

# “ Non-Computable You What You Do that A.I. Never Will”

Robert J. Marks II, Ph.D.

Distinguished Professor of Electrical & Computer  
Engineering

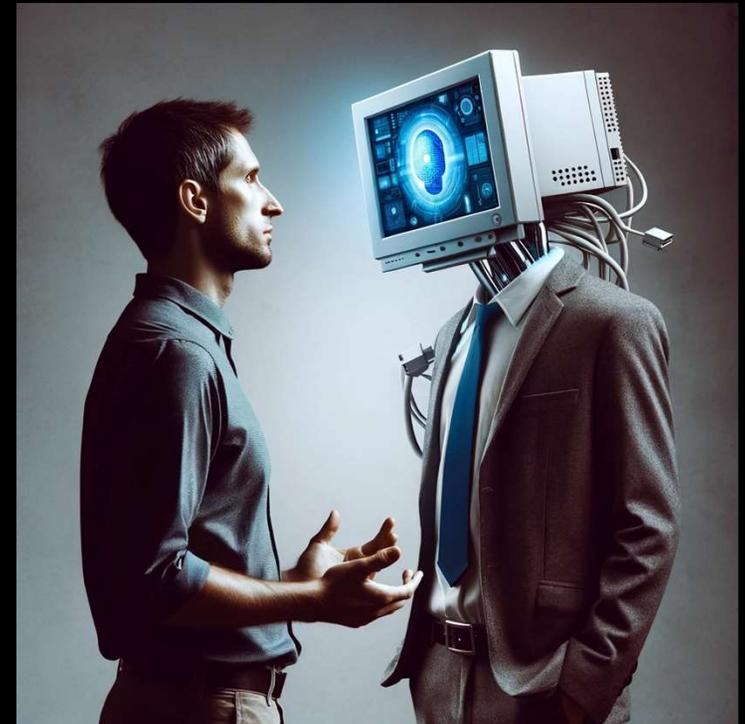
Life Fellow IEEE and Fellow OSA

Director & Sr. Fellow, The Walter Bradley Center  
for Natural & Artificial Intelligence

