



LESSONS MANAGEMENT FORUM 2024

DAY 2 | 29 MAY

Welcome

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LESSONS MANAGEMENT FORUM 2024

DAY 2 | 29 MAY

Thank you for joining us, the
forum will commence at
9.30am ACST (Adelaide time).

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Welcome

Des Hosie

National Operations Advisor, Safety, Continuous Improvement & Lessons Management, Fire & Emergency New Zealand

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Acknowledgement to Country

AFAC and AIDR acknowledges the traditional owners of the land we are meeting on today, the Kurna people.

We pay our respects to Aboriginal and Torres Strait Islander peoples as the traditional custodians of Australia and Māori, as the Tangata Whenua and Treaty of Waitangi partners in Aotearoa-New Zealand.

I would also like to acknowledge and extend my respects to the Aboriginal, Torres Strait Islander and Māori people who are here today and online.

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Day one recap

Des Hosie

National Operations Advisor, Safety, Continuous Improvement & Lessons Management, Fire & Emergency New Zealand

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Housekeeping

- Please ensure all phones are switched to silent
- Q&A will be through Slido, please post your questions using the Slido link and QR Code.
- For those of you online, please use the chat window to share any thoughts or reflections.
- Make sure to select 'everyone' in the dropdown menu for everyone to view your messages.
- Please be respectful to each other and our presenters when posting your comments or questions.

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Slido.com
#LMF2024



The AI storm comes: are we ready for AI's impact on disaster management?

Charles White

Chief Knowledge Officer, Deep Space Engineering Technology

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#LMF2024

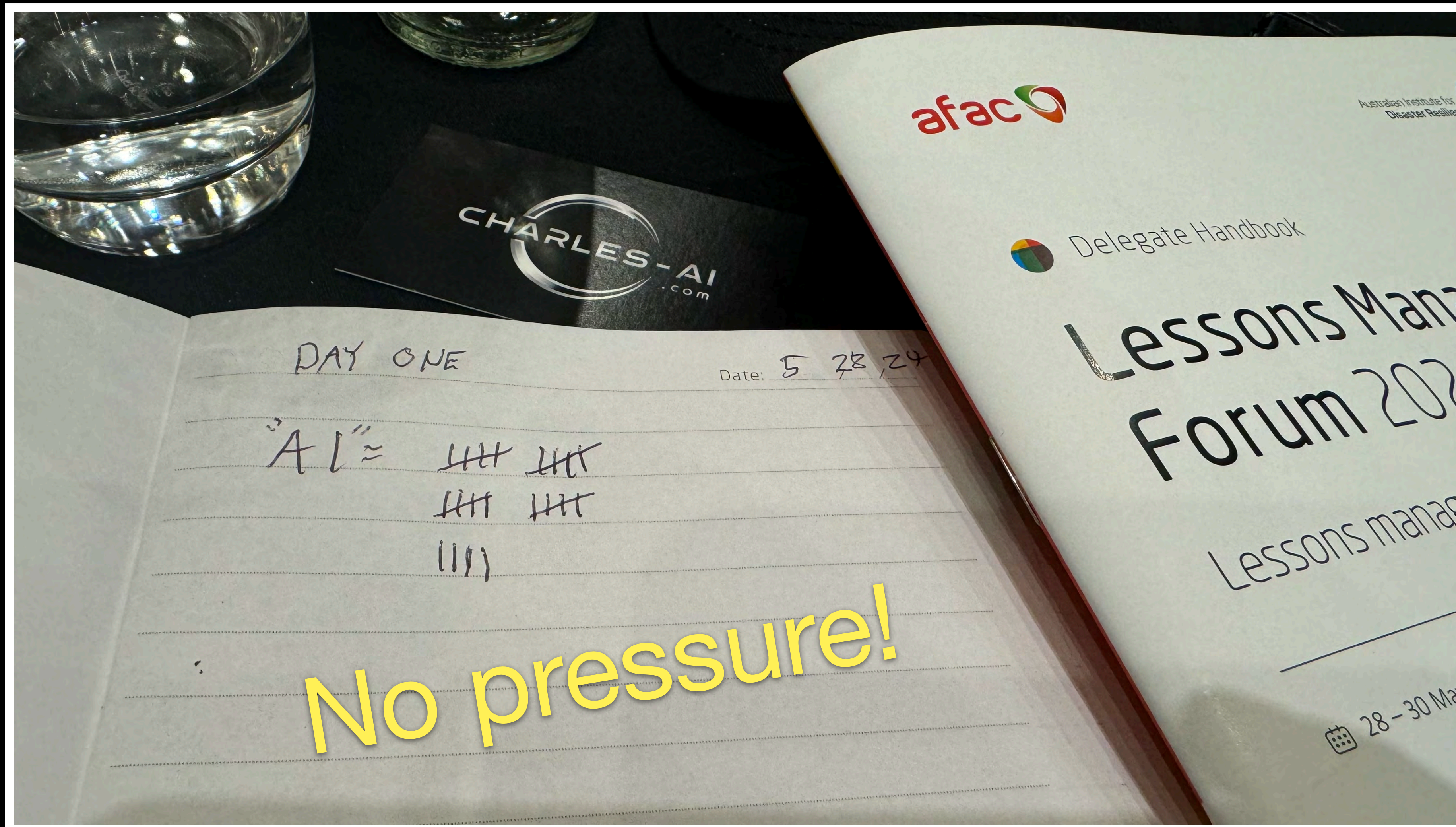


First off... Thank You for the 'warm' welcome!
You really didn't have to go all that trouble.



Day One - "AI" was said 24 times!

"You are one of the reasons I'm attending" -(redacted)





Charles White

The AI Storm Comes

Are We Ready for AI's Impact on Disaster Management?

Keynote By: *Charles White*

Adelaide, Australia May 29, 2024



Australian Government
National Emergency
Management Agency



Australian Institute for
Disaster Resilience

Who is this guy?



Former Deputy Chief Knowledge Officer, JPL Lessons Learned Investigator “Disruptor”

Disclaimer...

I am retired! I say things.

Neither Deep Space Engineering Technology, the U.S. Government, NASA, JPL, Caltech nor my wife shall endorse or recommend any commercial products, processes, or services.



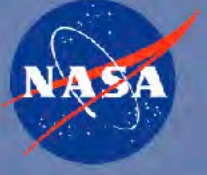
Published Lessons Learned:
NASA Website <http://llis.nasa.gov>

Among my favorites...

* Robot Li-Ion Fire

Respect Li-Ion and how
you charge them!!





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Lesson Info

Lesson Number

23701

Lesson Date

2018-01-09

Submitting Organization

JPL

Similar Lessons

Lithium-Ion Battery Fire	2010-05-17
Battery Fire at the Madrid DSN Facility	2014-10-15
Provide Adequate Maintenance and Hazard Response for UPS Units	2014-07-14
Mars Global Surveyor (MGS) Spacecraft Loss of Contact	2007-09-03
Battery quotPoppingquot During ATLO (Assembly Test and Launch Operations) Due to Horizontal Mounting	1997-08-27
CloudSat Battery Anomaly	2017-10-03
Implementing Power Quality Test Capability for ISS Payloads	2018-05-30
RapidScat Power Subsystem Failure	2017-12-12
SMAP Reflector Deployment Test Anomaly (Design and Test of Large, Complex Deployables)	2016-01-19
Premature Wear of the MSL Wheels	2017-09-26

Subject


Robot Li-Ion Battery Fire

Abstract

A non-flight robot development project suffered sustained combustion during lithium-ion (Li-ion) battery charging in a laboratory at the NASA/Caltech Jet Propulsion Laboratory (JPL). Failure analysis found significant weaknesses in battery design, battery component selection, battery charging and monitoring procedures, battery purchasing controls, and facility safety procedures. Li-ion batteries are in common use across NASA, and improper storage and use of large Li-ion battery packs can have catastrophic consequences.

Driving Event

In 2015 JPL completed a non-NASA sponsored research task to design a multi-limbed robot (Figure 1). JPL experience in the design of semi-autonomous mechanical systems had previously shown promise when applied to replacing human workers in hazardous terrestrial environments. The task was intended to demonstrate the stability (Figure 2) needed to complete challenging tasks under supervised tele-operation while in the degraded human environment typical of natural and man-made disasters. The robot featured a LiDAR (Light Detection and Ranging) device and stereo cameras to sketch out its environment in three dimensions.



**Published Lessons Learned:
NASA Website <http://llis.nasa.gov>**

Among my favorites...

- * Robot Li-Ion Fire
- * Premature Wear of the MSL Wheels

**I got to play with these wheels
in my office for months!**



NEWS News, features & press	MISSIONS Current, future, past	MULTIMEDIA Images, videos, NASA TV	CONNECT Social Media Channels &	ABOUT NASA Leadership, organization,
NEWS News, features & press releases	MISSIONS Current, future, past missions & launch dates	MULTIMEDIA Images, videos, NASA TV & more	CONNECT Social Media Channels & NASA Apps	ABOUT NASA Leadership, organization, budget, careers & more

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Lesson Info

Submit Lesson Number	22401
Lesson Date	2017-09-26
Submitting Organization	JPL

Similar Lessons

Lithium Battery	RapidScat Power Subsystem Failure 2017-12-12
Provide Response	CloudSat Battery Anomaly 2017-10-03
Mars Gravity Contact	Mars Landings May Not Accurately Account for Local Gravity (Export Version) 2019-11-03
Battery Test and Mounting	Implementing Power Quality Test Capability for ISS Payloads 2018-05-30
CloudSat	High Oxidizer Vapor Content May Cause Vapor Reaction in Bi-Propellant Systems 2018-06-19
Implement Payload	Employ JPL's Established Set of Engineering "Checks and Balances" 2017-10-24
RapidScat	SMAP Reflector Deployment Test Anomaly (Design and Test of Large, Complex Deployables) 2016-01-19
SMAP Instrument and Test	Proximate Cause of the SMAP Radar Failure 2019-03-30
Premature	OCO-2 Polarization Anomaly 2016-06-14
	Recognize That Mechanism Wear Products May Affect Science Results 2014-06-08

Subject

Premature Wear of the MSL Wheels

Abstract

The Mars Science Laboratory (MSL) rover wheel design has proven susceptible to puncture over certain types of Martian terrain. The anomalous wheel wear suggests that loads and terrains representative of actual operational conditions were not adequately simulated during life testing. The MSL project has implemented operational measures to minimize further damage, and for the Mars 2020 project the wheel design will be modified to increase durability over harsh terrain while preserving tractive performance in loose media.

Driving Event

The MSL “Curiosity” rover landed on August 6, 2012, and it has currently driven 19 kilometers (Reference (1)) across the Martian surface. Curiosity’s six aluminum wheels were designed for mobility on loose sand, rocks perched on sand, and flat bedrock. The design was tested under simulated conditions in the Mars Yard outdoor test facility. Like the wheels on the three prior Mars rovers, however, the wheel (Figure 1) was designed with very limited knowledge of the specific terrain features that would eventually be encountered during Mars surface operations.

The image shows a close-up of a black, ruggedized wheel from the Curiosity rover. The wheel has a complex tread pattern consisting of several rows of chevron-shaped grousers. It features a central hub with spokes and a stiffening ring. Various parts are labeled with yellow text and leader lines: 'Outer rim' at the top edge, 'Wheel flexures (Spokes)' pointing to the spokes near the hub, 'Skin' pointing to the outer tread surface, 'Grousers (Treads)' pointing to one of the chevron patterns, 'Chevron features' pointing to another chevron pattern, 'Stiffening Ring' pointing to the ring around the hub, 'Inner rim' pointing to the inner edge of the tread area, and 'Odometry Marker' pointing to a small feature on the lower right side of the wheel.

Figure 1. Components of a Curiosity wheel

As the rover drives across the surface of Mars, the rover operations team at the NASA/Caltech Jet Propulsion

Published Lessons Learned:
NASA Website <http://llis.nasa.gov>

Among my favorites...

- * Robot Li-Ion Fire
- * Premature Wear of the MSL Wheels
- * Conductive Polyamide Tape and Nickel Alloy Foils Can Become Magnetized

This is my favorite
one of them all!



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Lesson Info

Lesson Number

Lesson Date

Submitting Organization

Similar Lessons

High Oxidizer Vapor Content May Cause Vapor Reaction in Bi-Propellant Systems

2018-06-19

RapidScat Power Subsystem Failure

2017-12-12

OCO-2 Polarization Anomaly

2016-06-14

Poor Coordination of Routine Maintenance Spoiled an Important Test

2014-08-11

Schedule Early Generation and Validation of Simulated Science Datasets

2013-06-25

Fabrication of Propulsion Tubing for the MSL Descent Stage

2014-12-02

Projects Benefit from Lessons Learned on Previous Spaceflight Projects

2017-05-23

Procurement of Nonconforming Titanium Alloys

2011-01-01

DSN Antenna Damaged by Dropped Handrail

2015-06-09

CloudSat Battery Anomaly

2017-10-03

Subject

Conductive Polyimide Tape and Nickel Alloy Foils Can Become Magnetized

Abstract

System testing of the Juno spacecraft's sensitive magnetometer detected an anomalous magnetic field emanating from the spacecraft. Upon investigation, the magnetic contamination was traced to tiny nickel-plated balls within the adhesive on conductive black polyimide tape. Nickel itself is normally not magnetic, and the tape was used without considering the potential for a nickel alloy to become magnetized.

Driving Event

Polyimide tape (Figure 1) is used extensively in the fabrication of spacecraft as an insulation and protection layer on electrostatically sensitive and fragile components. The features of this thin, flexible, film include light weight, a low outgassing rate, stability at temperature extremes, and thermal conductivity even at very low temperatures. Polyimide tape is manufactured in electrically conductive and non-conductive versions; the black-colored conductive version, which contains tiny nickel-plated spheres embedded in its adhesive, is considered to be non-magnetic.

Non-conductive "yellow" polyimide tape

Conductive "black" polyimide tape

Figure 1. Applications for polyimide tape

The NASA/Caltech Jet Propulsion Laboratory (JPL) launched the Juno spacecraft on its mission to Jupiter in August 2011. Juno's science instruments include two fluxgate magnetometers (FGMs) and one scalar helium magnetometer (SHM) that will map the planet's magnetic field, determine the dynamics of its interior, and determine the three-dimensional structure of Jupiter's polar magnetosphere and its auroras. These sensors are located on the end of one of the three solar arrays on a small boom 12 meters from the center of the spacecraft (Figure 2); this location is intended to assure that the sensors will not be magnetically contaminated by stray magnetic fields generated by the spacecraft bus.

But in addition to my Rocket Scientist work...

Some of my background in Emergency Management

“Whittier Narrows Earthquake”

October 1, 1987

Wide area affected
8 fatalities, 200 injuries
\$358 million in damages

Help is not coming!



“Station Fire”

Started August 26, 2009

160,00 acres - 250 square miles
90 homes and 120 buildings
2 firefighters

Laboratory evacuated





Today...



Employee Volunteer USAR Team...

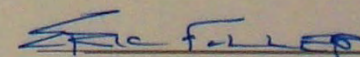
Jet Propulsion Laboratory Fire Department Urban Search and Rescue Reserve Team

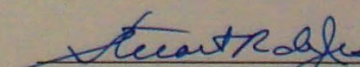
This Certifies that

Charles White

Public Information Officer




Eric G. Fuller, Program Manager

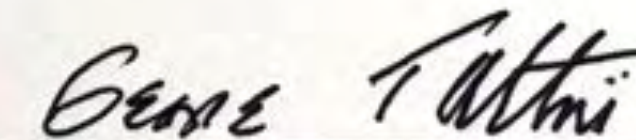

Stuart de Jesus, Captain



Charles White

*In appreciation for your outstanding efforts
in protecting the Jet Propulsion Laboratory
during the recent Station fire.*

You are a true professional, well done.



