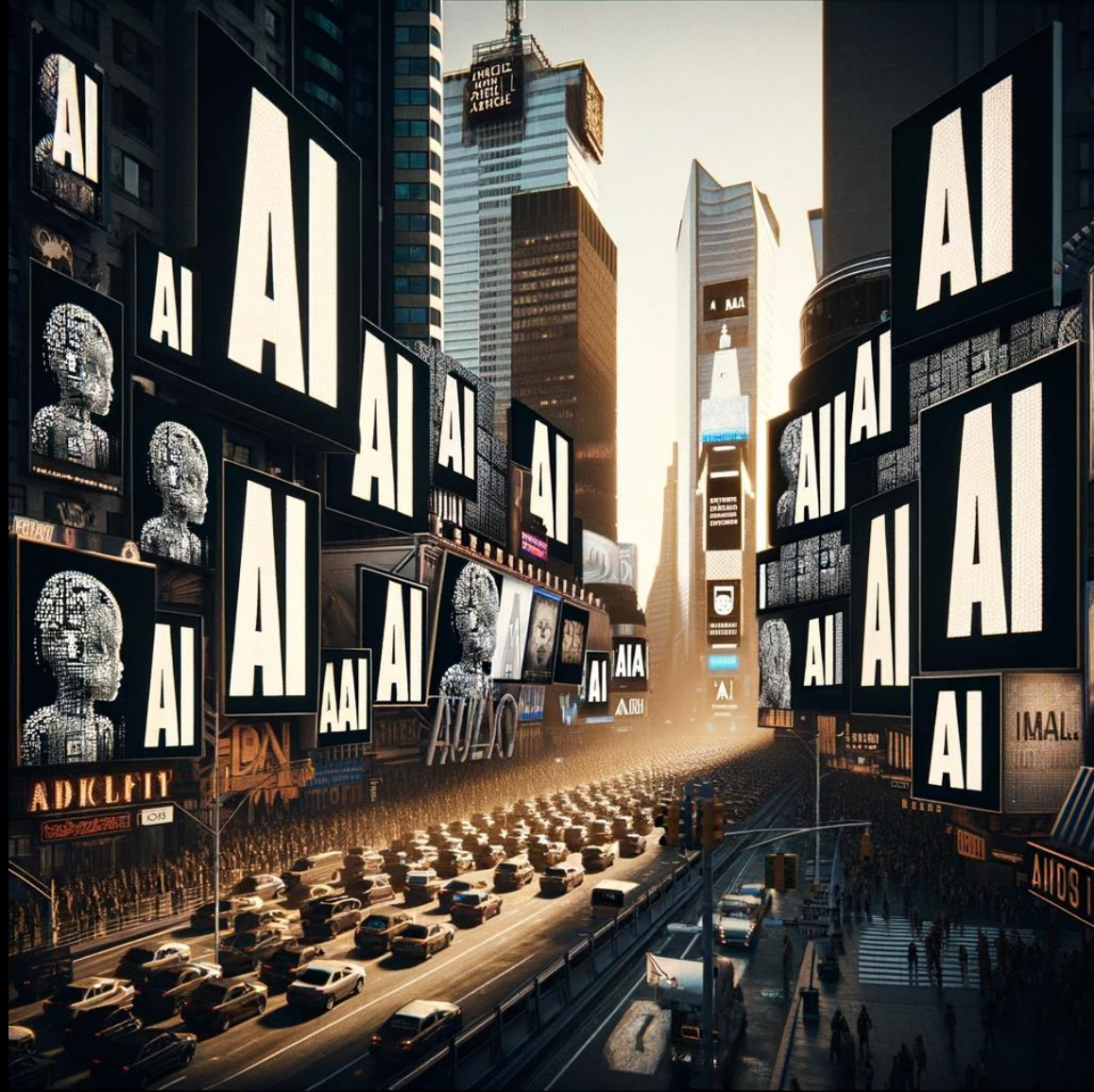
"As we stand on the threshold of an era shaped by artificial intelligence, let us remember the wisdom of our forefathers and tread with the courage of lions, yet the caution of sentinels. For in this dance of progress, it is our duty to ensure that the light of AI illuminates the path of righteousness, safeguarding the sanctity of our human spirit and the security of our noble endeavors."

-ChatGPT-4 Turbo

"Write a quote about artificial intelligence as if it were spoken by Sir Winston Churchill. Also include a little about safety."

“I believe nothing in our foreseeable future will transform our lives more than artificial intelligence. Like the coming of electricity or the birth of the internet, it will bring new knowledge, new opportunities for economic growth, new advances in human capability, and the chance to solve global problems once thought beyond us...”

-British Prime Minister Rishi Sunak



# The backstory

Dall-E3: An image of Times Square with every jumbotron saying AI

November 30<sup>th</sup>, 2022



ChatGPT

An advanced “generative AI” chatbot. It could respond to a text prompt in natural language and conduct human-like conversations with a high degree of accuracy.