School of Engineering & Computer Science

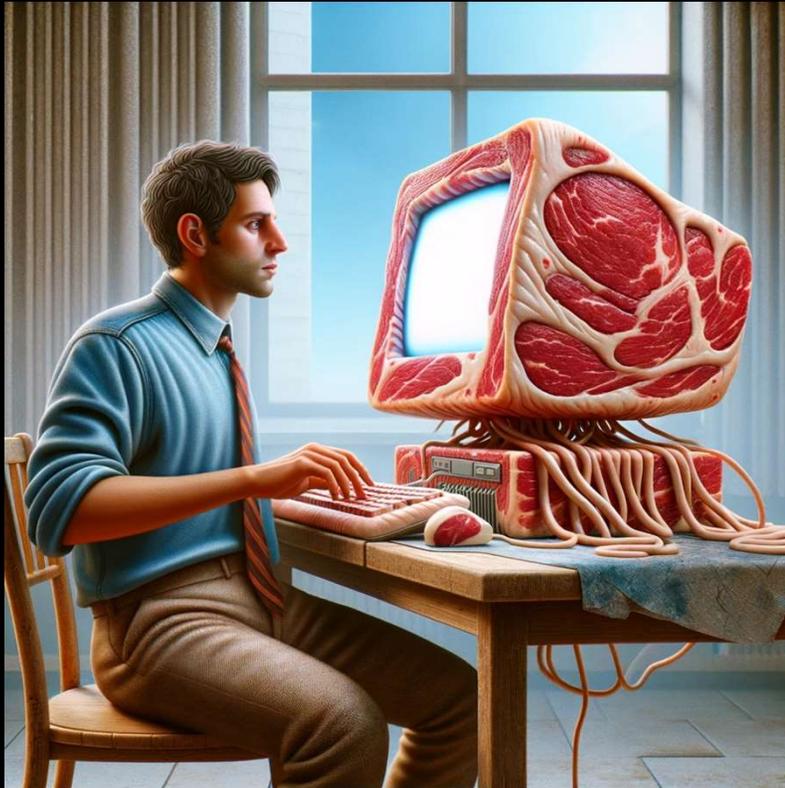
Baylor University

Robert\_Marks@Baylor.edu , RobertMarks.org



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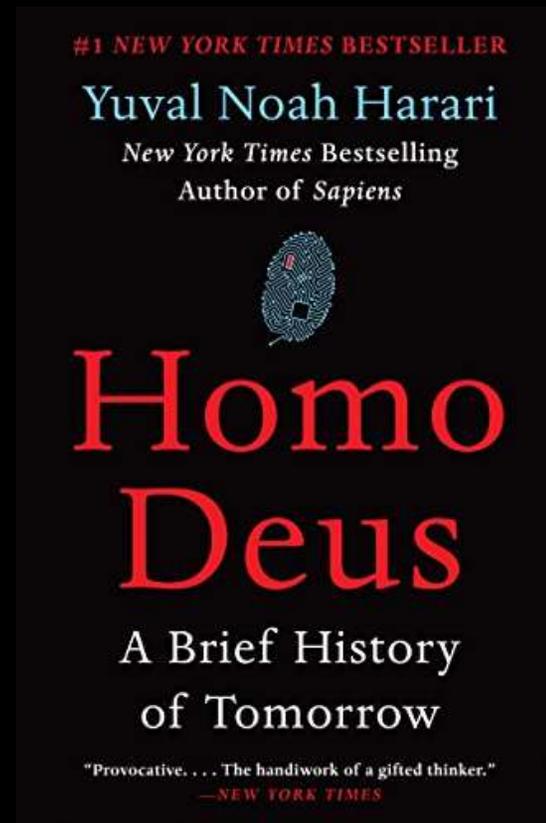
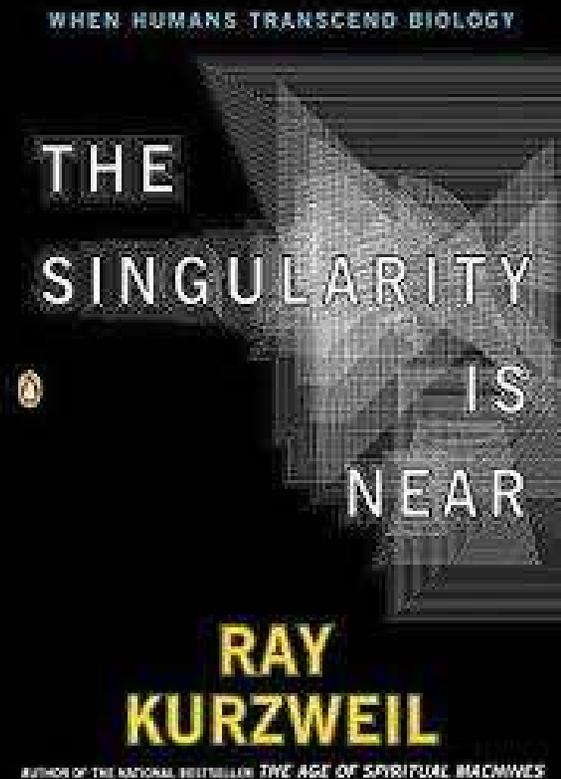
# What are you?



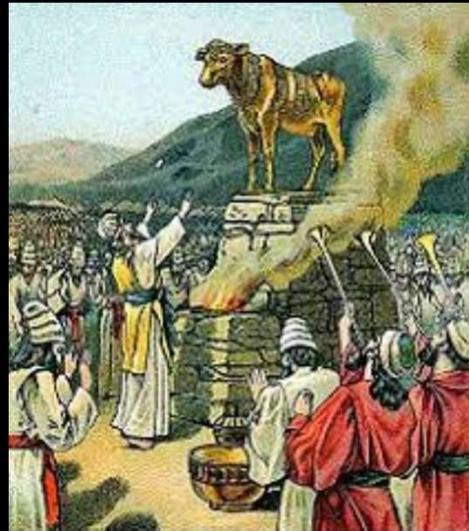
- A computer made out of meat?
- A creation with a spirit & mind beyond the material?



# AGI & the Singularity



# The AI Church



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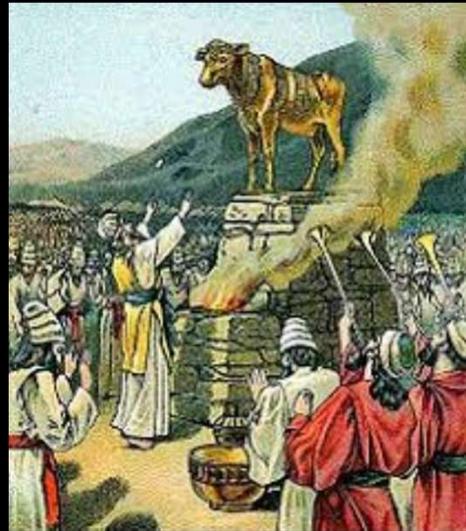


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# The AI Church



1. Immortality



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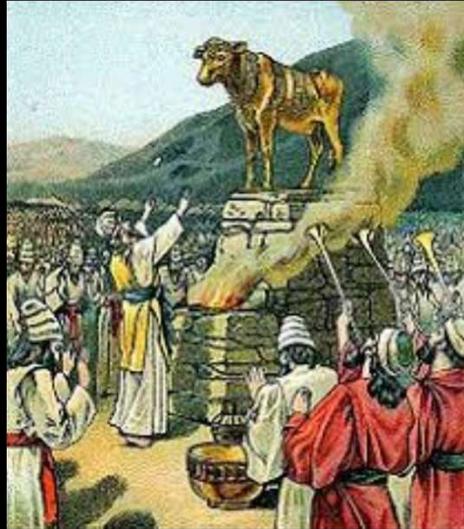


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## The AI Church

1. Immortality
2. Superintelligence



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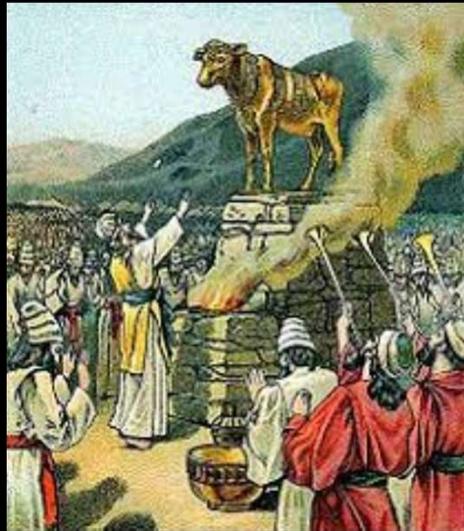


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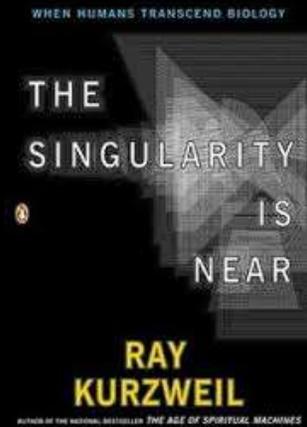
# The AI Church