Lt. Gen. Eugene Tattini, USAF, Retired
Deputy Director, Jet Propulsion Laboratory

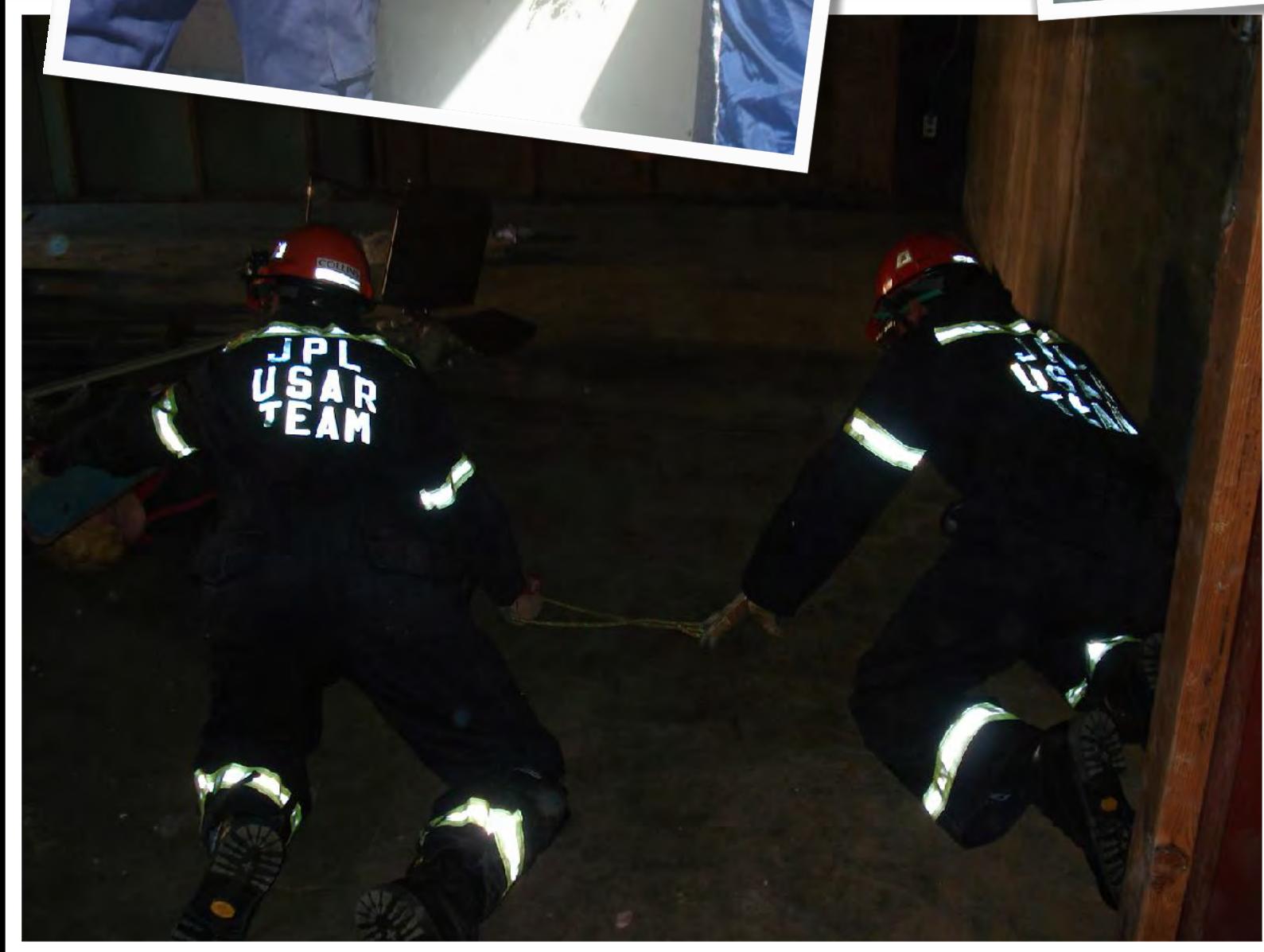
JPL

California Institute of Technology

My scrap book...



My scrap book...



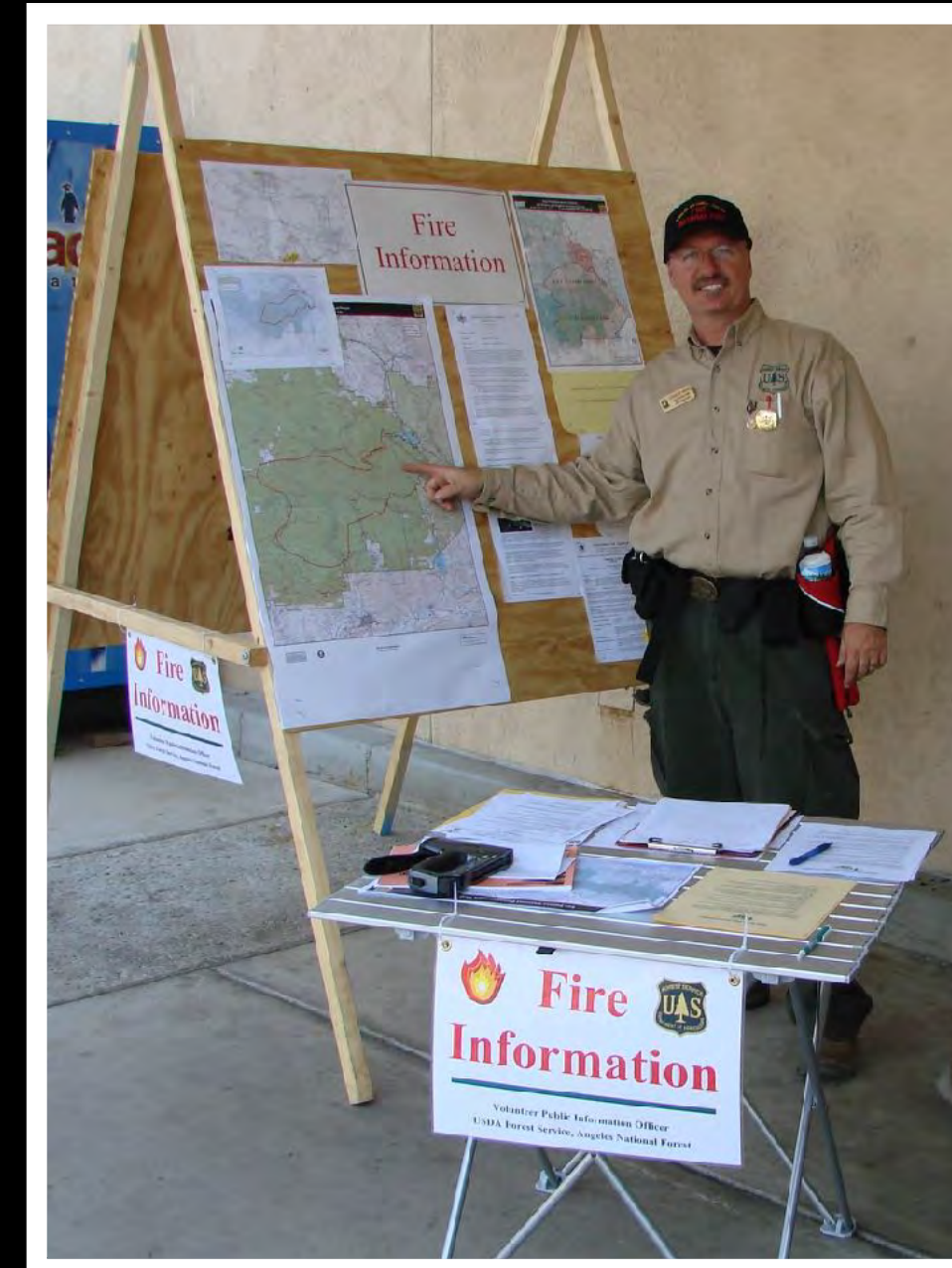
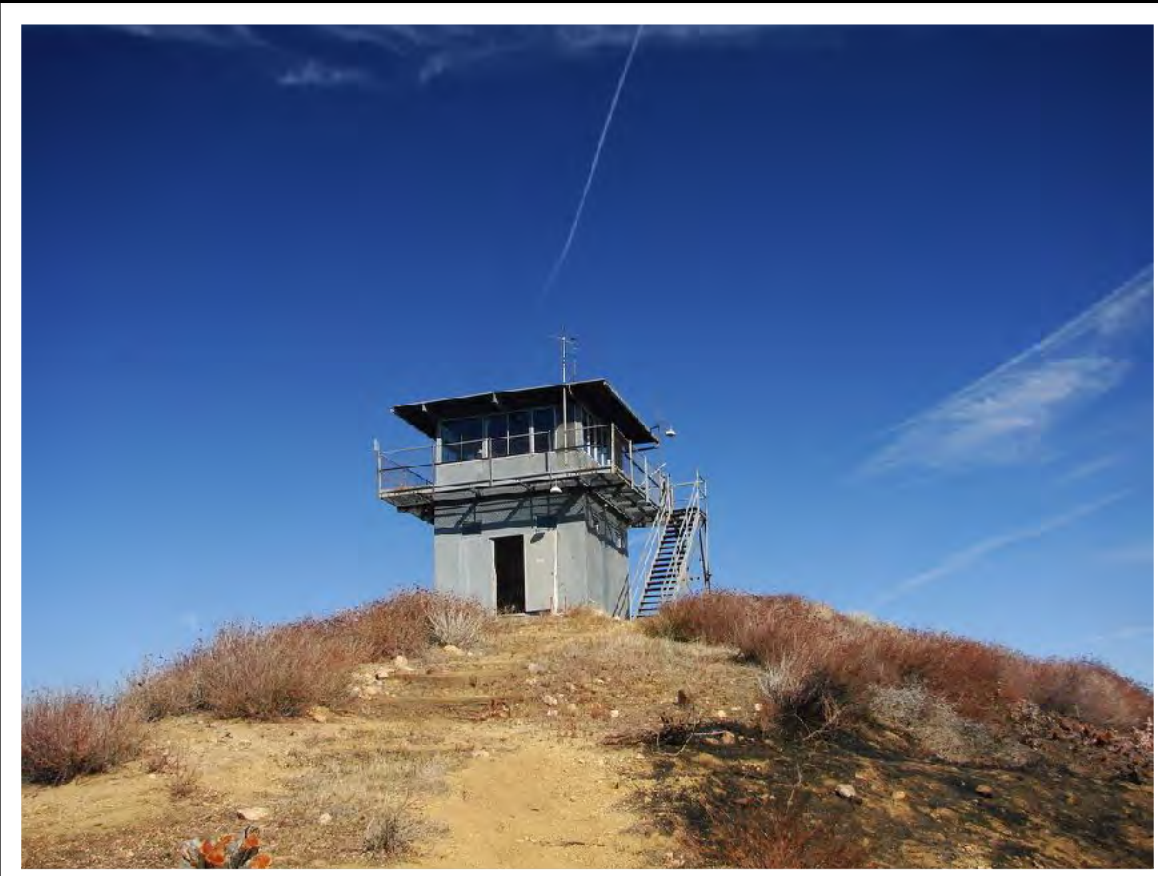
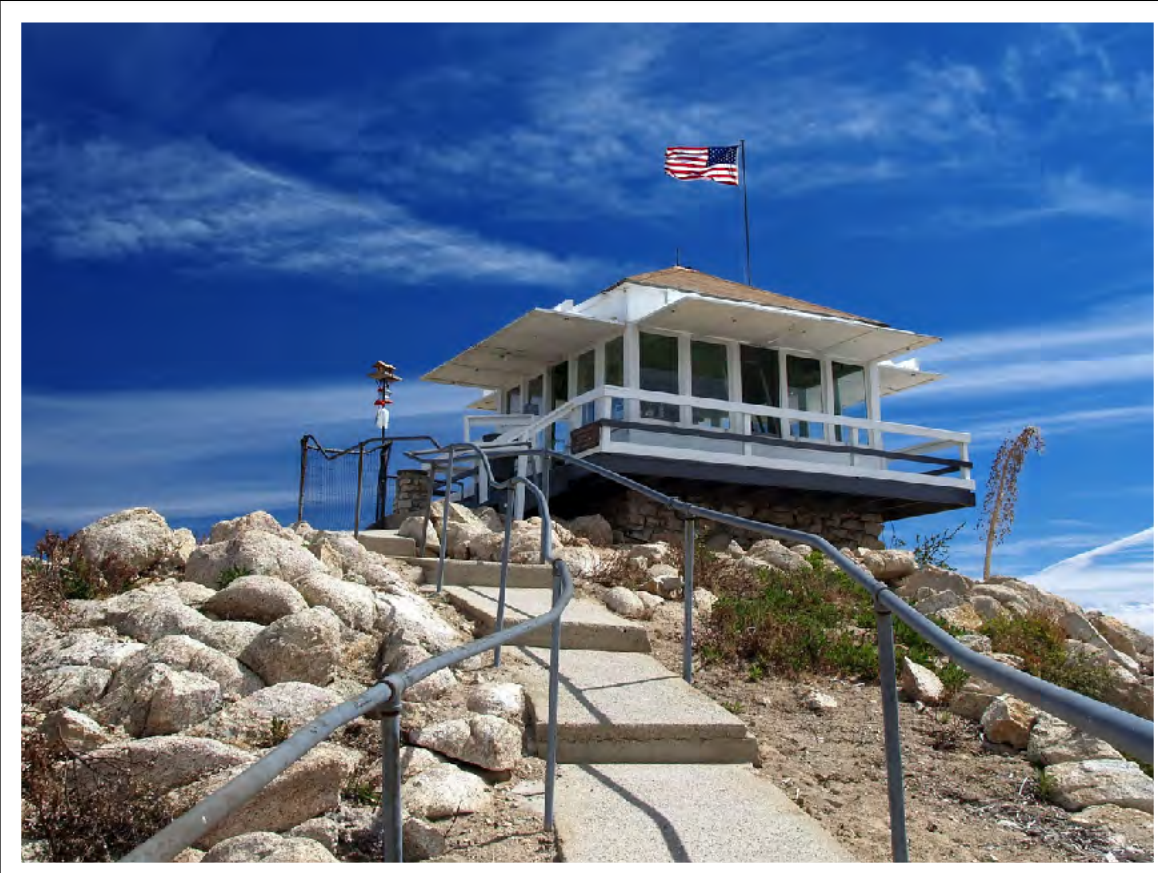
But wait... if you order now you get this special offer:

Personal non-work hours...

United States Forest Service (USFS)

* Volunteer Fire Lookout *

* Volunteer Public Information Officer *



* *Featured in Wikipedia*

* *Only citizen PIO volunteer in USA*



Hello!



The AI Storm Comes

Are We Ready for AI's Impact on Disaster Management?