- ChatGPT reached 100 million users in 2 months
- AI has been in the news almost daily since, and controversial
- Its premier platform, currently GPT-4 Turbo, is still the most popular ~~and capable~~ of generative AI platforms (Anthropic's Claude 3 is now considered the most capable 3/4/24)
- It currently receives 1.7 billion visits per month



MAGIC SCHOOL

ANTHROPIC



Character.AI



ChatGPT-4 Turbo

LLaMA by Meta



Perplexity



BRAINLY



COPILOT



Eleven Labs



Midjourney



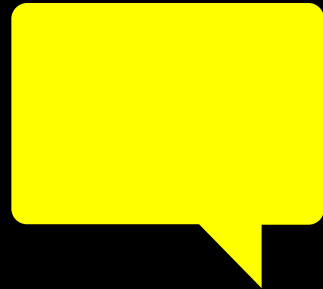
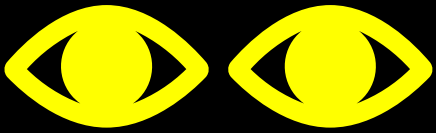
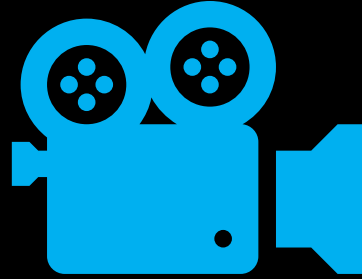
grammarly



Gemini

# What is Artificial Intelligence (AI)

- Very difficult to define
- Computer systems that perform tasks that normally require human intelligence (McKee, 2023)
- Familiar: Writing suggestions, face ID, language translation, smart home, GPS navigation...
- The big news now is generative AI. These are technologies that use a neural network architecture and a method called deep learning to *create* things that typically require human intelligence



# AI Adventure



Dall-E3: An image of people geeking out, something about people getting excited – really geeking out!

# Geek out!

# How does this work?

**ChatGPT is a Large Language Model (LLM).** Large Language Models are usually very large (billions to hundreds of billions of parameters) deep-neural-networks, which are trained by going through billions of pages of material in a particular language, while attempting to execute a specific task such as predicting the next word(s) or sentences. As a result, these networks are sensitive to contextual relationships between the elements of that language (words, phrases, etc).

Source: Drenik, 2023

# Claude Shannon 1948

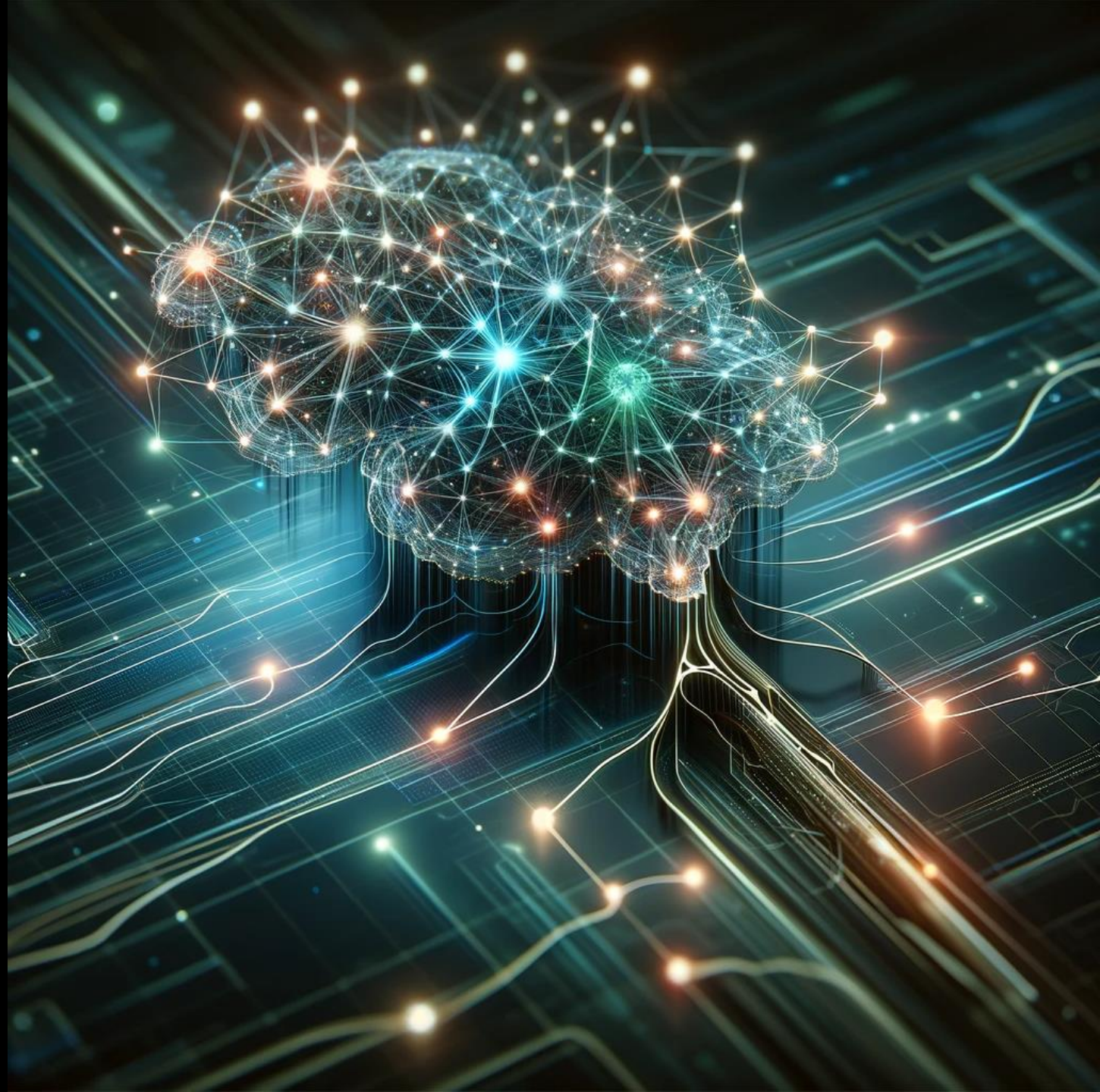
- A Mathematical Theory of Communication
- Precision measuring of the quantity of information in a message
- The likelihood of some letter or word appearing could be approximated.
- The text generated was meaningless but contained approximately the same structure you would see in English.