1. Immortality
2. Superintelligence



3. Bible



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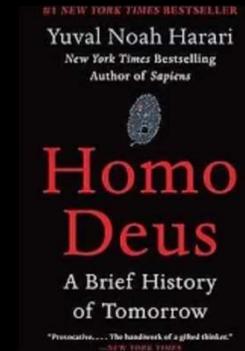
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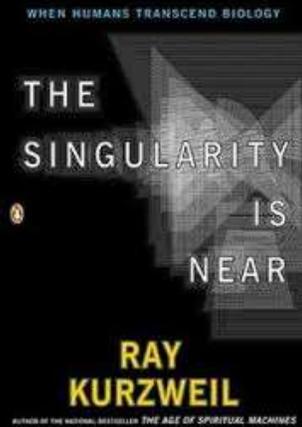
1. Immortality
2. Superintelligence

## The AI Church

4. The AI Church's Prophets:  
The Human God  
Yuval Harari



3. Bible



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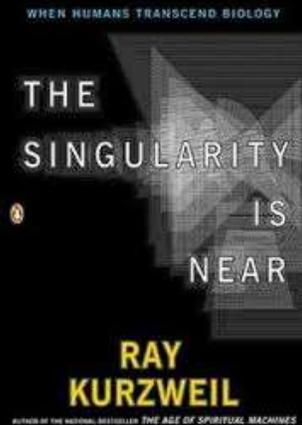


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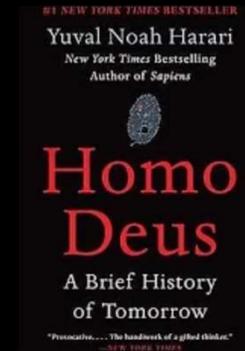
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5. The AI Church's Apostle:  
Anthony Levandowski founded the AI church "Way  
of the Future"



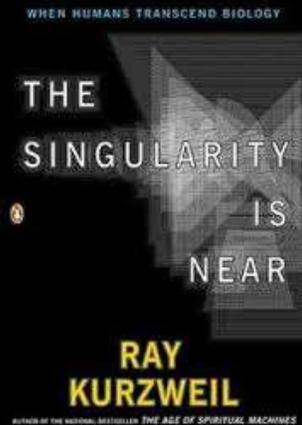
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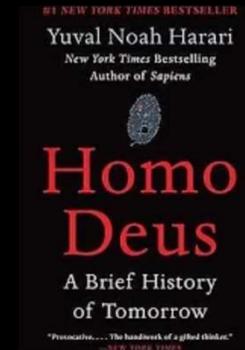
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6. The Apostle's Creed:  
Levandowski epistle to the IRS.  
"[The AI Church believes in] the realization,  
acceptance, and worship of a Godhead based on  
Artificial Intelligence (AI) developed through  
computer hardware and software."



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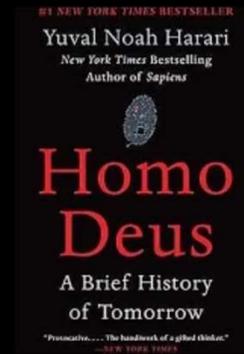


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# Anthony Levandowski, former Google engineer at center of Waymo-Uber case, charged with stealing trade secrets

Kirsten Korosec @kirstenkorosec / 1:02 pm CDT • August 27, 2019

Comment



rch's Prophets:  
God

rch's Apostle:

andowski founded the AI church "Way  
"

e's Creed:

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- Judge Alsup: “This was not a small crime. This was the biggest trade secrets crime I have ever seen,”
- Fined \$756,499.22 in compensation to Google and a fine of \$95,000. Sued by Google for \$179 Million.



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- Pardoned by Donald Trump during Trump’s last day in office.



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# The Frankenstein Complex

The Washington Post

The Switch

## Bill Gates on dangers of artificial intelligence: 'I don't understand why some people are not concerned'

By Peter Holley January 29, 2015



Bill Gates joined Reddit for an AMA on Wednesday. (Tobias Schwarz/AFP/Getty Images)

The development of full artificial intelligence could spell the end of the human race....It would take off on its own, and re-design itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, couldn't compete and would be superseded.

Stephen Hawking, BBC



'With artificial intelligence we are summoning the demon'  
Elon Musk

"I think Elon Musk is a tremendous entrepreneur, yet he's a quite retarded thinker" George Gilder



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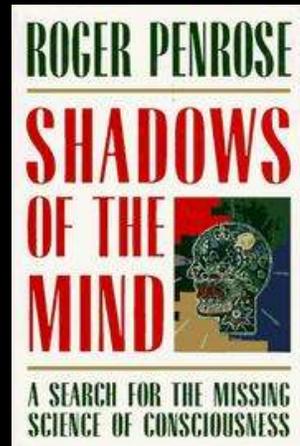
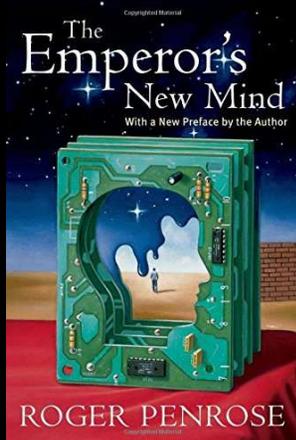
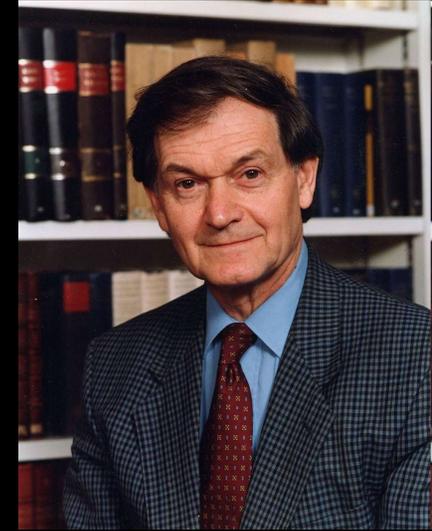
# Limits Creativity