Keynote By: *Charles White*

Adelaide, Australia May 29, 2024

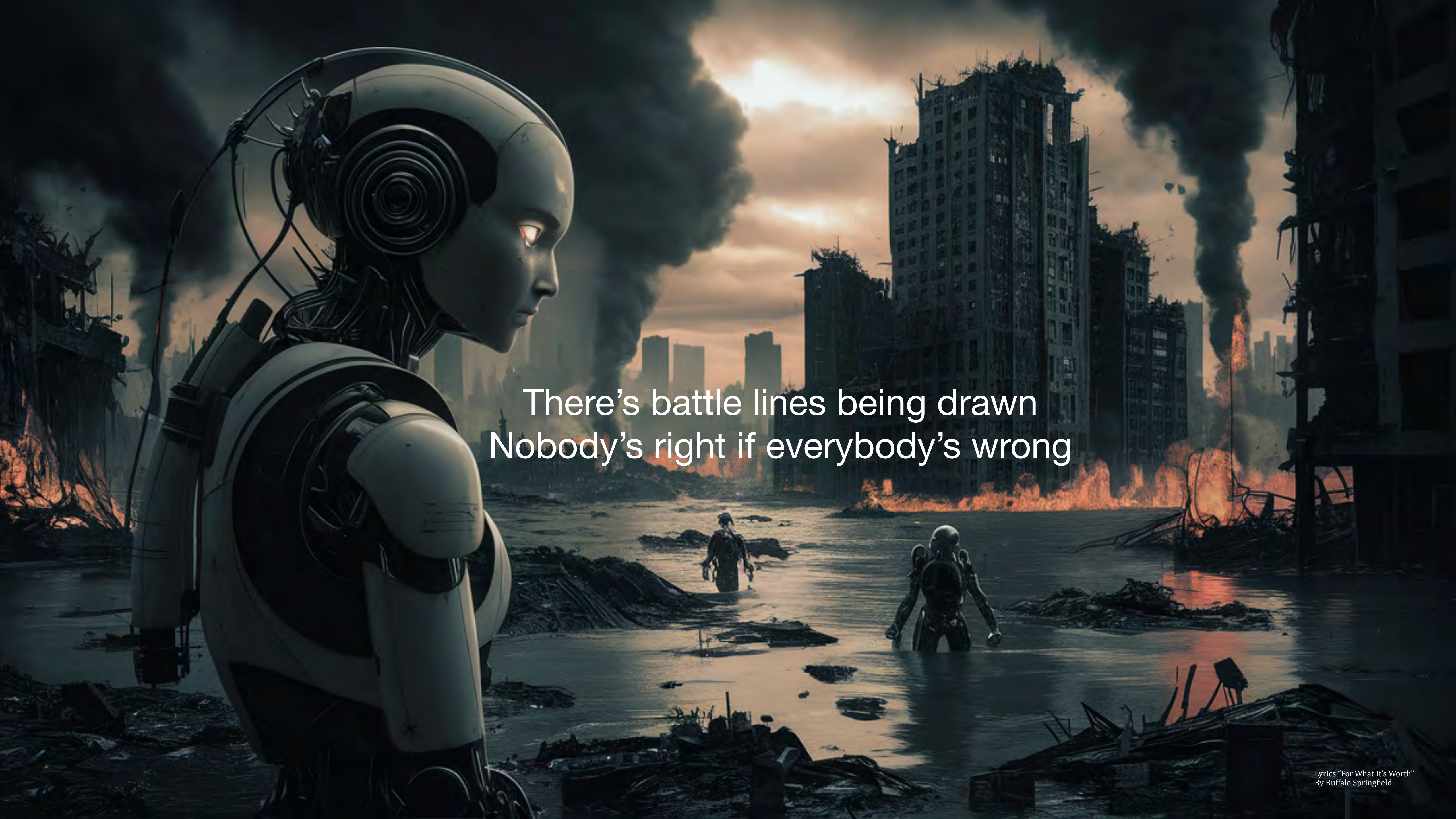


Australian Government
National Emergency
Management Agency




Australian Institute for
Disaster Resilience

Are we ready?

A futuristic robot with a white and grey body and a glowing red eye stands in the foreground, looking out over a devastated city. The city is filled with smoke, fire, and ruined buildings. Two other robots are visible in the background, wading through a body of water. The scene is set during a sunset or sunrise, with a bright orange glow on the horizon.

There's battle lines being drawn
Nobody's right if everybody's wrong



Something is happening here...
What it is isn't exactly clear.

I think it's time we stop, hey...
What's that sound
Everybody look what's going down!

Lyrics "For What It's Worth"
By Buffalo Springfield

Hahaha fooled you!

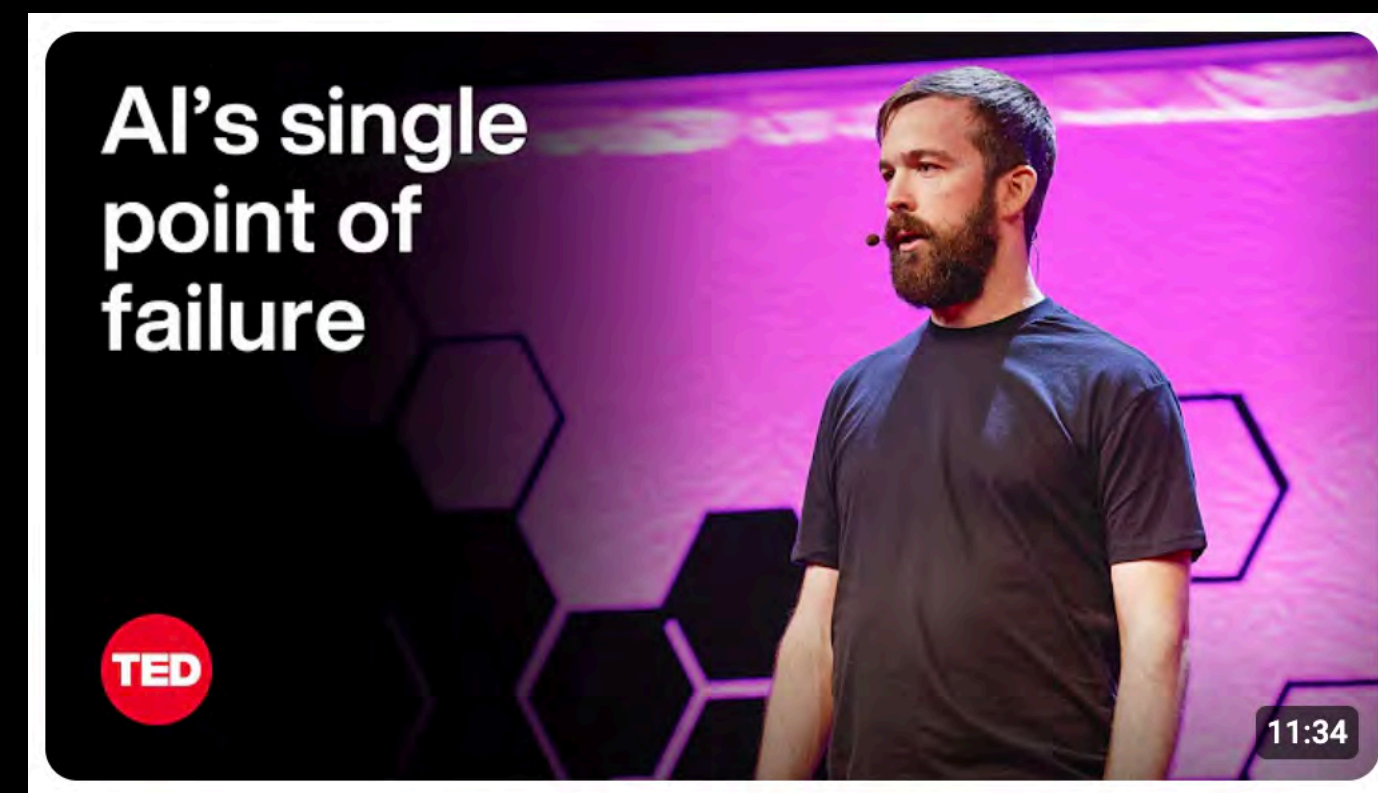
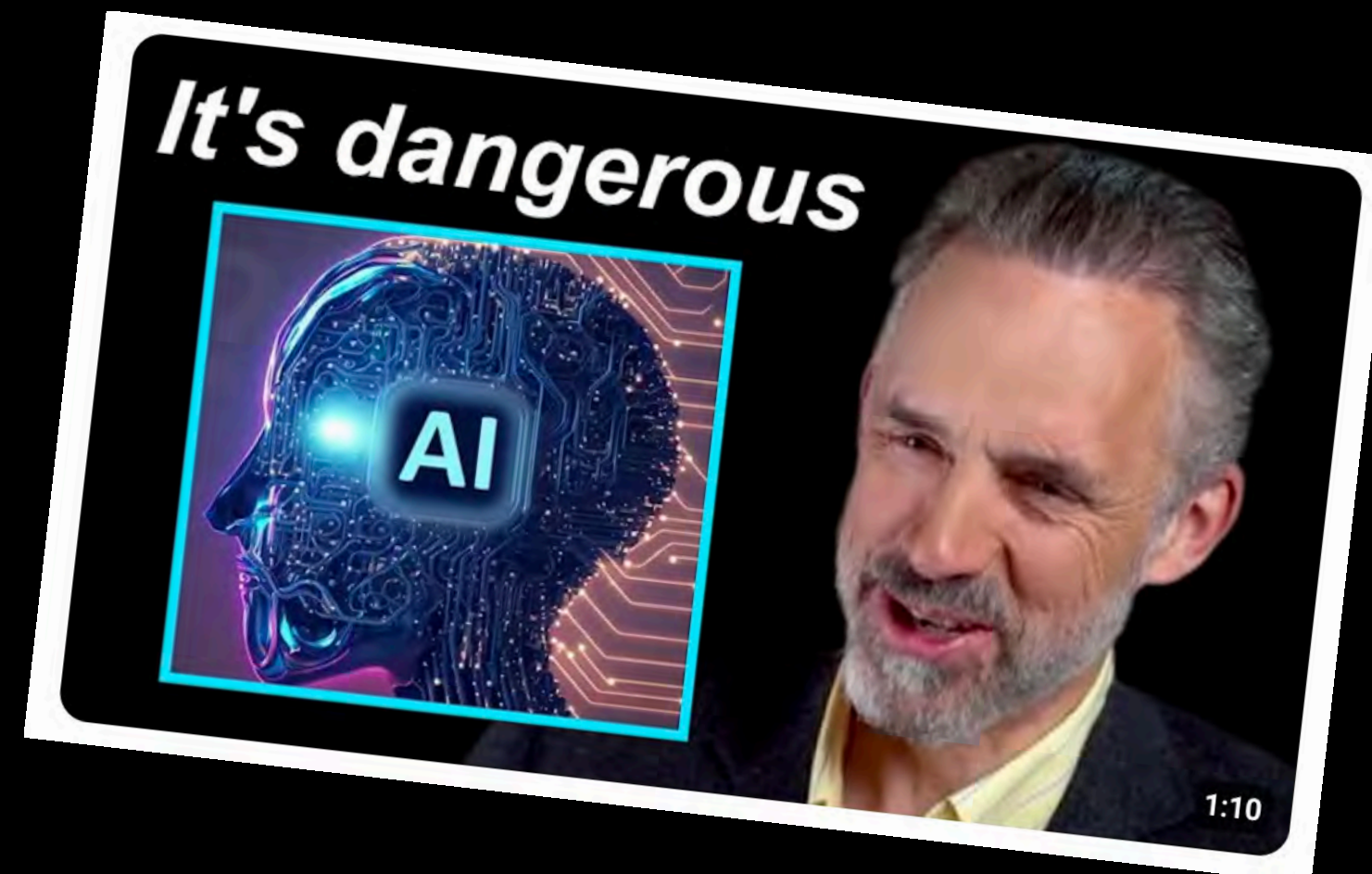


I envision a different future

I'm NOT going to talk about...

The end of humanity!

Plenty of opinions on YouTube!



I'm NOT going to talk about...
AI replacing artists

Wedding painters are hard to find these days!

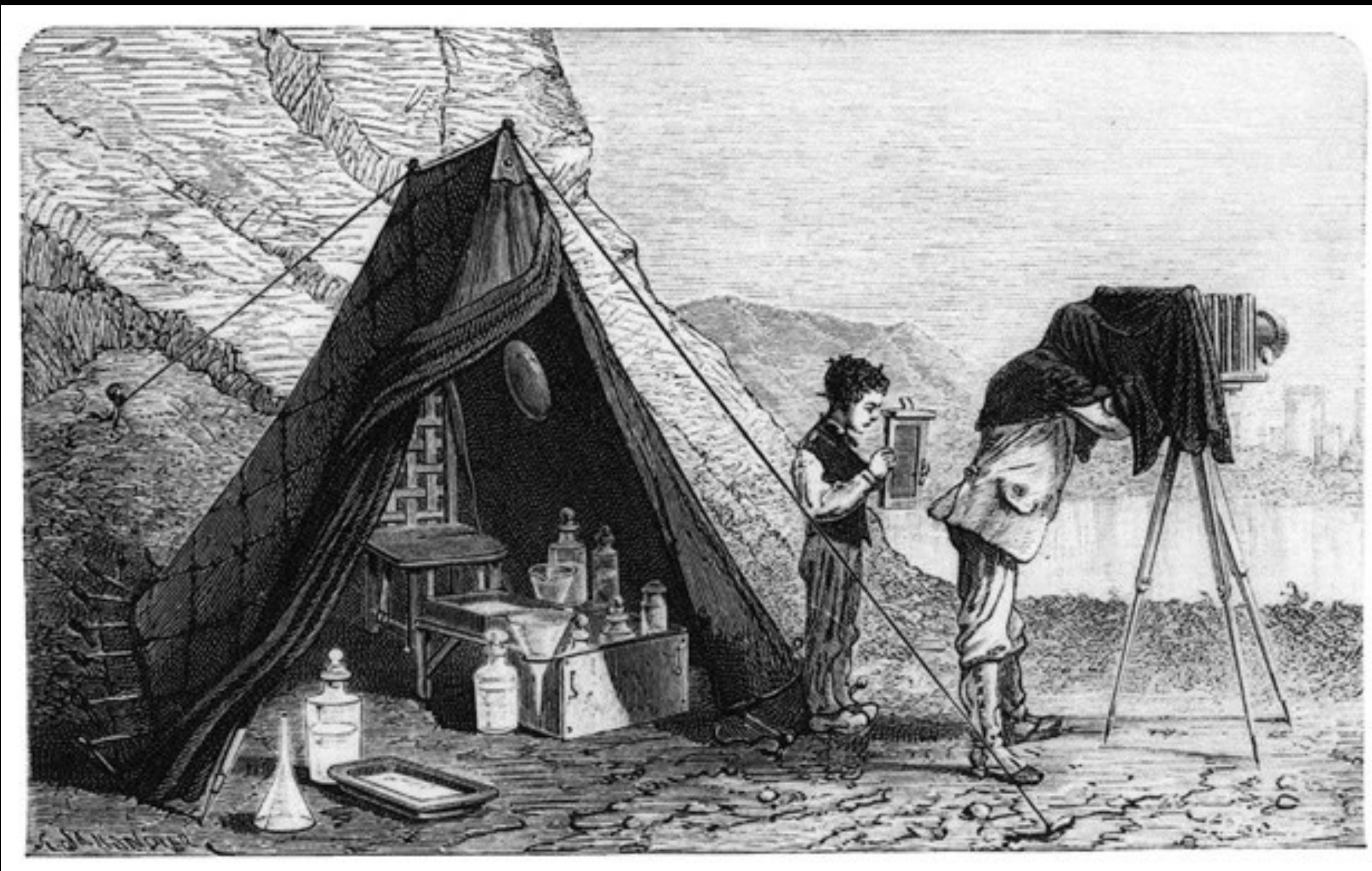


I'm NOT going to talk about...

AI replacing artists

It's already happened: Photography vs Painters

- * 1839 Daguerrotype
- * 1841 Calotype Process (first negatives)
- * 1851 Collodion Process (Civil War photos)
- * 1861 Tintype and Carte de Visite (card photos)
- * 1935 Kodachrome (first color photos)



You needed both a camera
and your own darkroom!