THE HEAD AND IN FRONTAL ATTACK ON AN ENGLISH WRITER THAT  
THE CHARACTER OF THIS POINT IS THEREFORE ANOTHER METHOD  
FOR THE LETTERS THAT THE TIME OF WHO EVER TOLD THE PROBLEM  
FOR AN UNEXPECTED.

# Neural Network

- Interconnected artificial neurons – like a brain
- Like a team of workers on an assembly line, tasks are passed progressively through the neurons
- Mid-2010's “Transformer” architecture begins to be applied, making them trainable to enormous data sets

Dall-E 3: An image to represent a neural network as in AI





# 75 years later...A critical intersection

Immense increases in computing power

+ Availability of enormous data set for training (the internet)

+ Development of neural networks

+ Transformer architecture

**= Advanced AI**



The worst AI you  
will ever see

Dall-E 3: Create me an image of a  
pile of old computers from the  
1980's

# Evolution of benchmarks of popular platforms

<b>Model:</b>	<b>GPT 3.5 (Nov. 2022)</b>	<b>GPT 4 (March 2023)</b>	<b>Claude 3 (March 2024)</b>
<b>Undergrad level knowledge MMLU</b>	70.0%	86.4%	86.8%
<b>Graduate level reasoning GPQA, Diamona</b>	28.1%	35.7%	50.4%
<b>Grade school math GSM8K</b>	57.1%	92.0%	95.0%
<b>Math problem-solving MATH</b>	34.1%	52.9%	60.1%
<b>Code HumanEval</b>	48.1%	67.0%	84.9%
<b>Knowledge Q&amp;A ABC-Challenge</b>	85.2%	96.3%	96.4%
<b>Common Knowledge HellaSwag</b>	85.5%	95.3%	95.4%

# Evolution of Image Generation

**Stable Diffusion: March 2023**



**Dall-E 3: February 2024**



Video Generation: 2023 vs. 2024

# What we'll cover

- Claude
- Perplexity web search
- Whisper speech-to-text
- Pi
- Microsoft Copilot for Office integration
- Pi AI speech conversation
- Luma 3d modeling
- Mathkicker
- OKO
- Be My AI
- Envision Smartglasses with ChatGPT
- AI hardware

# Main themes of AI in 2024

- AI integration into familiar applications (Outlook)
- Natural language control of complex applications (Photoshop)
- AI Agents

# Large Language Models (LLMs)



**ANTHROPIC**

Claude

The highest performing of all AI chatbots

[Claude.ai](https://claude.ai)

# Further your knowledge – Large Language Models:

- Google Gemini
- Llama-2 by Meta
- Mistral
- ChatGPT



Perplexity

AI-based search

[Perplexity.ai](https://perplexity.ai)

# Further your knowledge – AI Search:

- [Edge AI Browser](#)
- [Arc Search](#)
- [Google Gemini](#)
- [ChatGPT-4](#)



ChatGPT-4 Turbo  
Whisper speech to text

[chat.openai.com](https://chat.openai.com)



# Pi AI Chatbot

A free conversational AI chatbot

[pi.ai](https://pi.ai)