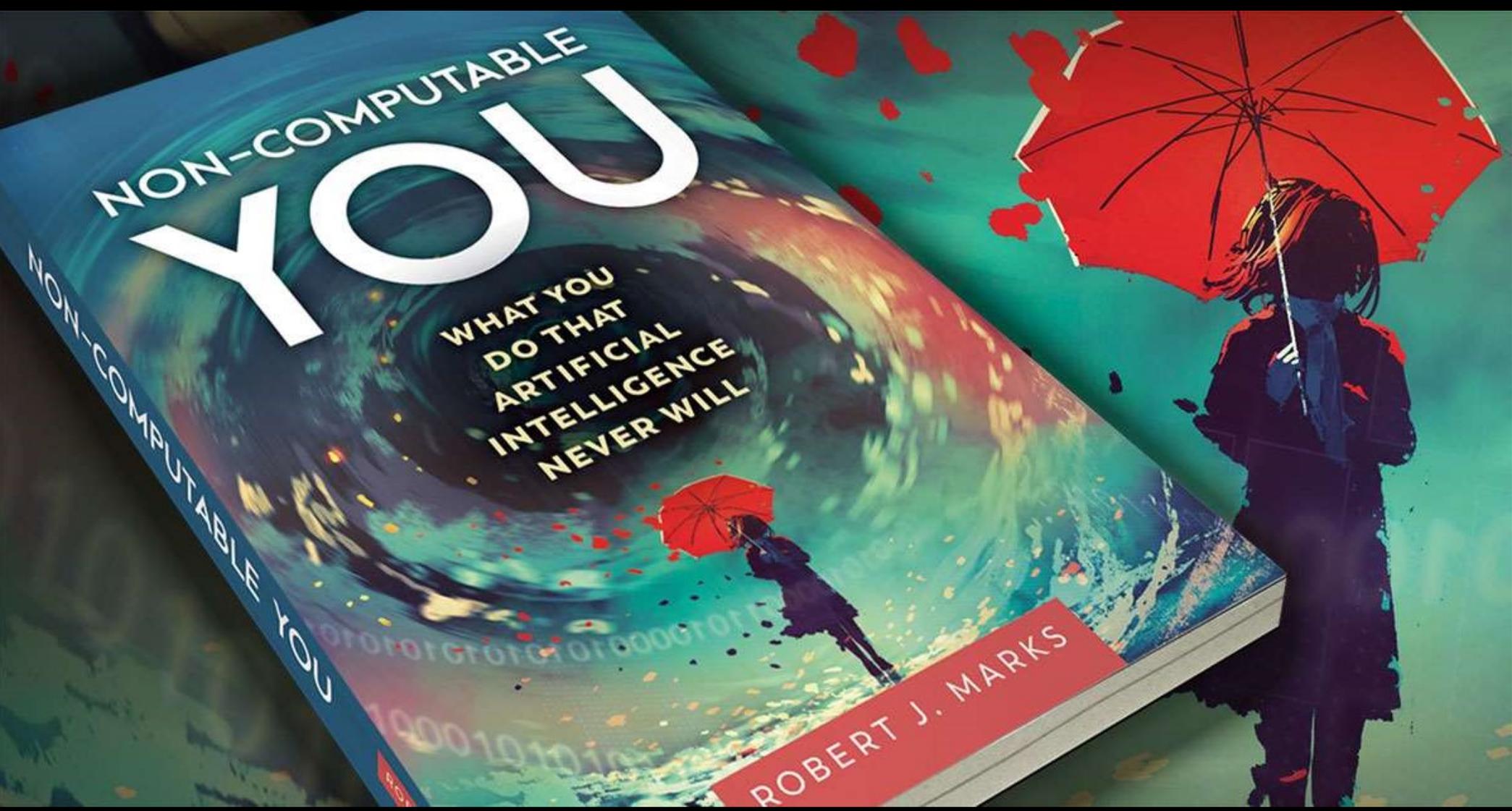
## Roger Penrose

(Penrose–Hawking singularity theorems)

Humans are Not Computers (Turing Machines)?

Humans can create beyond their foundational  
experience!