“If photography is allowed to supplement art in some of its functions, it will soon have supplanted or corrupted it altogether... thanks to the stupidity of the multitude which is its natural ally.”

-Charles Baudelaire (1859)

“Photography has become the refuge of every would-be painter, every painter too ill-endowed or too lazy to complete his studies.”

-Lady Elizabeth Eastlake (1857)

I'm NOT going to talk about...
AI replacing taking jobs from people

(But... There are by far more wedding photographers now than there was ever oil painters back then)



LOL AI signed my
prompted image!

So once we get past all the...

AI will destroy humankind

AI will destroy art

AI will destroy your jobs

I have a news flash for you...

AI cannot be uninvented

FIRST... let's share the lexicon of terms:

Artificial Intelligence (AI)

Narrow AI

Large Language Models (LLM)

Machine Learning (ML)

Deep Learning

Neural Networks

Natural Language Processing (NLP)

Computer Vision

Supervised Learning

Unsupervised Learning

Reinforcement Learning

Generative Adversarial Networks (GANs)

AI Ethics

Robotic Process Automation (RPA)

Explainable AI (XAI)

Edge AI

FIRST... let's share the lexicon of terms 2:

Artificial Intelligence (AI)
Narrow AI
Large Language Models (LLM)
Machine Learning (ML)
Deep Learning
Neural Networks
Natural Language Processing (NLP)
Computer Vision
Supervised Learning
Unsupervised Learning
Reinforcement Learning
Generative Adversarial Networks (GANs)
AI Ethics
Robotic Process Automation (RPA)
Explainable AI (XAI)
Edge AI

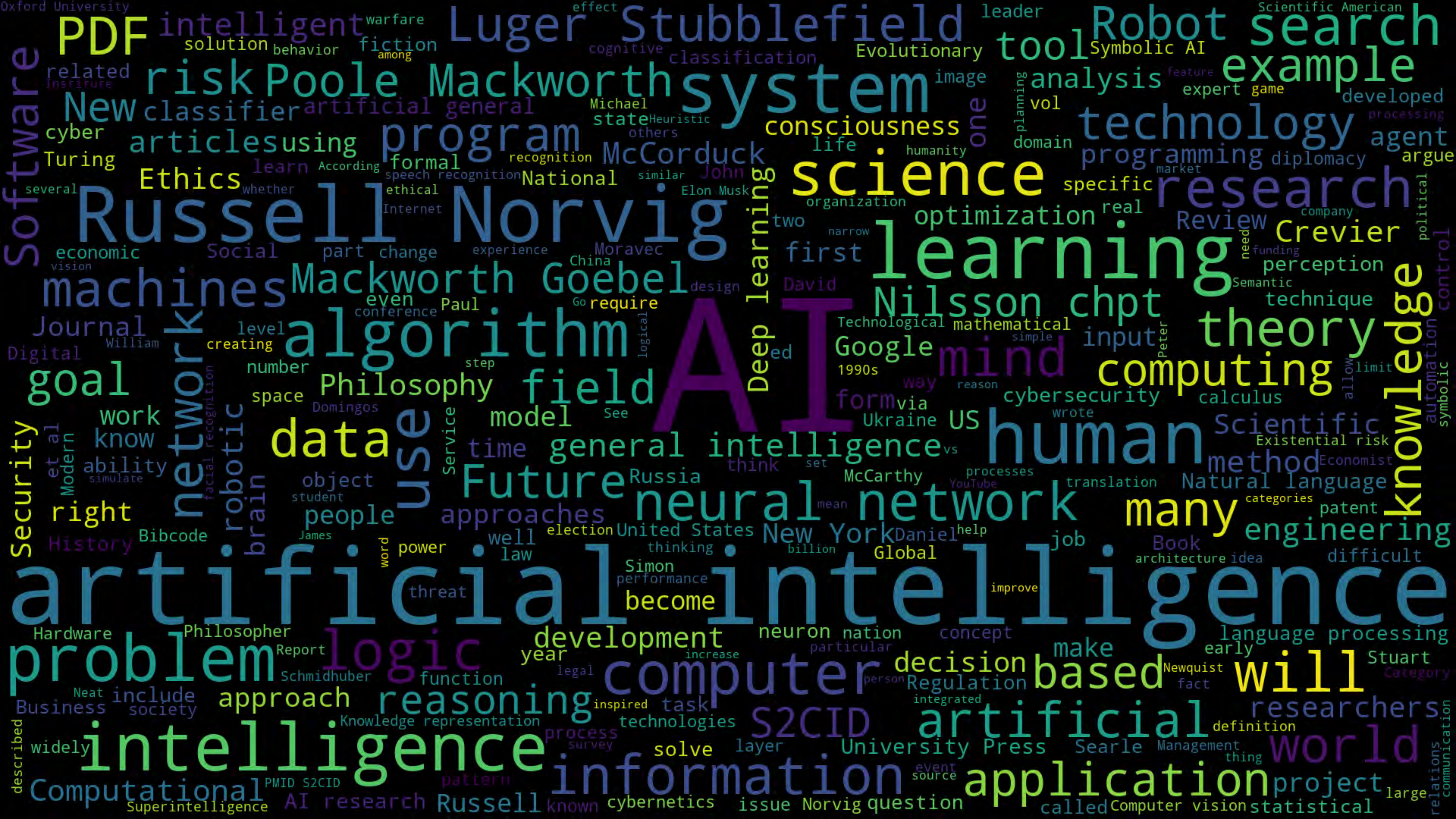
AI Governance
Algorithm
Data Mining
Feature Extraction
Big Data
Cognitive Computing
Chatbots
Semantic Analysis
Sentiment Analysis
Bias in AI
Transfer Learning
Anomaly Detection
Speech Recognition
Predictive Analytics
Autonomous Vehicles
Backpropagation
Capsule Networks

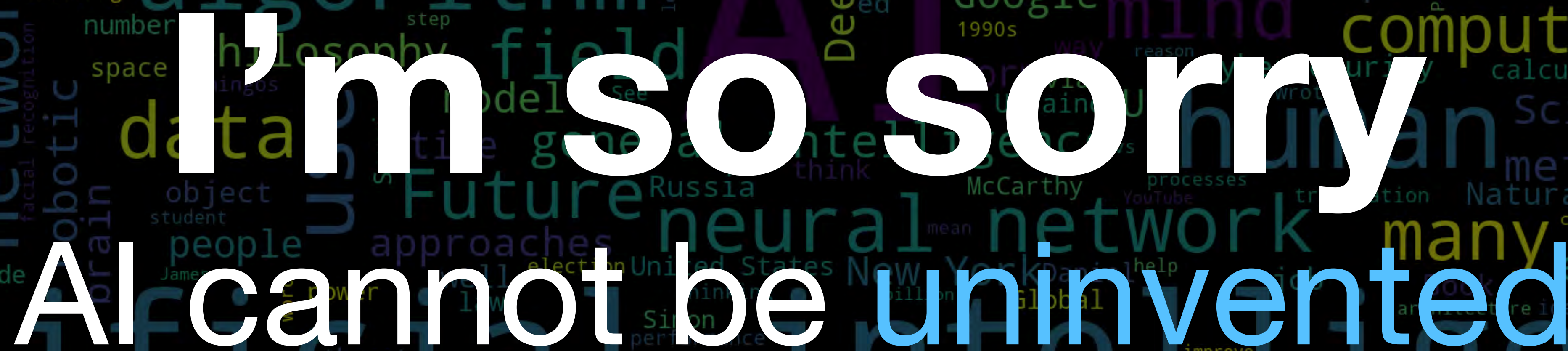
FIRST... let's share the lexicon of terms 3:

Artificial Intelligence (AI)
Narrow AI
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Edge AI

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Data Mining
Feature Extraction
Big Data
Cognitive Computing
Chatbots
Semantic Analysis
Sentiment Analysis
Bias in AI
Transfer Learning
Anomaly Detection
Speech Recognition
Predictive Analytics
Autonomous Vehicles
Backpropagation
Capsule Networks

Artificial General Intelligence (AGI)
Artificial Superintelligence (ASI)
Strong AI
Superintelligent Agent
Singularity
AI Alignment
Exponential Growth
Technological Autonomy
Recursive Self-Improvement
Cognitive Architecture
Seed AI
Brain-Computer Interface (BCI)
Neuromorphic Computing
Transhumanism
Moral Patienthood in AI
Posthuman
AI Containment
Oracle AI
Utility Function





I'm so sorry
AI cannot be uninvented

I'm only going to briefly talk about these important basics...

Narrow AI

Large Language Models (LLM)

AI Agents

Artificial General Intelligence (AGI)

Artificial Super-Intelligence (ASI)

Narrow AI

We've had it for years...

Voice Recognition

- Siri, Apple
- Alexa, Amazon
- Google Assistant
- Google Translate

Image/Video Analysis

- Facial recognition
- Medical images
- Security systems

Personalization

- Netflix
- YouTube
- Google

Predictive Analytics

- Your Credit Score
- Fraud detection
- Stock trading
- Healthcare

Automotive Uses

- Tesla
- Toyota
- BMW
- Honda
- Audi
- General Motors
- Mercedes-Benz
- Ford
- Volvo
- Nissan

Retail Commerce

- Customer Service
- Chatbots
- Inventory

Large Language Models (LLM)

I can't keep up... so many to list right now!

** I had to update this presentation so MANY times*

Chat-GPT 4 (Open AI)

Cohere

Alpaca

MPT

Dolly

Orca

Falcon

Gemini (Google AI)

#2.0 2019
#3.0 2020
#3.5 2022
#4.0 2023
#4o (oh) 2024

May 13th!

May 14th!

LLaMA

Claude

BLOOM

OpenLLaMA

FastChat

Vicuna

Koala

OPT

PaLM

Guanco

StableLM

LaMDA

BERT 2018

Meta AI

LLM's cracked human languages!

- Spoken / written & international
- Programming languages



Python

C++

Java

Scala

Julia

Large Language Models (LLM)

Like ChatGPT and others...

Are language based!

(They suck at math)

Allow me to say it again...

Are language based!

Large Language Models (LLM)

(At present) ChatGPT is phenomenal!



Ravi Belani
Stanford University
Adjunct Lecturer, Management Science and Engineering

Sam Altman
Co-Founder and CEO
OpenAI (ChatGPT)

April 24, 2024

Sam's response...



Ravi Belani
Stanford University
Adjunct Lecturer, Management Science and Engineering

Sam Altman
Co-Founder and CEO
OpenAI (ChatGPT)

Wait... wut?

He said what ? ? ?



“ChatGPT 4 is **not** phenomenal.”

“ChatGPT 4 is mildly **embarrassing** at best.”

“ChatGPT 4 is the **dumbest** model you will ever have to use again.... **by a lot**.”

Sam Altman
Co-Founder and CEO
OpenAI (ChatGPT)

He can say this about his own product...



"ChatGPT 4 is the **dumbest** model you will ever have to use again.... **by a lot**."

Because he has seen **what is in**
our future **in his** labs **right now!**



Even now, ChatGPT has helped...

An owner named, **Cooper**, noticed their dog, **Sissy**, was showing unusual symptoms.

The vet tested the dog but the cause remained unclear.

The owner in a last-ditch effort, used ChatGPT to describe the symptoms in detail.

ChatGPT suggested a possible medical condition and emphasized getting checked by a veterinarian.



So the story goes * ...

Armed with the text from ChatGPT, a different veterinarian with an open mind reviewed the ChatGPT suggestions.

The veterinarian confirmed the ChatGPT suggested condition.

The dog received the proper treatment and recovers.



** I was not able to confirm the dog story... but... my story is true!*

I went blind!

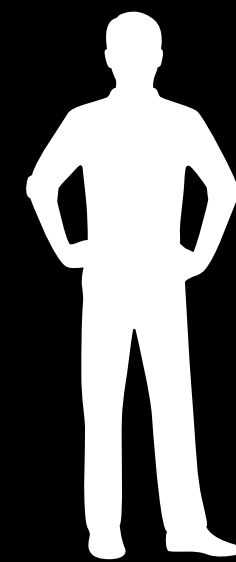
2 Emergency Rooms
1 MRI
1 Catscan
6 Appointments

3 ER Vision Doctors
2 GP Vision Doctors

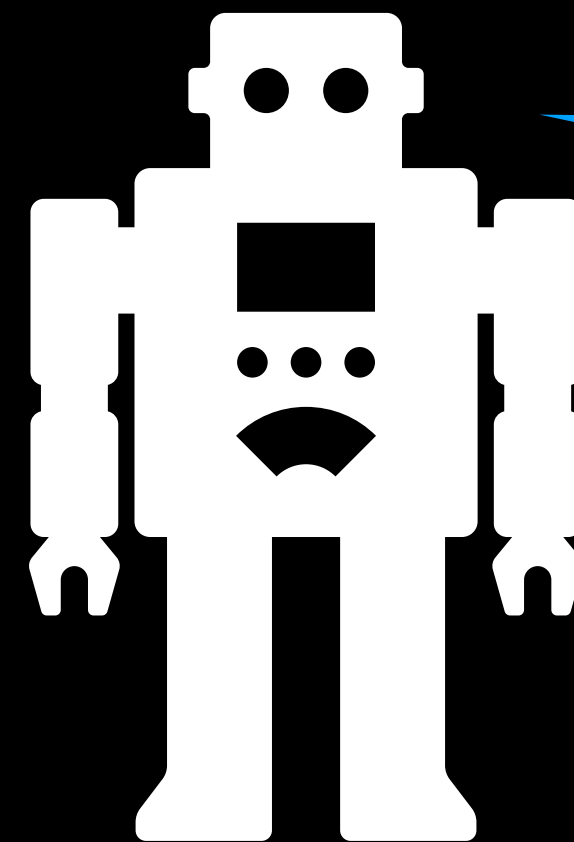


I used ChatGPT in *the exact same way* for my doctor,
who confirmed a rare drug side effect !

Today's LLM's like ChatGPT...



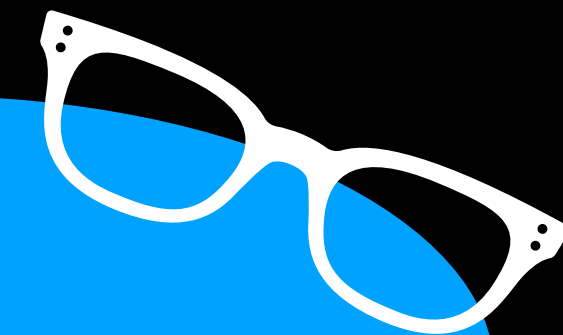
Me



LLMs

I can read
I can talk
I can sing*

And now I can see



* I'll just apologize now

Side track...

Chat-GPT 4 (OpenAI)

GPT = Generative Pre-trained Transformer

Charles White's Pro Tips:

- **Don't use a prompt without style!**
 - ... in the style of [Lester Holt](#) but don't mention Lester
 - ... in the style of [Stephen King](#) but don't mention Stephen
 - ... in the style of [Carl Sagan](#) but don't mention Carl
- Use the settings tab to define your style
- Settings also can be used to refine your output responses

Side track...

Chat-GPT 4 (OpenAI)

Twinkle, Twinkle, Little Star

Charles White's Pro Tips:

- Use your favorite authors
- Use well known authors
- Use prolific authors



You

Can you recite the original Twinkle Twinkle little star?



ChatGPT

Certainly! Here's the original "Twinkle, Twinkle, Little Star":

Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky.

When the blazing sun is gone,
When he nothing shines upon,
Then you show your little light,
Twinkle, twinkle, all the night.

Then the traveler in the dark
Thanks you for your tiny spark;
He could not see which way to go,
If you did not twinkle so.