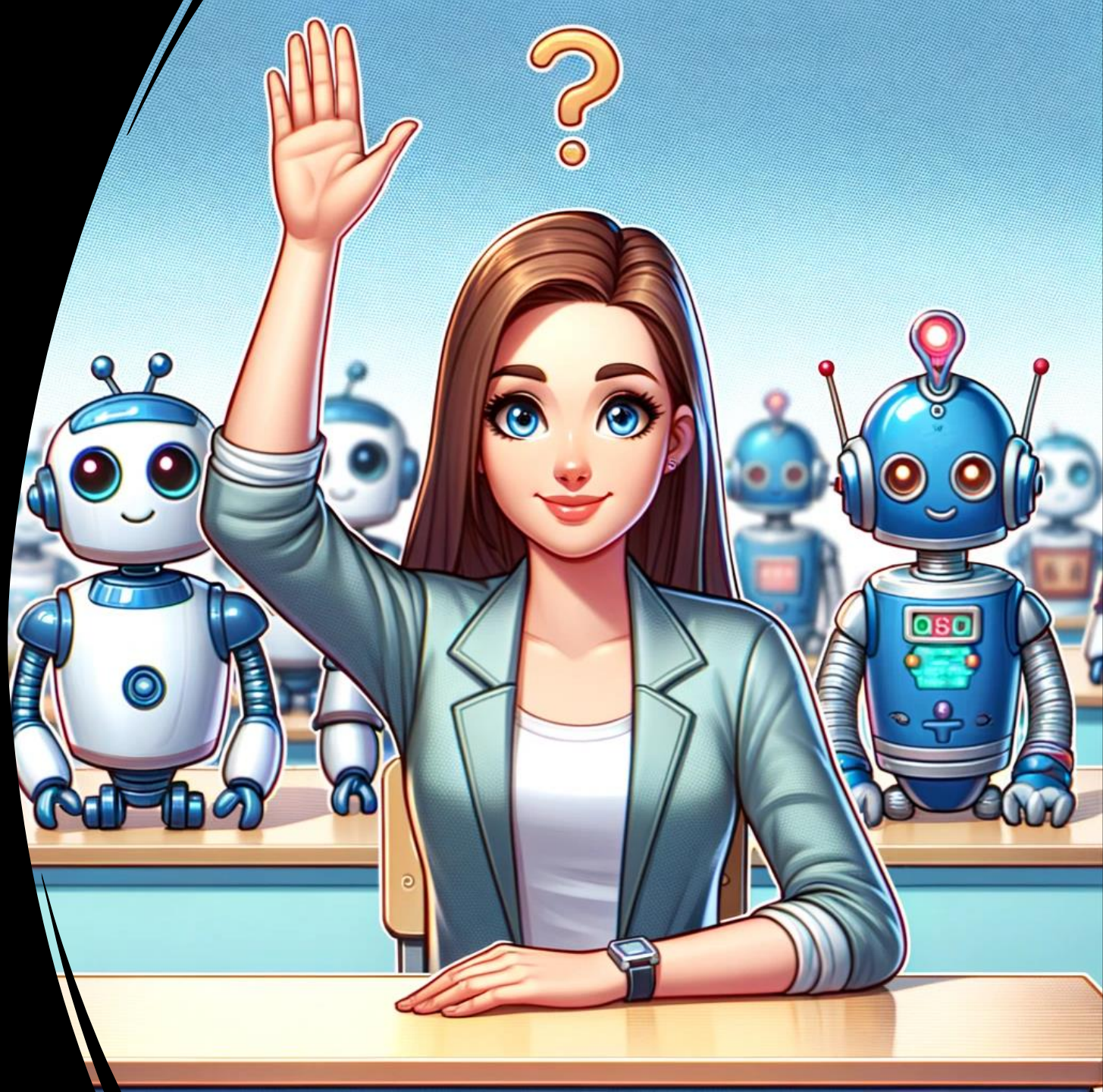
# Microsoft Copilot

AI integration into familiar Microsoft applications

[Get Copilot](#)

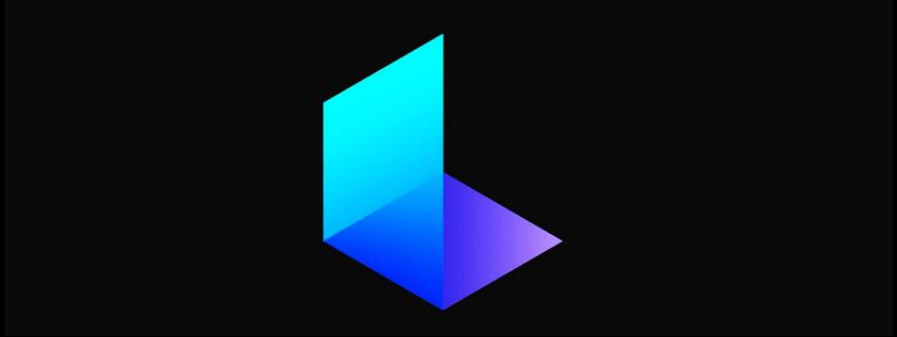
# Questions?