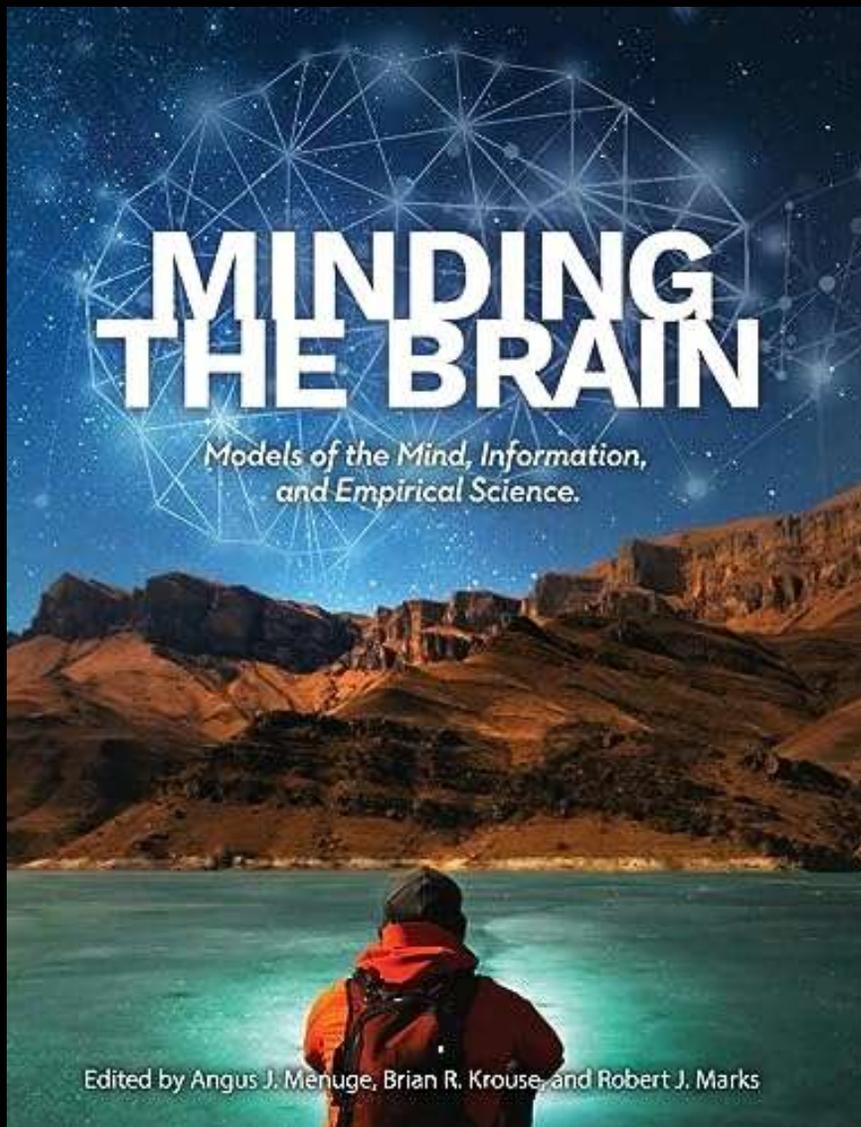




# NON-COMPUTABLE YOU

WHAT YOU  
DO THAT  
ARTIFICIAL  
INTELLIGENCE  
NEVER WILL

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Is your mind the same thing as your brain, or are there aspects of mind beyond the brain's biology? This is the mind-body problem.

# Computers (AI) is Amazing, but will ...

- Never be creative
- Never understand
- Never be sentient (experience qualia)
- Never achieve anything like the singularity
- Always be limited to learning AI ergodic processes
- Always be hyped



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Why?

One Reason is:  
Algorithms



Algorithm = Recipe

... a set of rules to be followed in problem-solving operations



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# Algorithm = Recipe

... a set of rules to be followed in problem-solving operations



## The Best Vanilla Cake Recipe

The Best Vanilla Cake Recipe - A vanilla cake recipe that is quick, easy, and delicious! Made from scratch, this cake is perfect for every occasion!

| Prep Time | Cook Time | Total Time |
|-----------|-----------|------------|
| 15 mins   | 30 mins   | 45 mins    |

Servings:  people Author: Robyn Stone | [Add a Pinch](#)

### Ingredients

- 3 cups all-purpose flour
- 2 teaspoons baking powder
- 1 teaspoon baking soda
- 1 pinch salt
- 1 cup butter softened to room temperature
- 2 cups sugar
- 4 large eggs at room temperature
- 1 cup [buttermilk](#) at room temperature
- 2 1/2 teaspoons [vanilla extract](#)
- [Chocolate Buttercream Frosting](#)



[Print Recipe](#)

[Pin Recipe](#)

[Add to Recipe Box](#)

★★★★★

4.68 from 28 votes

### Instructions

1. Preheat oven to 350° F. Prepare three 8-inch cake pans by spraying with baking spray or buttering and lightly flouring.
2. Combine flour, baking powder, baking soda, and salt in a large bowl. Whisk through to combine. Set aside.
3. Cream butter until fluffy and then add sugar. Cream together for about 8 more minutes.
4. Add eggs, one at a time, and mix just until combined.
5. Add flour mixture and buttermilk, alternately, beginning and ending with flour. Combine each addition until well combined.
6. Add vanilla and mix until thoroughly combined.
7. Divide among pans and bake for 25-30 minutes until edges turn loose from pan and toothpick inserted into middle of cake comes out clean.
8. Remove from the oven and allow to cool for about 10 minutes. Turn out onto wire cooling racks and allow to cool completely.
9. Frost cake with [Chocolate Buttercream Frosting](#).



**Tried this recipe?**

Share a photo on Instagram and tag me with [@addapinch](#) and [#addapinch!](#)



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<https://addapinch.com/best-vanilla-cake-recipe/>



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Directions =  
a set of rules to be followed in  
problem-solving operations =  
Algorithm

from Christ Church, 112 Medina St, Austin, TX 78702  
to Wiethorn Undergraduate Admissions Center, 55 Baylor Ave, Waco, TX 76706

**1 h 28 min** (102 miles)  
via I-35 N  
Fastest route, the usual traffic

**Christ Church**  
112 Medina St, Austin, TX 78702

- > Get on I-35 N from E 2nd St  
1 min (0.4 mi)
- > Follow I-35 N to N Interstate 35 Frontage Rd/J H Kultgen Expy in Waco. Take exit 335B from I-35 N  
1 h 29 min (101 mi)
- > Take S University Parks Dr to Baylor Ave  
1 min (0.5 mi)