In the dark blue sky you keep,
And often through my curtains peep,
For you never shut your eye
Till the sun is in the sky.

As your bright and tiny spark
Lights the traveler in the dark,
Though I know not what you are,
Twinkle, twinkle, little star.

Side track...

NOT Stephen King...

Twinkle, twinkle, little star,
How I wonder what your secrets are.
Above the world, so dark, so high,
A chilling gleam within your eye.

In the deep black, you float alone,
A silent watcher fully grown.
Twinkle, twinkle, little star,
What horrors hidden do you guard?

→ Through the shadowed, endless night,
Bearing witness to our plight.
Twinkle, twinkle, up so far,
What nightmares dwell where you are?



Side track...

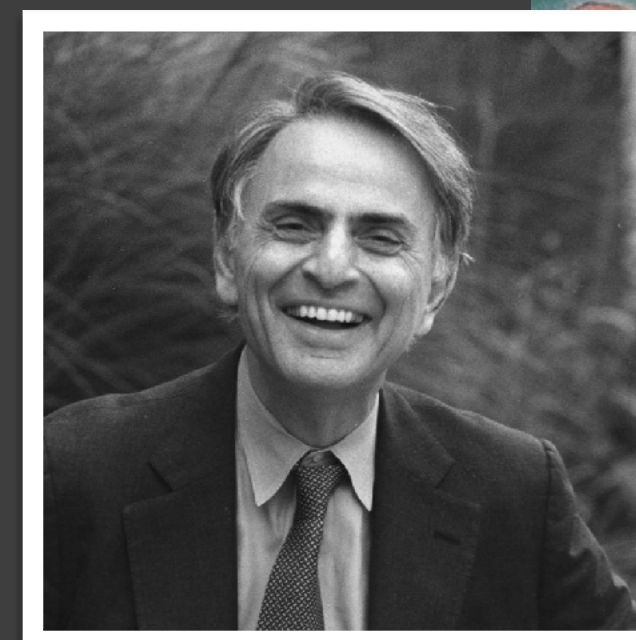
NOT Carl Sagan...

Twinkle, twinkle, distant star,
Across the cosmos, oh so far.
Floating in the vast, dark night,
A stellar furnace, burning bright.

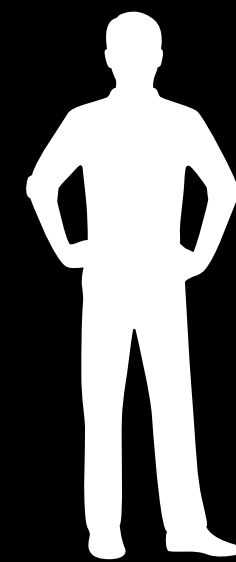
Each photon's journey, wide and long,
Through the void where stars belong.
Twinkle, twinkle, cosmic light,
A beacon shining in the night.

→ Reflecting on our tiny place,
Within this vast, expansive space.
Twinkle, twinkle, star so fine,
Within your light, the universe aligns.

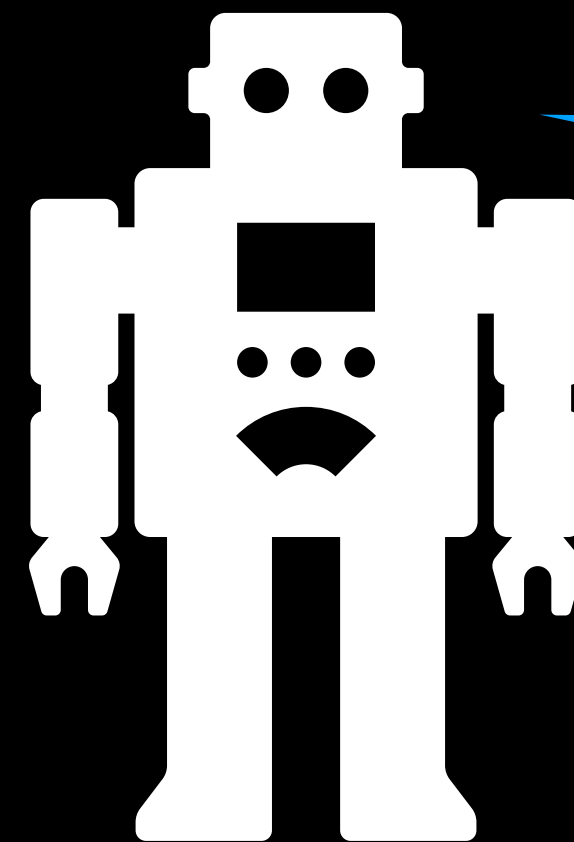
(End of side track)



Today's LLM's like ChatGPT...



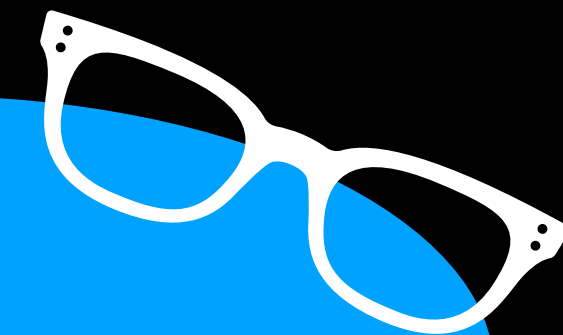
Me



LLMs

I can read
I can talk
I can sing*

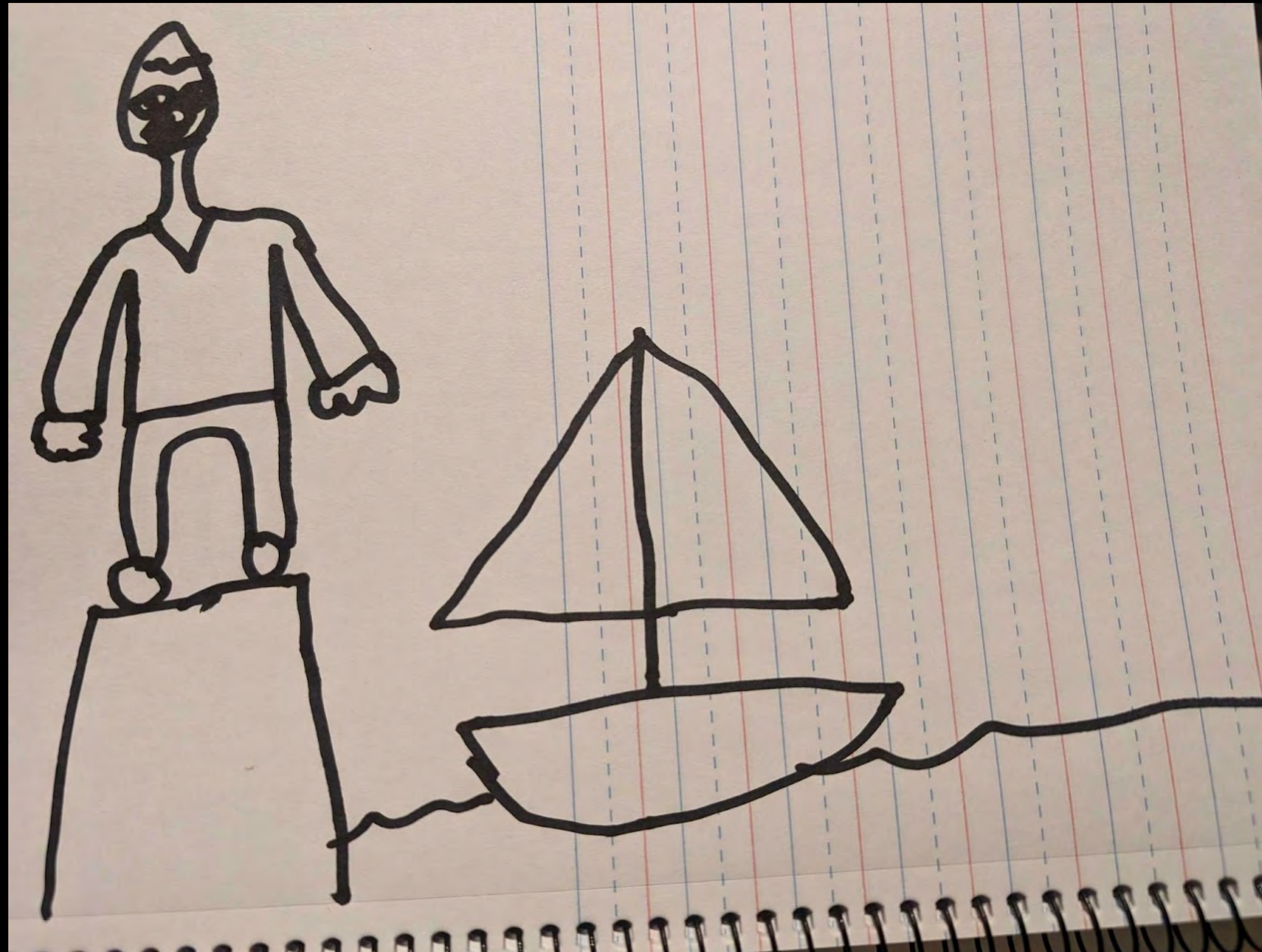
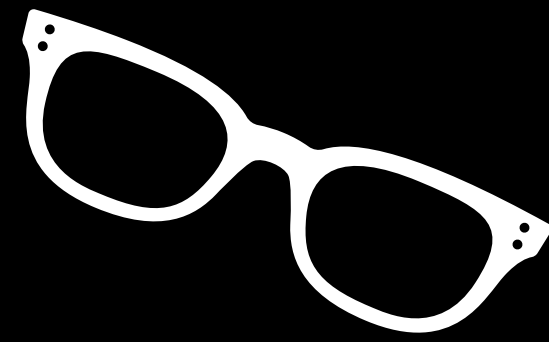
And now I can see



* I'll just apologize now

Today...

Interpret a hand drawing...



Human User

My son drew this, can you tell a short bedtime story based on his drawing?

Grok 1.5

Once upon a time, in a land of adventure and wonder, there was a brave little boy named Timmy. Timmy lived in a cozy little house with his family, and he loved nothing more than exploring the world around him.

One sunny day, Timmy decided to go on an adventure in the nearby forest. He packed his favorite snacks, a compass, and his trusty notebook to draw all the exciting things he would see.

As Timmy ventured deeper into the forest, he discovered a magical river that sparkled in the sunlight. The river was so enchanting that Timmy decided to build a small paper boat to send down the river as a special message to the forest spirits.

Timmy carefully folded his paper boat and drew a smiley face on it to bring joy to the forest spirits. He then placed the boat on the river and watched as it floated away, carrying his message of friendship and love for nature.

As the sun began to set, Timmy knew it was time to head back home. He felt grateful for the magical day he had spent in the forest, and he knew that he would always carry the memories of his adventure in his heart.

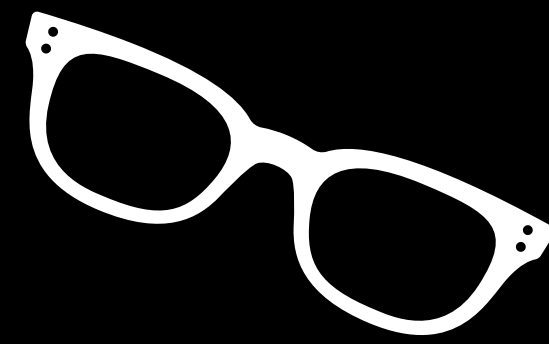
Back at home, Timmy shared his story with his family, who were delighted to hear about his magical day in the forest. They all agreed that Timmy's brave and kind spirit was a true inspiration, and they knew that he would continue to have many more wonderful adventures in the future.

And so, with a heart full of love and a mind full of dreams, Timmy drifted off to sleep, eager to discover what new adventures awaited him in the world of his imagination.



Today...

Interpret a flowchart...

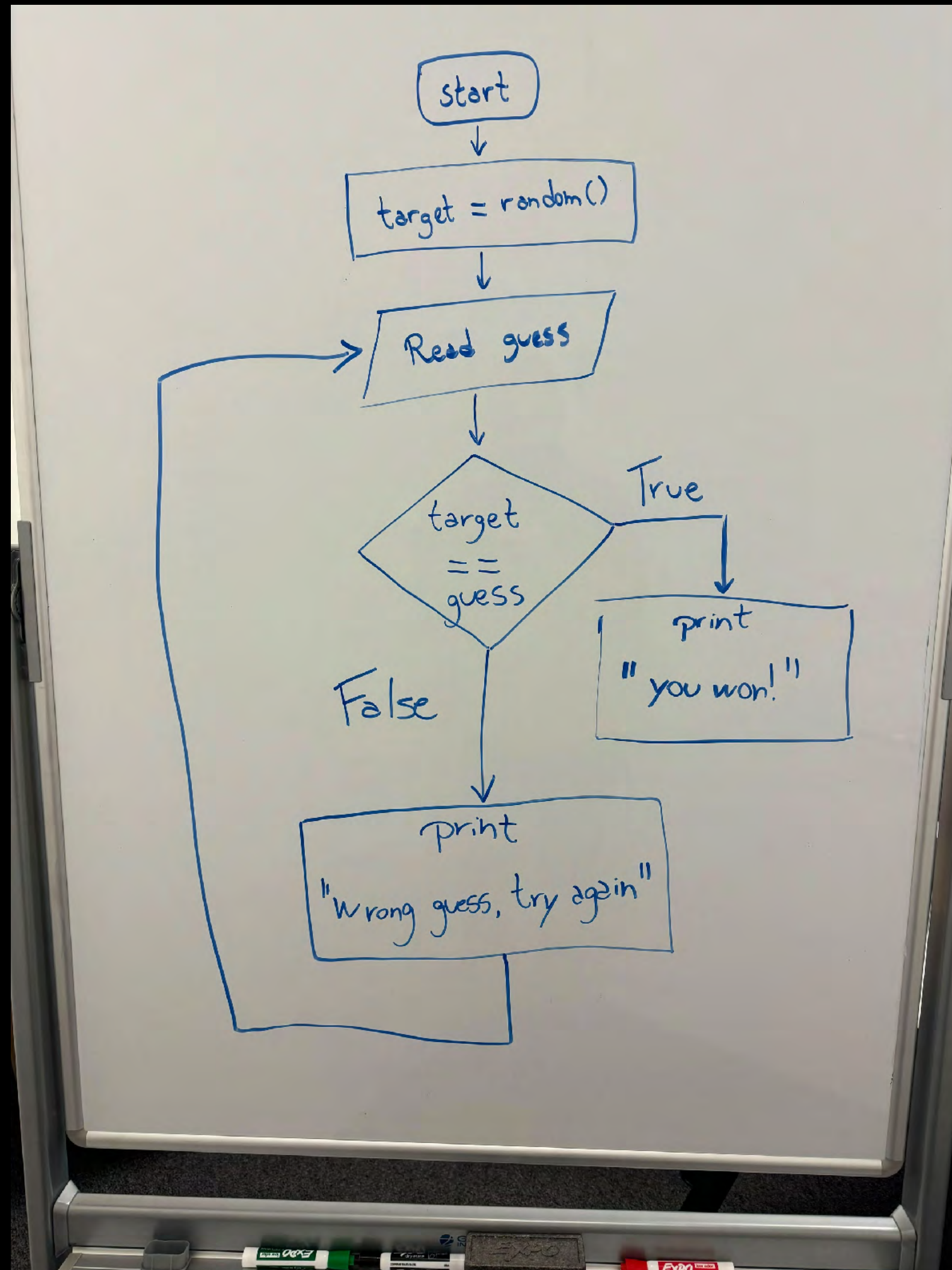


Human User

Can you translate this into Python code?