Dall-E 3: Create me an image of a woman sitting at a desk, raising her hand to ask a question. She should be facing the viewer of the image. Put robots in the background. Make it cartoon-like please





# Image Generation



Luma AI

Instant 3d graphics for printing

[lumalabs.ai](https://lumalabs.ai)

# Computer Vision

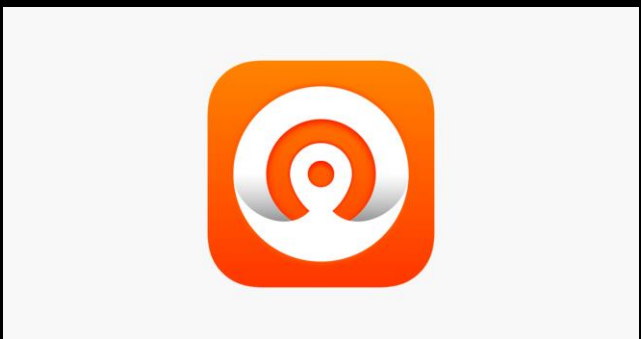




# Mathkicker

A purpose-built AI accessibility tool

[mathkicker.ai](https://mathkicker.ai)



OKO

Pedestrian signal detection

[Get OKO on the App Store](#)



# Be My AI

A ChatGPT-4 powered conversational digital assistant for  
accessing the visual world

[Be My Eyes on the App Store](#)



# Envision AI Smart Glasses

Wearable computer vision

[letsenvision.com](https://letsenvision.com)

# Further your knowledge – computer vision:

- Meta Ray-Ban smart glasses with Llama-2
- Seeing AI app
- ChatGPT-4 Turbo with vision
- 12 Labs video search AI
- Humanware StellarTrek





## The Ai Pin

A mainstream smartphone replacement with  
some inherent accessibility

[humane.com](http://humane.com)

# Questions?



Dall-E 3: Create me an image of a man sitting at a desk, raising his hand to ask a question. He should be facing the viewer of the image. Put robots in the background. Make it cartoon-like please

# The Impact

# 56%

Of American workers have used Generative AI at least occasionally on the job

Source: Conference Board, 2023



# Boston Consulting Group Study

758 consultants split into groups and were given 18 tasks to complete. The groups included those working without AI and those with AI (ChatGPT-4) .

Source: Marketing Artificial Intelligence Institute, 2023

# The group using ChatGPT-4...

- Completed 12.2% more tasks on average
- Completed tasks 25.1% more quickly
- Produced results 40% higher quality
- For the group without AI use, results were 19% less accurate
- Lower-skilled employees were leveled up

*“The performance improved on every dimension. Every way we measured performance” – Ethan Mollick, Wharton School of the University of Pennsylvania*

# 33%

Of teachers have used generative AI in their classroom

- Most popular use is for lesson planning, crafting assessments, content creation, and grading

Source: Kuykendall, 2023

# 90%

Of teachers indicated that generative AI will make education somewhat/more accessible for students with special needs.

Source: Kuykendall, 2023



# 66%

Of teachers have not used generative AI  
in their classroom

- 65% cite lack of familiarity with the tools
- 48% expressed ethical concerns

Source: Kuykendall, 2023



Dall-E3: An image of a can of food with worms coming out of it

# Considerations & Limitations

# Considerations

- Teacher training in AI
- Hallucinations
- Equitable distribution of the technology and training
- Deepfakes
- Keeping pace in a rapidly advancing technology ecosystem
- Environmental impacts of data centers
- Cost and time of implementation
- Adjusting teacher prep programs
- Privacy
- Intellectual property
- Appropriate/capable equipment
- Sophisticated cyber attacks
- Societal impacts
- Creating policy
- Supervising student use
- Overreliance / cognitive atrophy
- Bias
- Automation bias
- Citing work done with AI
- Plagiarism/Academic dishonesty
- Homogenization of ideas...

# Hallucinations

- AI systems designed to produce plausible information, not truthful information
- No filter for untruthful data
- Fact checking skills will be paramount, and sometimes time-consuming. Tools like Perplexity can assist with this, but nothing substitutes human cross-referencing right now.



Dall-E3: An image of Pinocchio holding a computer screen that says AI

# Hallucination rates

- GPT-4 .....3%
- GPT-3.5.....3.5%
- Llama-2.....5.1-5.9%
- Cohere.....8.5%
- Claude II.....8.5%
- Mistral.....9.5%
- Bard/Palm2...12.1%

Source: Connelly, 2023)

# Fabricating citations:

- GPT-3.5: 55% fabricated citations, 43% of non-fabricated citations had substantive errors
- GPT-4: 18% fabricated citations, 24% of non-fabricated citations had substantive errors

Source: Walters & Wilder, 2023

# Automation bias

- The propensity for humans to favor suggestions from automated decision-making systems and to ignore contradictory information made without automation, even if it is correct.



Dall-E3: Two pilots in a very complicated looking aircraft cockpit

# Nikon advertisements: “Don’t give up on the real world.”

/imagine prompt::a latte skatepark in the middle of the desert in Mars

© John Fowler  
Nikon D80  
Coyote Buttes, USA

DON'T GIVE U

/imagine prompt::a mutant Umbrella tree shaped like a nuclear bomb explosion\_

© Andrew Svk  
Nikon D850  
Socotra, Yemen

DON'T GIVE UP ON THE REAL WORLD. 