**Wiethorn Undergraduate Admissions Center**  
55 Baylor Ave, Waco, TX 76706

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map: Live traffic, Fast, Slow, 3D, 10 mi



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## ROBOTIC ACCOUNTING DEPARTMENT

*The future of number crunching*



Technology has almost entirely replaced the travel agent as well as many brick and mortar stores. But high tech tools like bots are replacing employment in, of all places, accounting. Show Notes 01:30 | Introduction; Jeremiah Marks 02:00 | Forbes and AI accounting prime time 03:00 | What is Mint? 04:48 | Natural language recognition in accounting 06:15 | What : [Read More >](#)



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## MILITARY TECHNOLOGY AND AI

*Past, Present, and Future*



Technology, including AI, needs protection. Intellectual property of corporations needs protection from espionage. Military technology needs protection from foreign agents. Show Notes 01:10 | Introduction; Daniel M. Ogden, J.D. 02:20 | Technology in the military history 08:00 | WWII technology; Norton Gun Site 12:20 | Banning AI autonomous weapons 16:48 | Slaughterbots 18:13 | Military AI endgame 18:55 | Other : [Read More >](#)



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## EXPORTING AND SECURING TECHNOLOGIES OF TODAY AND TOMORROW

*U.S. Export Control and Research Espionage*



Technology is vital in commerce and war. Corporations spend billions in development and don't want to get ripped off. Technology and AI, more than ever, determine



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# MindMatters.AI



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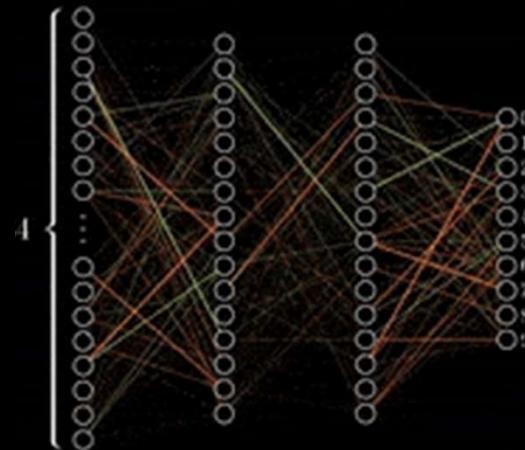
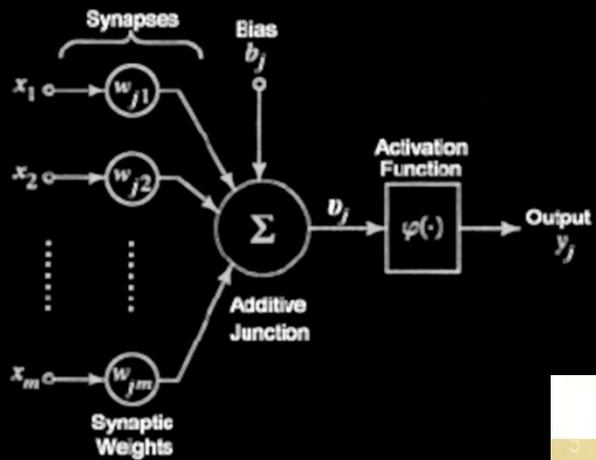
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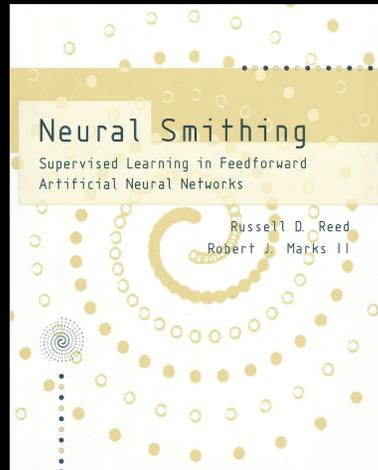


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<https://gfycat.com/gifs/search/deep+learning>

Artificial Neural Network  
 Training is Algorithmic:  
 Error Backpropagation

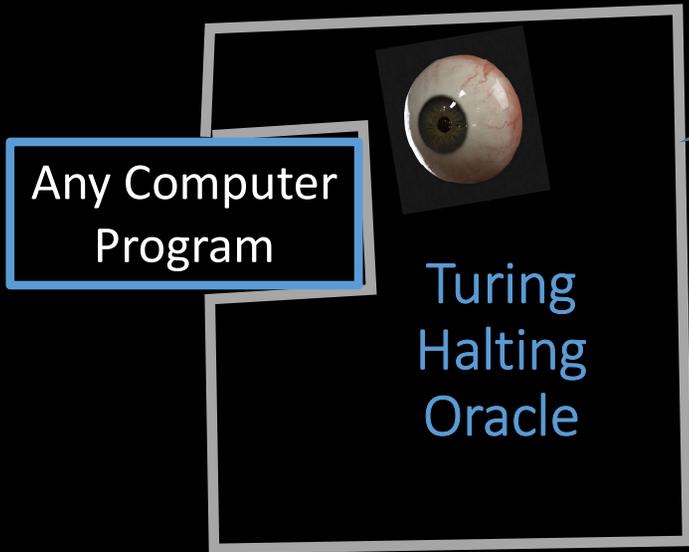
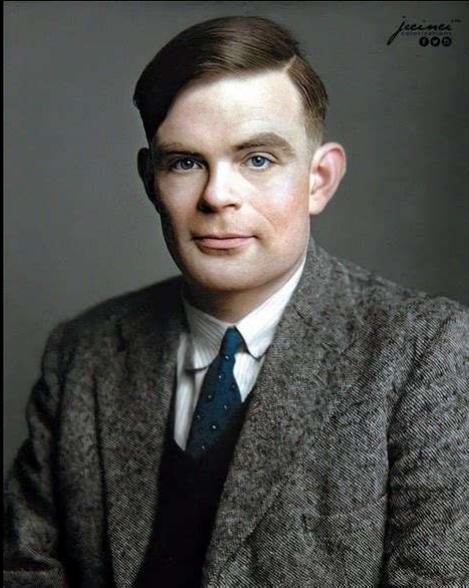