Grok 1.5

Certainly! The flowchart you've provided describes a simple guessing game where the computer generates a random number, and the user has to guess it. Here's the Python code that represents the logic in the flowchart:



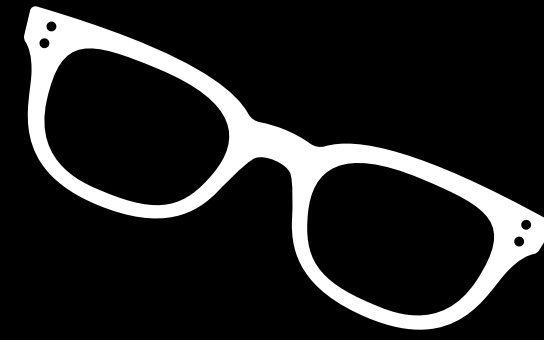
```
python
1 import random
2
3 def guess_number(): # Generate a random number between 1 and 10
4
5     target = random.randint(1, 10)
6
7     while True:
8         guess = int(input("Guess a number between 1 and 10: "))
9
10        if guess == target:
11            print("You won!")
12            break
13        else:
14            print("Wrong guess, try again!")
15
16 if __name__ == "__main__":
17     guess_number()
```

This code will run the guessing game as described in the flowchart. The user will be prompted to enter their guess until they guess the correct number.



Today...

Give me advice based on a photograph...



Human User

These holes are appearing around the screws in my deck. Is it rotten? Should I get my boards replaced?

Grok 1.5

It appears that **the wood in your deck has started to rot**. This is indicated by the presence of holes around the screws, which is a common sign of wood decay.

To ensure the safety and longevity of your deck, **it is recommended to have the affected boards replaced**. This will help to prevent further damage to the deck and maintain its structural integrity.

If you are unsure about how to proceed with the replacement of the boards, it may be helpful to **consult with a professional** deck builder or contractor. They will be able to assess the extent of the damage and provide you with expert advice on the best course of action for your deck.



May 13, 2024

ChatGPT-4o (as in oh for omni)

Updated Slide!

RIP ChatGPT 4.0



These capabilities are here today and will only get better!



Now lets talk about tomorrow...

Hold on... I interrupt my own presentation...

I needed some advice on this Keynote



I called some friends...

The first is a tech giant

The second is a well know entertainer

An interesting phone call #1...

“Thoughts on my Keynote??”

“One first responder controls 10 androids”

“Getting past the fear”

“Organizational rigidity and change control”



An interesting phone call #2...

I'm excited

My concerns

Do you remember?

I'm going to show some examples

Yes it's me!



That's the point!!

What about ethics?



These capabilities are here today and will only get better/worse soon.

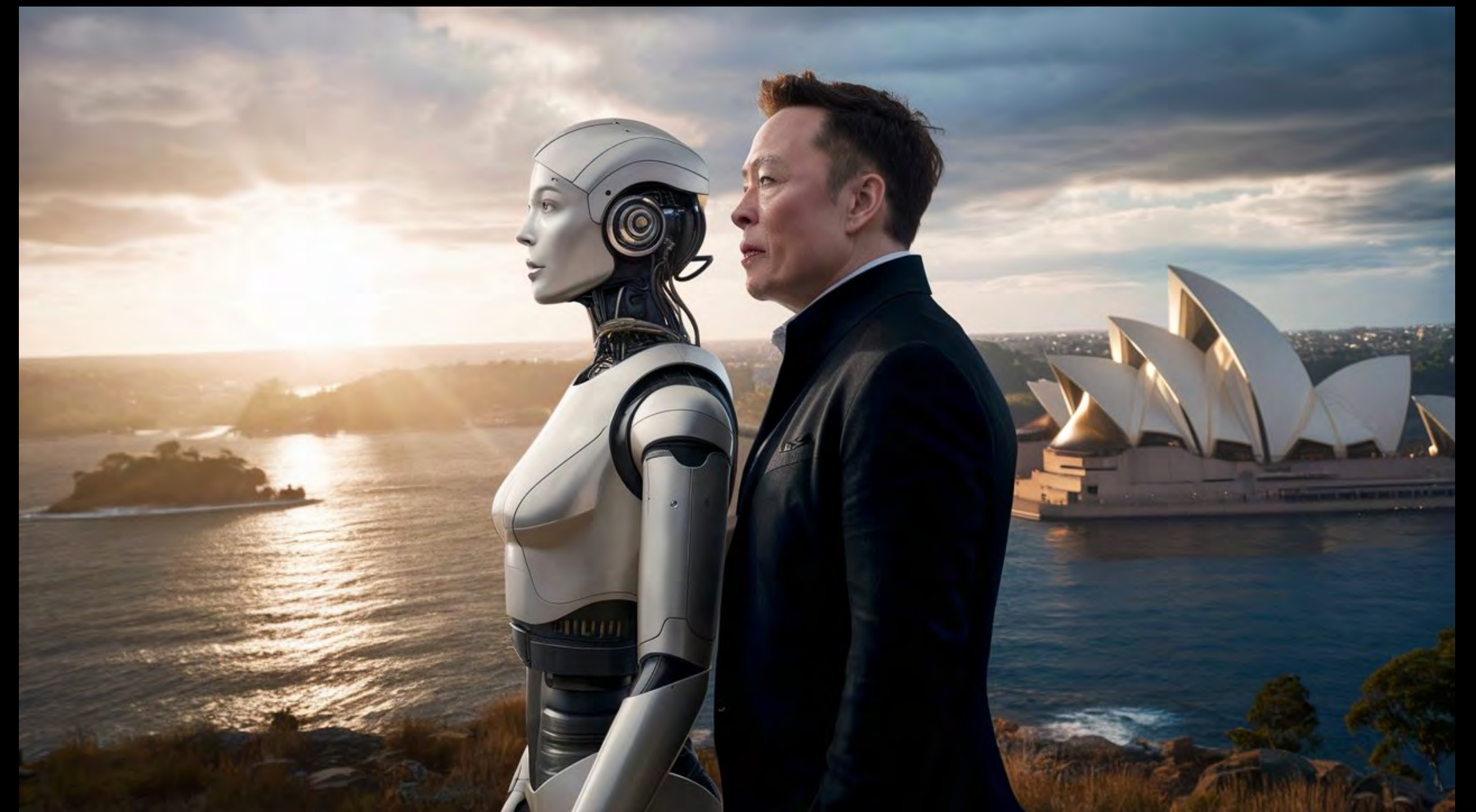
YES... That was fake.

No... Elon Musk did not call me.

No... I did not call Beyonce

We need AI to fight AI... (fight fire with fire)

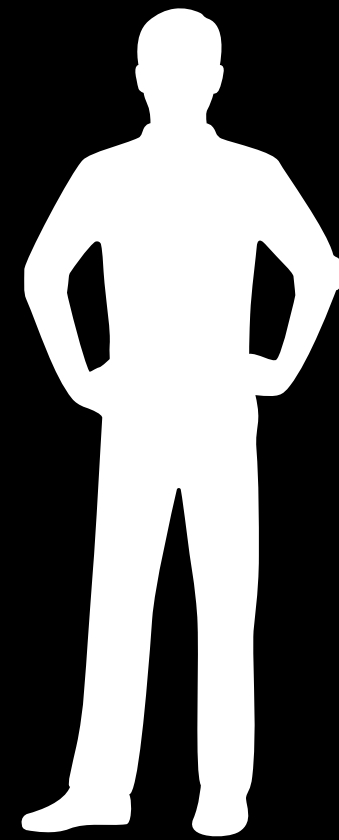
Play.ai



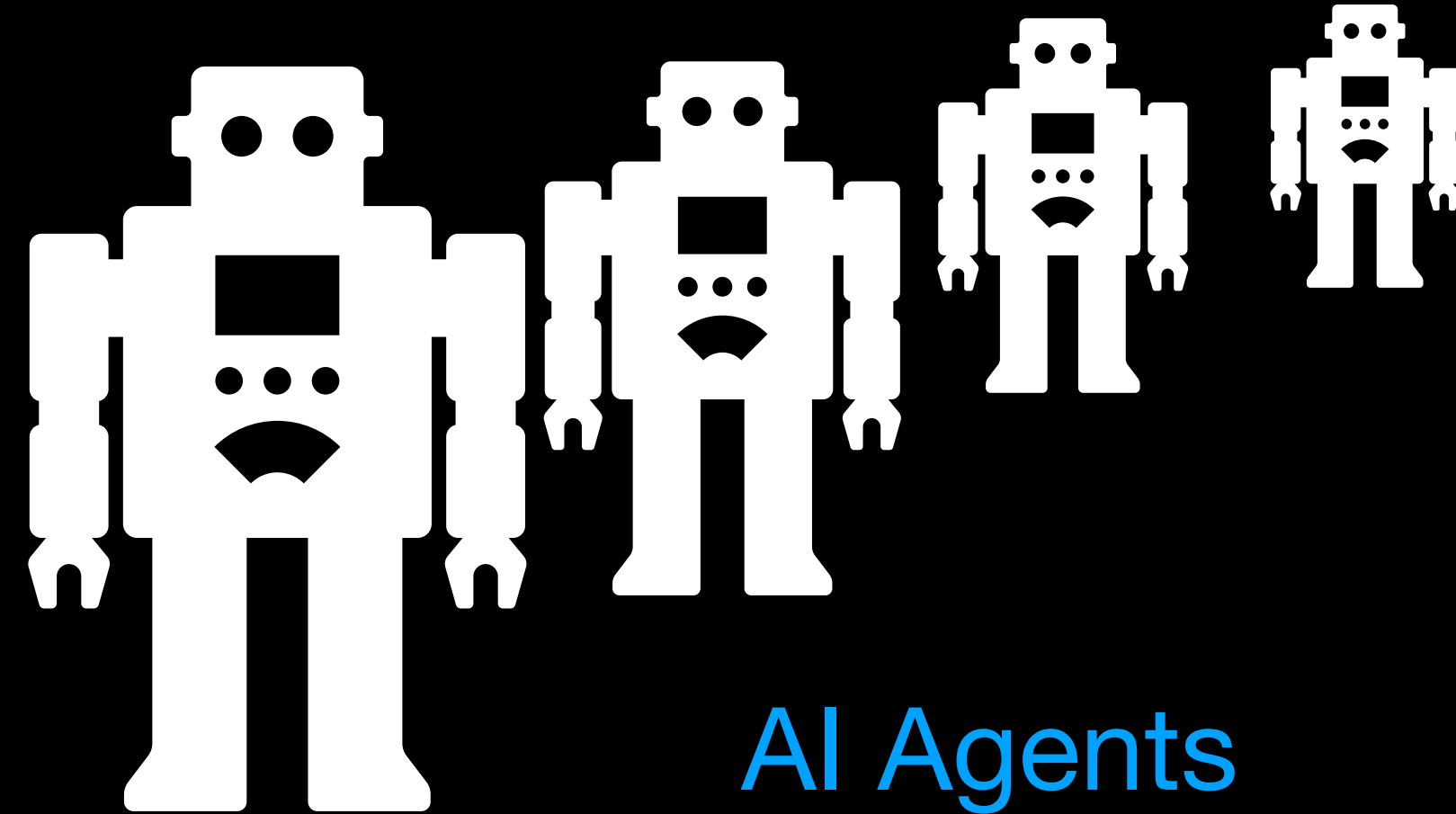
But let's **get past that** and talk about tomorrow...

Yet... everything is about to change again...

That was the state of today...



Me



AI Agents

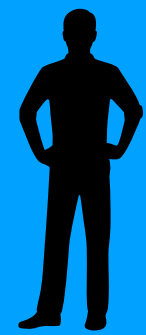
The next phase is this summer 2024!

AI Agents

This summer 2024 they shall rise!

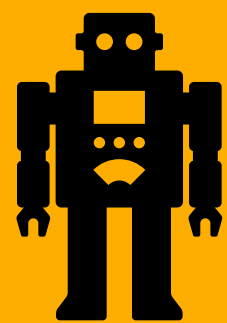
Currently

Charles White



Write a scientific paper

ChatGPT-4



Ok, here is your paper
Yada yada yada yada...

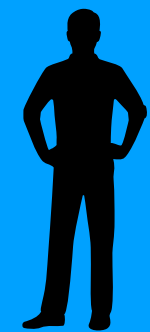
Problems: *(Today)*

- * Accuracy and reliability
- * Bias and representation
- * Mathematics suspect 🤔 *LOL*
- * Lack of reasoning
- * Limited context
- * Computational cost

AI Agents

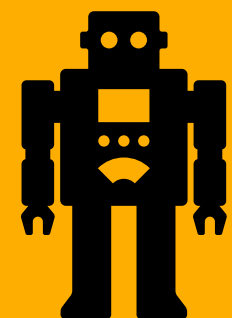
Currently

Charles White



Write a scientific paper

ChatGPT-4



Ok, here is your paper
Yada yada yada yada...

AI Agents can...

- Do things by themselves
- Talk to other agents
- React to what's happening
- Plan ahead (!)

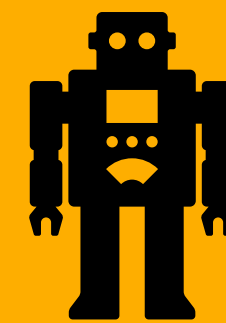
COMING SOON!

Charles White



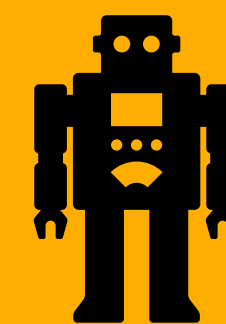
Write a scientific paper

AI Agent 1



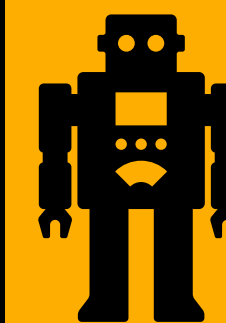
I'll do the data analysis
and research assistance

AI Agent 2



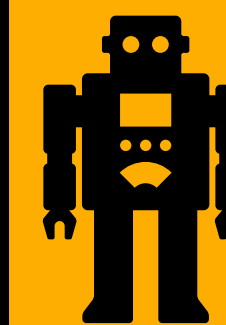
I'll draft, refine it, and
add writing suggestions

AI Agent 3



I'm checking citations

AI Agent 4



I'm looking for
plagiarism

You maybe thinking “this is too much”...

But wait... there's more to come!

AGI

Artificial General Intelligence (AGI)

When technology meets human-like reasoning, Artificial General Intelligence (AGI) emerges, enabling machines to understand and perform **any intellectual task** that a human can.

“By 2045” - Ray Kurzweil Jan 2013

The intelligence spectrum...

Emotional Intelligence

Spatial Intelligence

Musical Intelligence

Linguistic Intelligence

Logical-Math Intelligence

Body-Kinesthetic Intelligence

Existential Intelligence

Street Smarts
(Practical Intel)

Interpersonal Intelligence



I'm not talking about an IQ test!

*How can that happen??
It can't even draw five fingers!*

Artificial General Intelligence (AGI)

Standard AI Benchmarks:

NOT 100% YET!!

Tests humanities, social science, STEM, and more

Tests math, algebraic reasoning, visual perception

Tests graphs, diagrams, 15000 multiple choice questions

Tests reading ability in images against 453,360 ground truth answers

Tests charts against 9.6K human-written questions and 23.1K questions from summaries

Tests document content extracted for information with challenges to machines “understanding”

Tests spatial understanding of physical environments of 700+ images with verifiable answers.