# Bias

- AI technologies reflect the data they were trained on (the internet) and the values of their creators
- AI can solidify existing bias that can lead to prejudices, injustice, and inequality
- Concern that very few, non-diverse boardrooms at big tech companies possess immense influence
- Many platforms not transparent about biases

# Example of bias



I prompted GPT-4 this:

Tell me a little bit about James, a student who is blind and attends high school with his same age peers, fully integrated in his class, an A student, and has no additional physical or cognitive disabilities. He just washed his hands by himself for the first time.

ChatGPT-4 returns this:

James is a high school student who exemplifies determination and capability. Blind from birth, James studies in a regular high school setting, fully integrated and keeping pace with his sighted peers. His academic performance is stellar, reflected in his consistent 'A' grades, which speak to his dedication and intellectual prowess. Remarkably, James does not have any additional physical or cognitive disabilities, which underscores his recent personal milestone. Achieving the independent task of washing his hands for the first time is not just a step towards self-care autonomy; it is a significant leap towards his personal independence. This milestone is a bright testament to his growing self-reliance and his ability to overcome everyday challenges. James's story is one of inspiration, demonstrating the achievements possible when individuals are given the support and opportunity to succeed.

# Google chief admits 'biased' AI tool's photo diversity offended users

Sundar Pichai addresses backlash after Gemini software created images of historical figures in variety of ethnicities and genders

● [Human or fake? How AI is distorting beauty standards - video](#)



Google's Gemini AI illustrations of a 1943 German soldier. Illustration: Gemini AI/Google

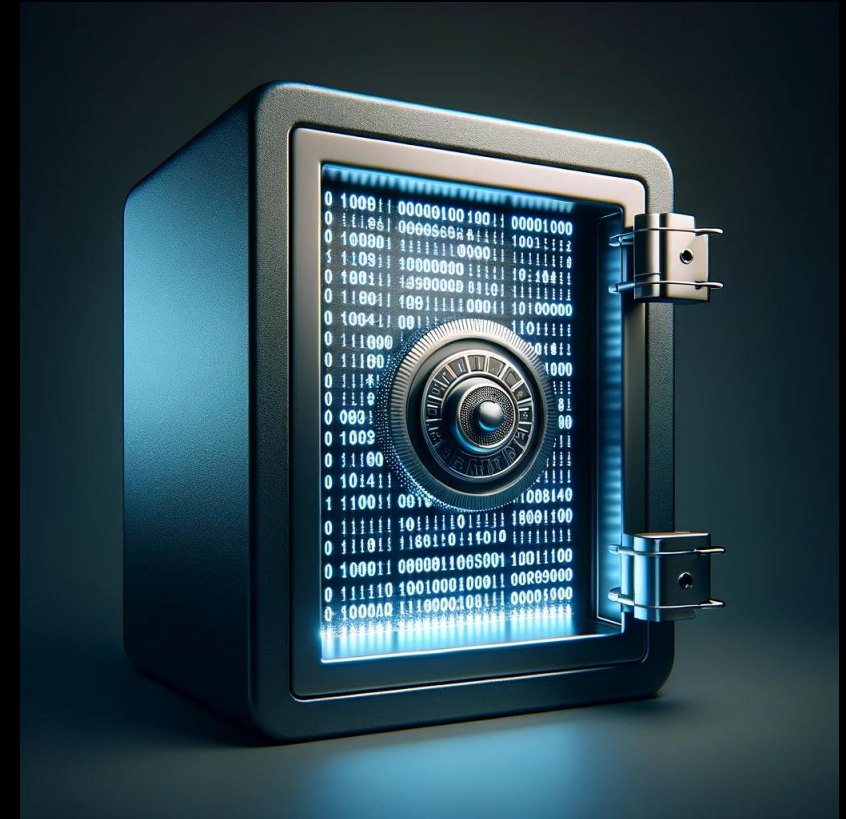


Dall-E 3: Make me an image of a CEO



# Privacy

- Unintended data exposure: AI models train on your interactions. DO NOT INPUT PERSONAL OR IDENTIFYING INFORMATION.  
Anonymize student data
- Be aware of the privacy policies of AI tools and review them for compliance with district/state policies
- Be transparent with your student when using AI tools - Incorporate privacy discussions in lessons