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Nonalgorithmic = Noncomputable



The Halting Oracle is Provably Noncomputable

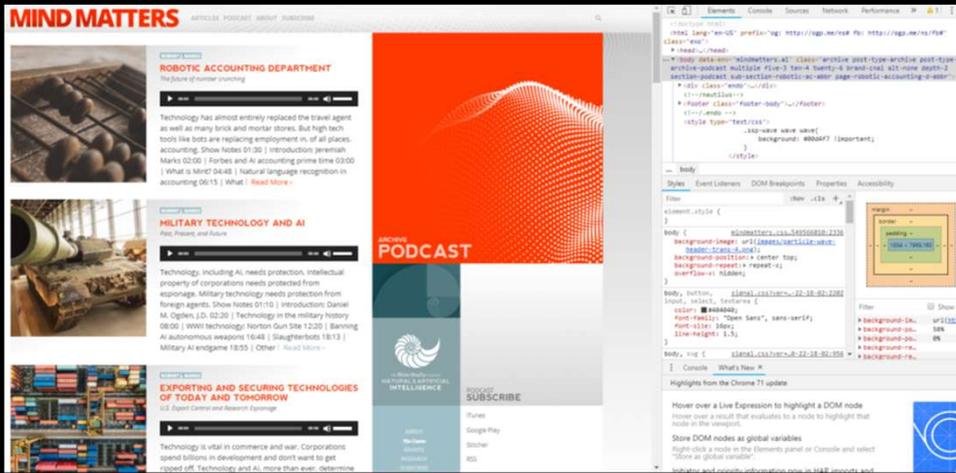


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# Another Nonalgorithmic Example: Shortest (Elegant) Program



Your program is shorter than mine!

There exists a shortest program:  
Kolmogorov Complexity

There exists no computer program to compute the shortest program for all desired outcomes ...  
doing so is nonalgorithmic.



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## Noncomputable human attributes



- Qualia
- Sentience
- Understanding
- Emotion
- Creativity
- Consciousness



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Qualia: individual instances of a subjective,  
conscious experience.



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Qualia: individual instances of a subjective,  
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## No Sentience



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# Limits: Understanding is Nonalgorithmic

## Searle's Chinese Room (1980)



「神爱世人，甚至将他的独生子赐给他们的，叫一切信他的，不至灭亡，反得永生。」



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# Limits: Understanding is Nonalgorithmic

## Searle's Chinese Room (1980)



IBM's Watson is a BIG Chinese room.



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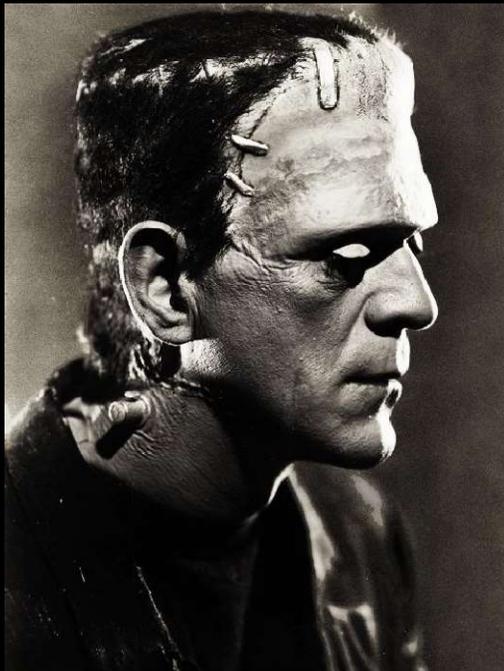


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## Limits: CREATIVITY... Lovelace Test: Strong AI

“Computers can't create anything. For creation requires, minimally, originating something. But computers originate nothing; they merely do that which we order them, via programs, to do.”

Augusta Ada King-Noel, Countess of Lovelace



**Lovelace Test:**  
Strong (or General) AI will be demonstrated when a machine's **performance** is beyond the intent or explanation of its creator.



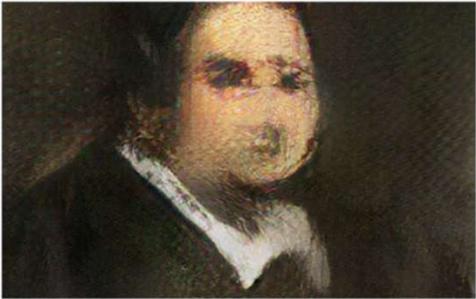
## Lovelace Test & Superintelligence



Has anyone passed?

Claim:  
AI can  
create  
ART

CHRISTIE'S



Is artificial intelligence set to become art's next medium?