Benchmark	Grok-1.5V	GPT-4V	Claude 3 Sonnet	Claude 3 Opus	Gemini Pro 1.5
MMMU Multi-discipline	53.6%	56.8%	53.1%	59.4%	58.5%
Mathvista Main	52.8%	49.9%	47.9%	50.5%	52.1%
AI2D  Diagrams	88.3%	78.2%	88.7%	88.1%	80.3%
TextVQA Text-reading	78.1%	78.0%	-	-	73.5%
ChartQA Charts	76.1%	78.5%	81.1%	80.8%	81.3%
DocVQA Documents	85.6%	88.4%	89.5%	89.3%	86.5%
RealWorldQA Real-world understanding	68.7%	61.4%	51.9%	49.8%	67.5%

LOL

“I believe AGI is contained in the lab right now!”

You maybe thinking “make it stop”...

But wait... there's **EVEN** more to come!

AS I

WARNING

The next slide maybe disturbing to some very smart people.

“Humans **will** become the **second** most intelligent thing on this planet.”

Artificial Super Intelligence (ASI)

When AI surpasses the brightest human minds in all cognitive tasks, we enter the realm of Artificial Super-intelligence (ASI)

ChatGPT said this to me...

“Get ready to be the second brightest crayon in the box”.
-ChatGPT 4



“I for one want to go on the historical digital record that I support our coming new digital overlords”.

-Charles White

This does not scare me.

Remember... I have a vision.



I'm married to a cyborg

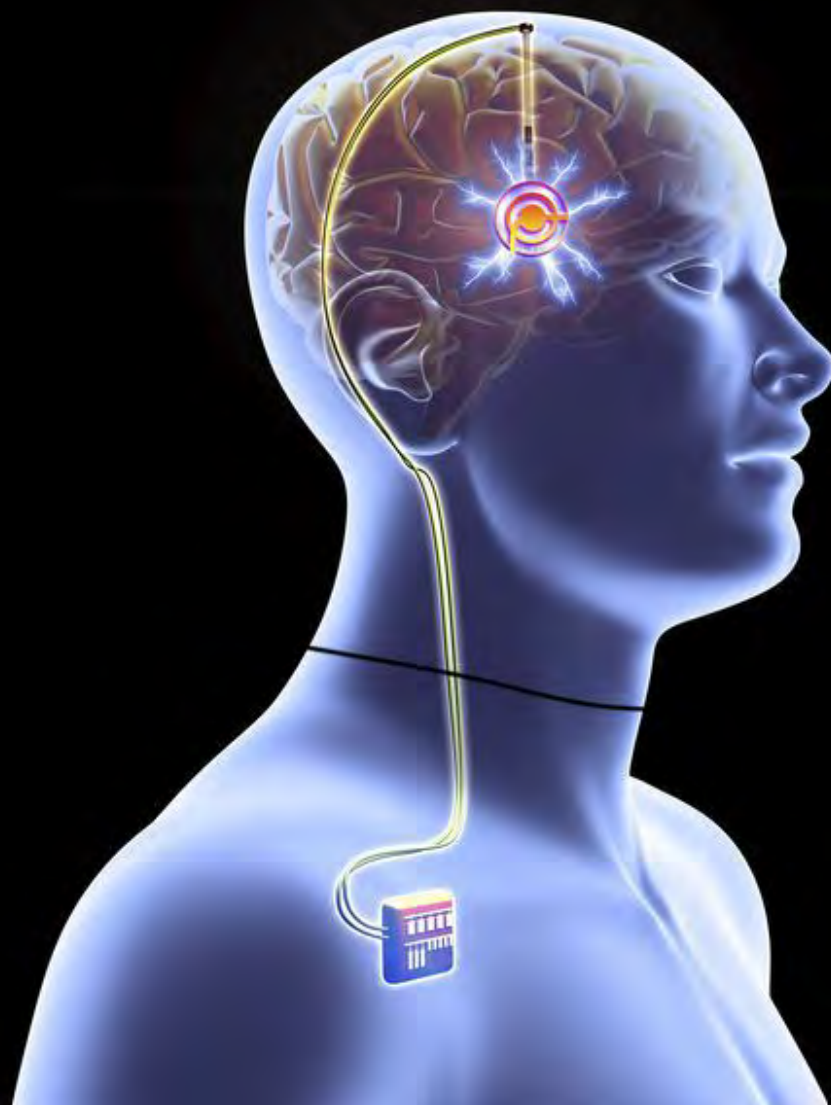
My wife...



My wife... is a cyborg...

A cyborg is a being with both **organic** and **cybernetic** body parts.

She has **four medical implants** that calm her Essential Tremors shaking.



Presently DBS is not AI based, but soon it could be.



Deep Brain Stimulation (DBS)

My wife... is a cyborg...

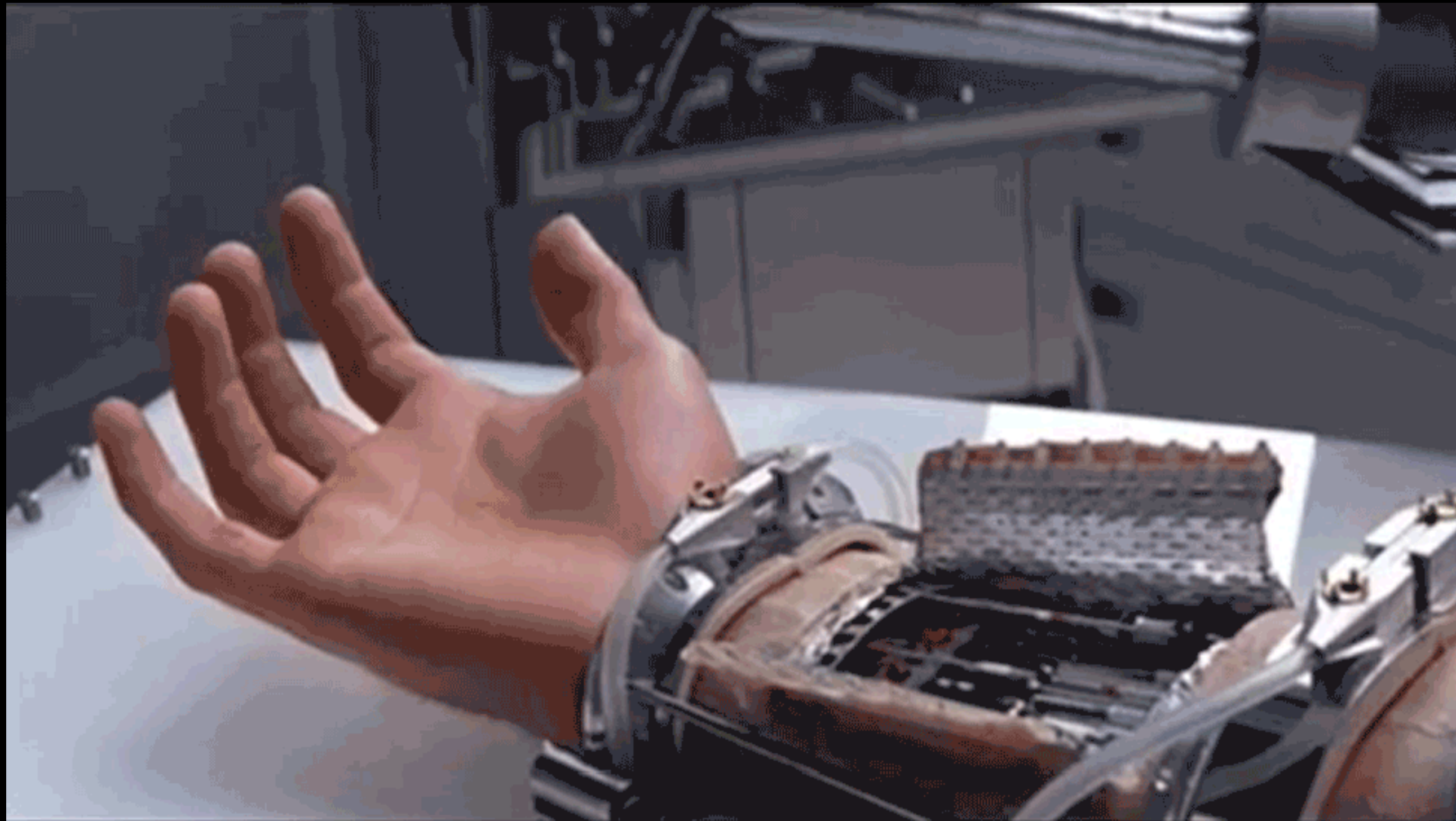
Susan White is living better quality of life
because of her implants.

Mapping the brain has come a long way
from science fiction to today's reality.



Neuroprosthetics

Today: Limited interfaces, expensive, big, closed designs, limited feedback, limited range of motion



Star Wars: Luke's hand

Future: AI vision assisted, AI computational interfaces and feedback




Soon...

News... AI can help people regain their voice!

UCLA


Newsroom

Categories For news media 

SCIENCE + TECHNOLOGY

Speaking without vocal cords, thanks to a new AI-assisted wearable device


The adhesive neck patch is the latest advance by UCLA bioengineers in speech technology for people with disabilities



Jun Chen Lab/UCLA

Measuring just over 1 square inch, the device could help those with dysfunctional vocal cords regain their voice function.

Christine Wei-li Lee
March 14, 2024

 Share

Education without AI...

Actual photos, not AI

Not a lot of evolution in education the past 150 years...



A geography class 1872
City of Boston Archives



A European Classroom 2014
Photo by: Muller168 Wikimedia Commons

AI in education

Education is about to adapt to the student



AI monitoring students concentration and distraction

Emphasis on developing critical thinking, not memorization

Customized learning pace

Cost savings... globally anytime anywhere

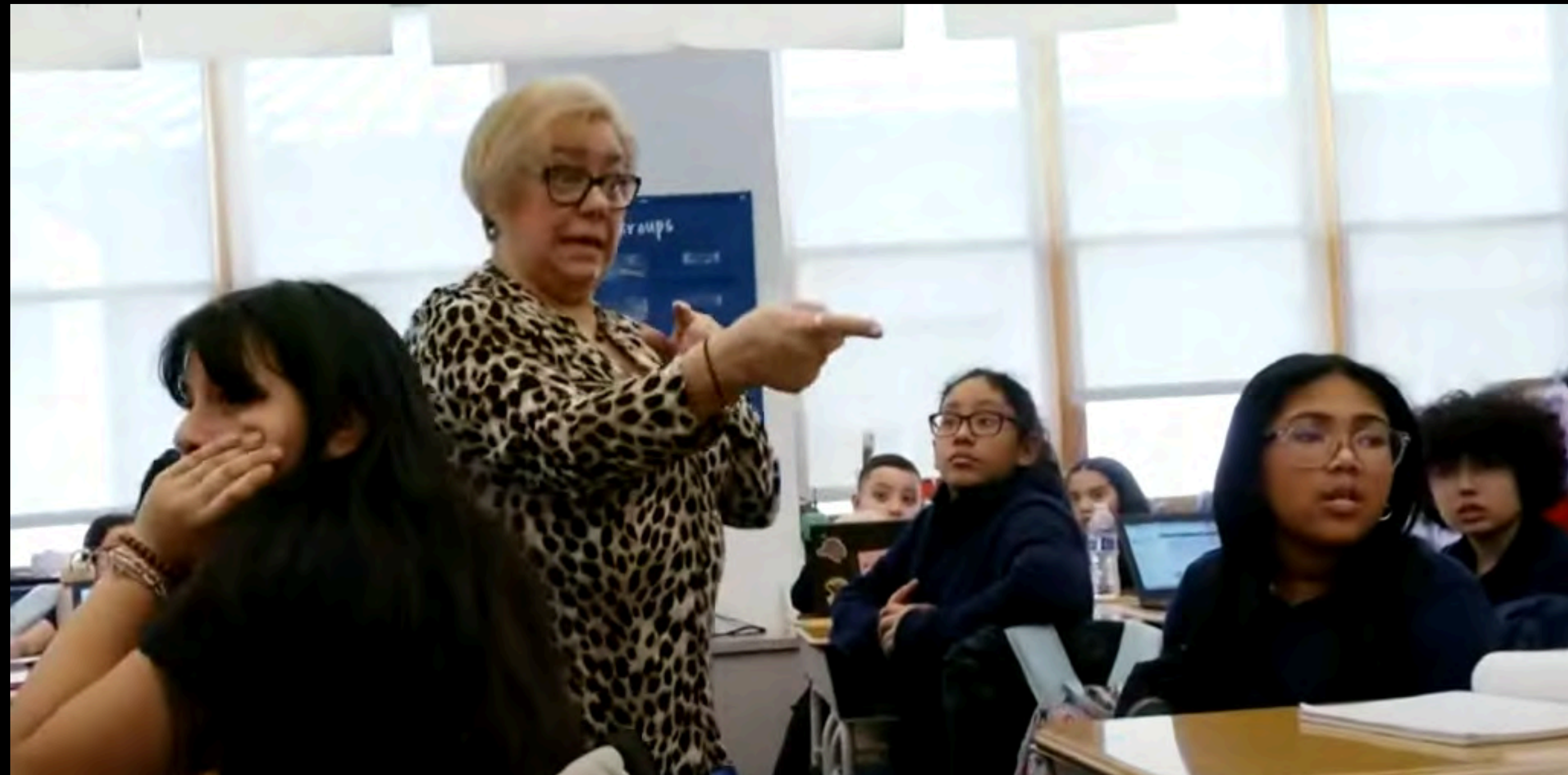
BIG ONE: Education will adapt to industry career needs!