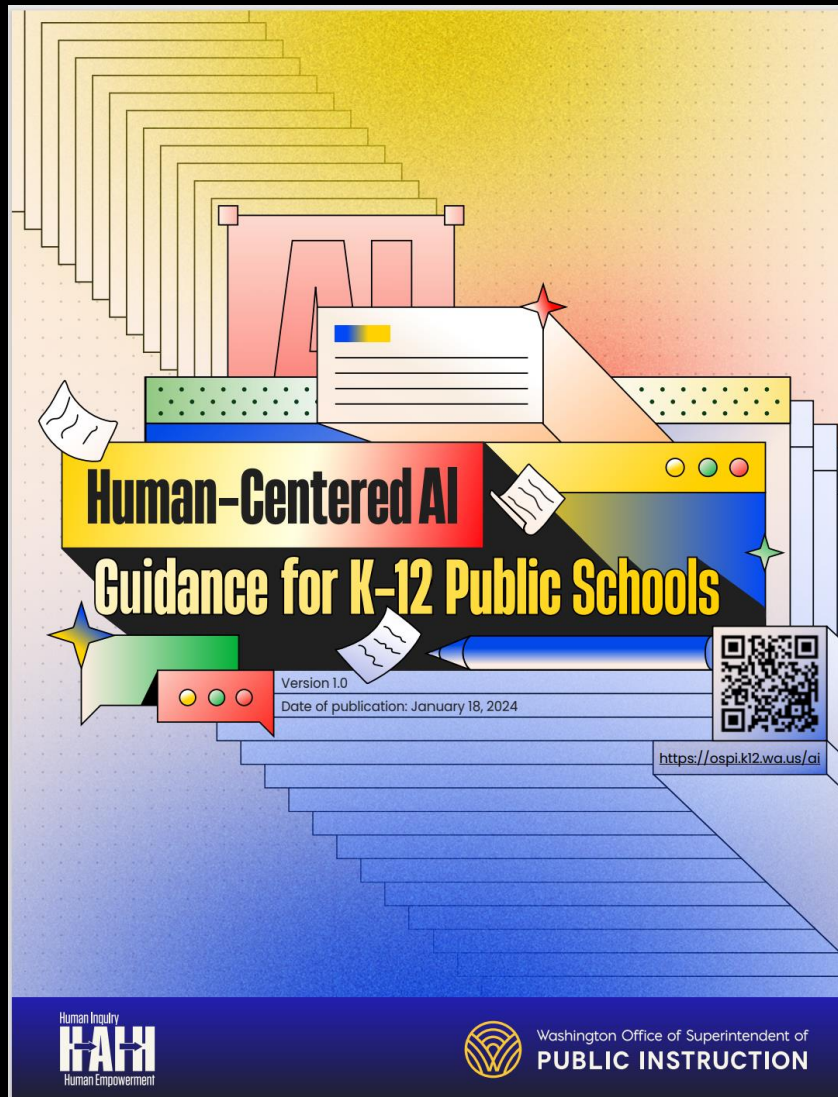
Dall-E3: A safe adorned with ones and zeros, make the numbers glow

# State Level Education Guidance

- 4 states currently providing guidance (CA, OR, WA, MI)
- 10 states developing guidance
- 21 states not providing guidance in foreseeable future (includes IL.)
- 17 states did not respond

Source: Dusseault & Lee, 2023)





**Guidance from OSPI**

# A “Human-Centered Approach”

- Develop student’s AI literacy
- Ensure ethical, equitable, and safe use of AI
- Provide professional development
- Apply human-centered design principles
- Align AI solutions with the best practices and principles of learning
- Avoid sole reliance on the use of “AI detection” tools

# Values

- New level of education
- Equitable and inclusive
- Safe and secure
- Consistent and compliant
- Accountable and transparent
- Interpretable and understood
- Purposeful and beneficial
- Human and machine
- Continuous learning and development

# AI Usage Policies in Washington Schools

- AI use should start and end with human insight, incorporating human intelligence and responsibility
- **Responsible USE Policy (AUP):** Updated to include safe and appropriate use of AI tools
- **AI inquiry and input review:** Human input required, ensuring compliance with FERPA, COPPA, and CIPA
- **AI Output Review:** Critical assessment of AI outputs before sharing or publicizing results
- **Addressing Bias and Misinformation:** Verifying AI results for credibility and accuracy

# Updates for Existing Policies

- Data collection: Informing and obtaining consent from parents/guardians and students for specific data collection activities
- Third-Party AI tools: Regularly review and update of the district's approved list of AI software and tools.
- Personal Information: Adherence to FERPA, COPPA, and CIPA when entering sensitive data AI systems

# Academic Integrity & AI

- Assessments: Teachers can allow AI as a study tool but should explicitly state if it's permitted during exams or quizzes
- Assignments: Teachers should clarify appropriate AI uses, possibly allowing limited AI for brainstorming or parts of assignments
- Bias and critical thinking: Users should evaluate AI outputs for accuracy and bias, developing critical thinking skills for AI navigation
- Citations and plagiarism: AI –generated content must be cited properly in assignments or publications to avoid plagiarism
- AI detection tools: Caution is advised as tools claiming to detect AI-generated content are not always reliable for identifying plagiarism