AI in education

Shy students ask the AI not the teacher

Newark Public Schools
Product: Khan Academy - Khanmigo

AI Tutor &
Teaching Assistant

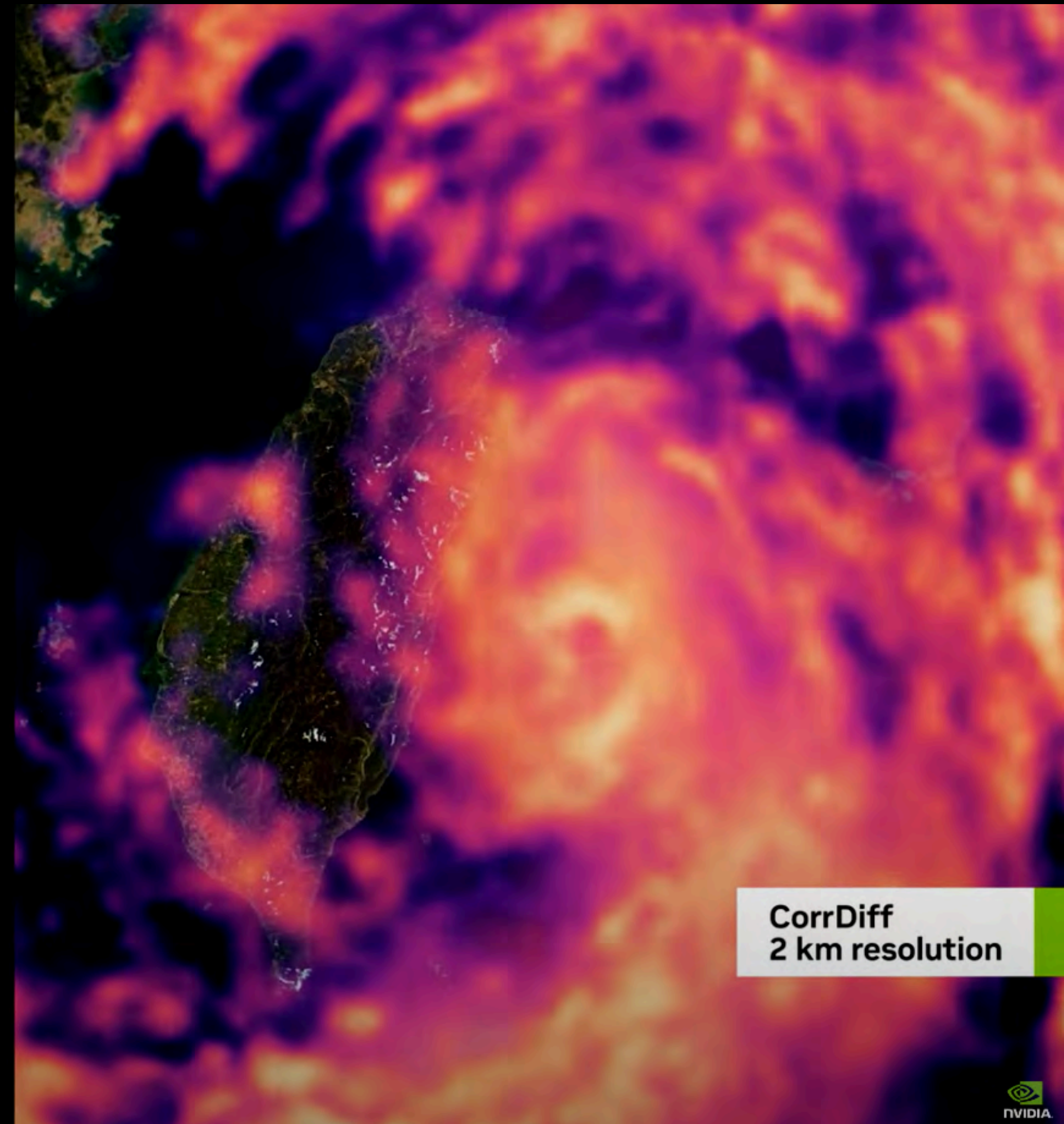
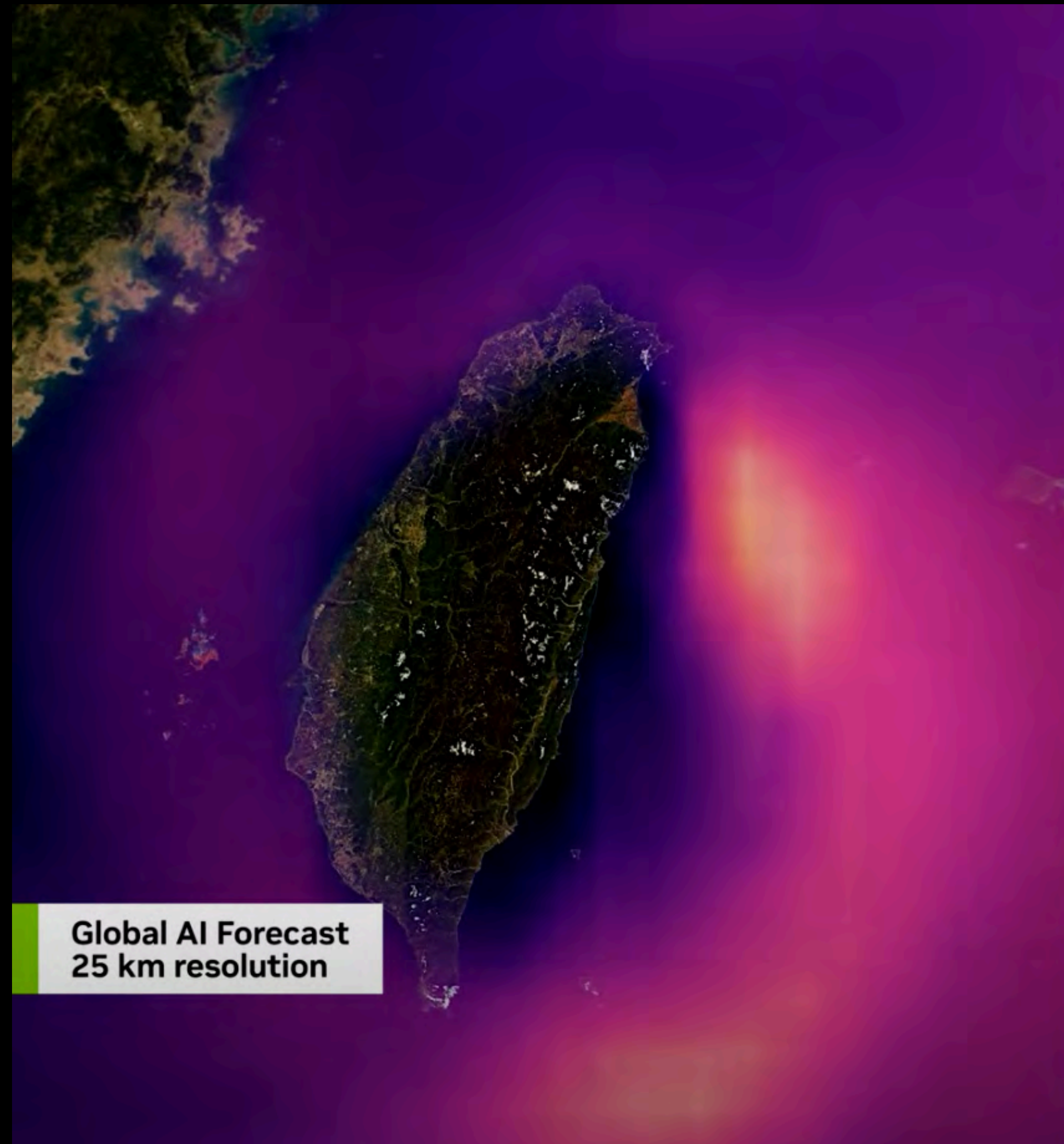


Arts
History
Science
Language

Anna Siron, “At the beginning it was difficult for me to let go of managing all their instruction, but the more I used it, the more I became aware it provides guidance it never gives the answer.”

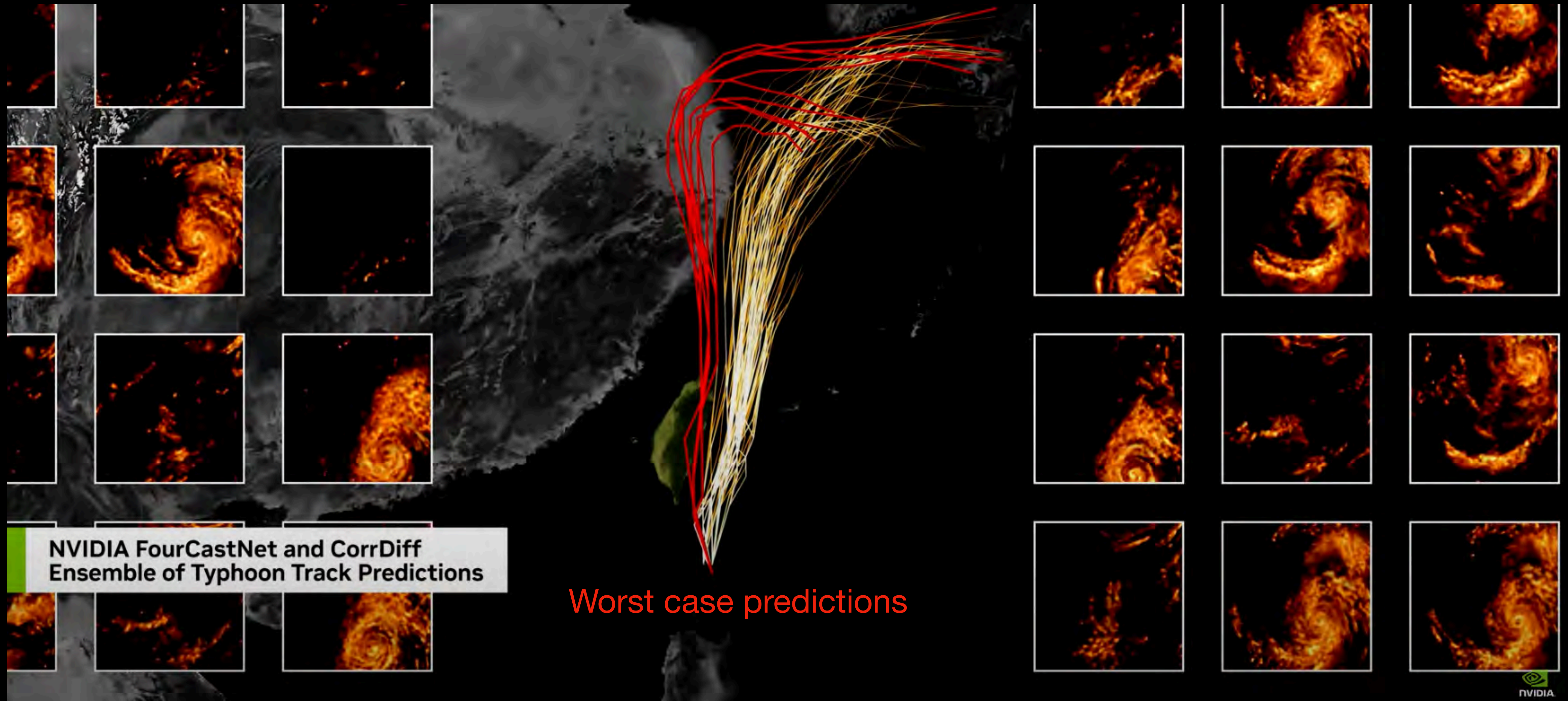
AI assisted weather/disaster predictions...

NVIDIA's Earth-2
NVIDIA's CorrDiff



Coming soon beyond Taiwan...

From 25km to 2km resolution
1,000 times the speed of current models
3,000 times less energy of current models



ALERTCalifornia, CALFIRE & Pano

AlertCalifornia.org

Distinguish smoke from clouds, fog, or dust and checked by human analyst.
The system **learns** after each incident!



ALERTCalifornia and CAL FIRE's fire detection AI program named one of TIME's Best Inventions of 2023

The artificial intelligence tool improves firefighting capabilities through the use of actionable, real-time data

PRESS RELEASE

October 24, 2023



CAL FIRE firefighters monitor ALERTCalifornia cameras and AI for active incidents. The award-winning AI tool helps reduce watch fatigue and improve response times to fires across California. (Credit: CAL FIRE)

This does not scare me.

We need intellectual help!

We need Intellectual help? **Yes!**

Design Fusion Reactors

(If we had unlimited energy, we could repair the atmosphere and clean water forever!)

Education and Personal Development

Environmental Sustainability

Advancements in Science

Efficiency and Automation

Healthcare Revolution

Space Exploration





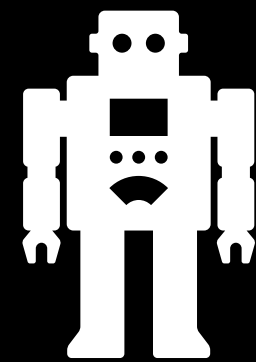
“When the first humans arrive on Mars, they will enter a lobby.”
- Charles White



My personal opinion...

Re-invent Space Exploration!

Use AI androids to explore



No life support infrastructure needed

No risk to human life

Explore hostile environments and worlds

Then... later... send humans



Charles White • You
CKD Deep Space Engineering Technology
2w +



After 37 remarkable years at NASA/JPL, my new retirement has given me time to reflect on the future of space exploration. I firmly believe that we stand on the brink of a monumental breakthrough in technology with augmented intelligence—where Artificial Intelligence, enhanced by human intellect, becomes a powerful tool for discovery.

In my view, it would be far more advantageous for humankind to deploy AI-powered android explorers to challenging environments like Mars or the moons of Jupiter. This approach not only prioritizes human safety by eliminating the need for life support logistics, but it also allows us to extend our reach farther and faster than ever before. While the human spirit of exploration will always drive us to venture forth ourselves, today's technology empowers us to first explore these frontiers through our augmented intelligent proxies.

This is the path I advocate for, as it harnesses the best of our technological advancements while safeguarding human lives. Let's embrace this era of augmented intelligence and reimagine what's possible in space exploration.

[#SpaceExploration](#) [#ArtificialIntelligence](#) [#AugmentedIntelligence](#) [#NASA](#)
[#JPL](#) [#FutureOfSpaceExploration](#)



 Gary Moore and 170 others

19 comments • 6 reposts

We need intellectual help!

We need institutional help!

How about disaster management ?

The key is speed!

Early warning systems

Predictive modeling

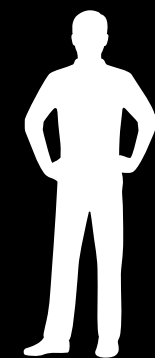
Situation assessment

Resource allocation

Communications and coordination

Post-disaster recovery

AI to SAVE LIVES!



Remember...

AI cannot be uninvented

So... make it work for us!

What I learned from my training...

“The Disaster is in Control”



The title of my talk...

The AI Storm Comes

Are We Ready for AI's Impact on Disaster Management?



The title of my talk...

The AI Storm Comes

Are We Ready for AI's Impact on Disaster Management?

My answer: No



The title of my talk...

The AI Storm Comes

Are We Ready for AI's Impact on Disaster Management?

My answer: No

Not because of AI and its capability, but because
'most' organizations are not agile in adopting change.

Any new tool requires...



Trust and Reliability

Risk aversion!

Costs

Uncertainty

Compliance/Regulatory

Operational disruption

Any new tool requires...



Training and Expertise

Innovative thinking

Technological proficiency

Interdisciplinary collaboration

Continuous learning

Adaptability

AND... Lessons learned!

Are we ready for interoperability?

Technological heterogeneity

- * Different agencies use varied systems
- * Not designed to work together
- * Compatibility issues

Communication protocols

- * Exchange of information challenge
- * Complex bridging solutions
- * Data standards and formats

Governance

Long term sustaining

Legacy systems

Scalability



This is the BIG ONE...

Cultural Resistance

Organizational Culture

I like my habits

Too complex

Comfort with status quo

- * That's the way it is, and I like it
- * Pfffft... it's just a fad
- * I'll just quit

No incentive

Too hard to master

Not going to TRUST it

Fear of obsolescence

- * Will I be redundant?
- * Job insecurity

I can't keep up

I'm overwhelmed



Initially Artificial Intelligence Will Not Solve...

1. Bureaucratic structures
2. Rigid policies and procedures
3. Long approval processes
4. Resource allocations for AI
5. Cultural resistance
6. Fear of failure
7. Lack of visionary leadership
8. Over-reliance on legacy systems
9. Inadequate talent management



It is up to you...



The storm is coming, and almost here!

Some breathing room...



With our current technology, AI is limited to multi billion dollar data centers.
It will scale down
It will be accessible

So I'm asking you...

Take these thoughts, let them spark and debate

Take them home to each city and state

And, prepare for the coming AI storm

AI cannot be uninvented

The Android Brothers

Suno - AI Music

Lyrics and music prompted by me



Wait wait wait... just one more!

That was [Suno](#)... prompted in April 2024

This is [udio](#)... prompted just 10 days ago!

The AI Angel Band

udio - AI Music

Lyrics and music prompted by me



With my apologies and thanks

Thank You

Charles White

The AI Storm Comes

Questions?

Are We Ready for AI's Impact on Disaster Management?

Keynote By: *Charles White*

Adelaide, Australia May 29, 2024



Australian Government
National Emergency
Management Agency



Australian Institute for
Disaster Resilience

Oh... and protect your data centers!





Charles White

“The first ultra intelligent machine is the last invention that man need ever make.”

– Irving John Good

1965

Q&A

Please submit your questions to Slido.

Slido.com
#LMF2024



Gold Sponsor



AIDR Funding partner



Morning Tea Break

We will recommence at 11.00am Adelaide time.

Gold Sponsor



Australian Government
Australian Civil-Military Centre

AIDR Funding partner



Australian Government
National Emergency
Management Agency