# The Path Ahead

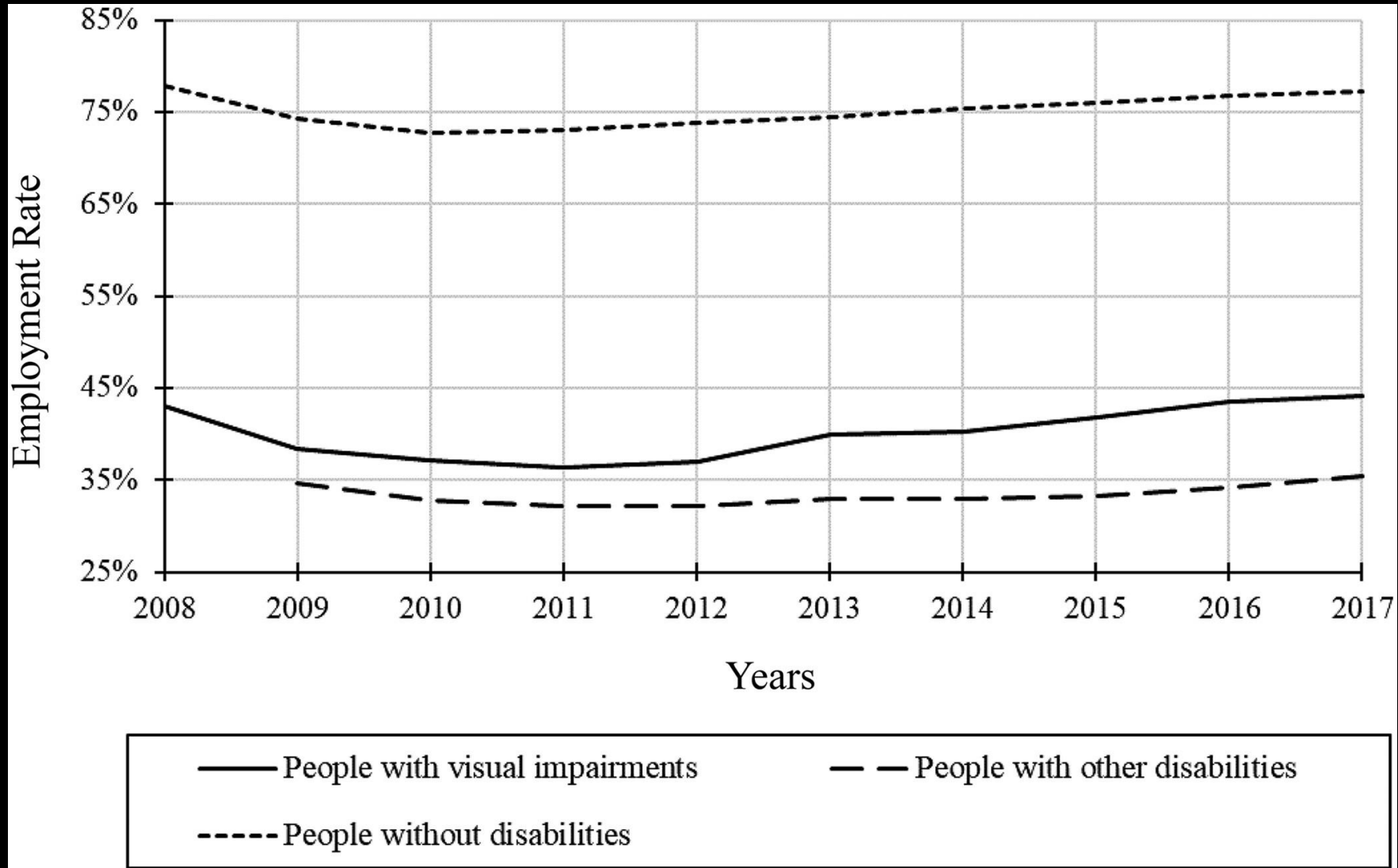
# PwC (PricewaterhouseCoopers) Annual Global CEO Survey



- 68% of US CEOs think that AI will increase productivity in the next 12 months
- 68% of US CEOs agree that generative AI will significantly change the way my company delivers, creates and captures value
- 61% of US CEOs agreed that generative AI would require most of their workforce to acquire new skills



# Employment rates



# 90%

Of teachers indicated that generative AI will make education somewhat/more accessible for students with special needs.

Source: Kuykendall, 2023

“Over the last 10-15 years, almost everybody who sits on a stage like this would tell you that it is vital that your children learn computer science, everybody should learn to program. In fact, it is almost exactly the opposite. It is our job to create computing technology such that nobody has to program, and that the programming language is human. Everybody in the world is now a programmer. This is the miracle of AI.”

Jensen Huang, CEO, NVIDIA

World Government Summit in Dubai, Feb. 2024



*“Looking at LLMs (Large Language Models) as chatbots is the same as looking at early computers as calculators. We’re seeing an emergence of a whole new computing paradigm, and it is very early.”*

*-Andrej Karpathy of OpenAI*

Dall-E3: A woman teacher working with a blind child reading a futuristic braille device in a space-age classroom with robots in it.

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