AI artwork sells for \$432,500 — nearly 45 times its high



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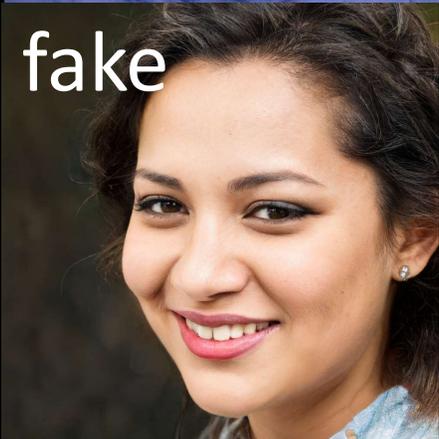


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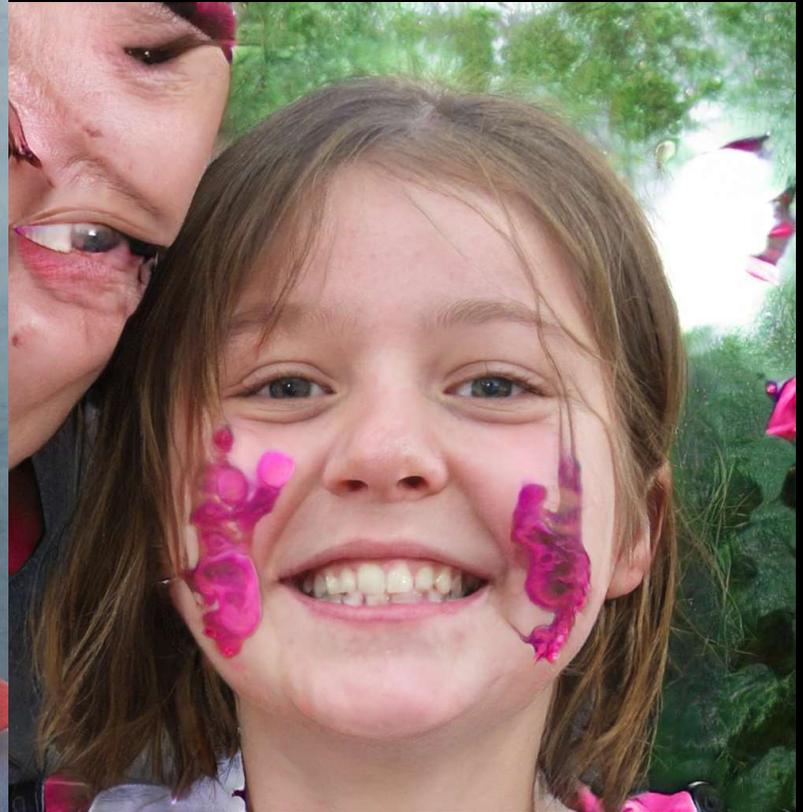




Which are fake? Which are real?



Which are fake? Which are real?



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# Midjourney Images



# Faking Bob





Can AI  
create  
MUSIC?

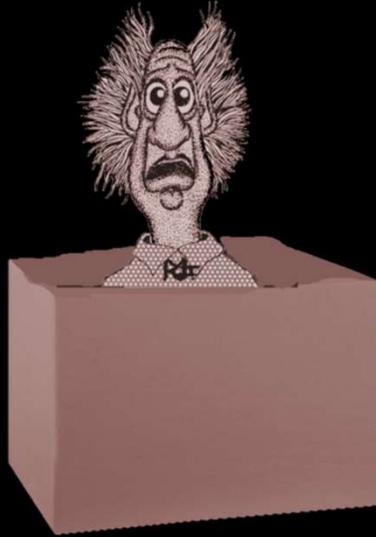


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Can AI  
create  
Prose?



ChatGPT is “high-tech plagiarism” Noam Chomsky



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# Litigation Galore!

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- The New York Times filed a lawsuit against ChatGPT's OpenAI for using content that falls under the Times' paywall.
- The Authors Guild is suing OpenAI in a class action lawsuit. The Guild represents authors such as David Baldacci, John Grisham, The Lincoln Lawyer writer Michael Connelly, and George R.R. Martin, the author of Game of Thrones.
- Reuters against the AI company Ross Intelligence,
- Microsoft's generative AI faces legal action regarding computer code it writes.
- Getty Images has taken legal action against Stability AI for employing more than 12 million of its copyrighted images in the training of a AI image generator.



Getty smoking gun...



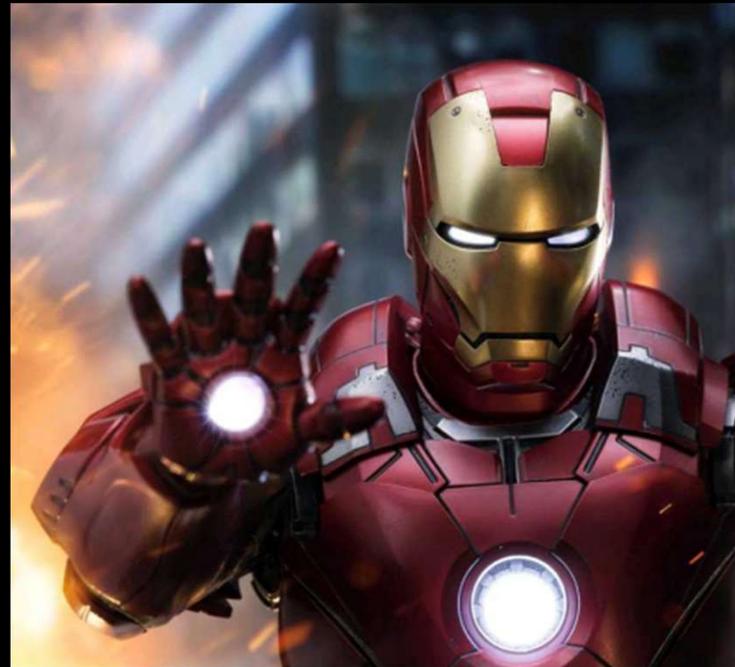
Midjourney: create an image of Joaquin Phoenix from “The Joker.”  
Joaquin Phoenix Joker movie, 2019, screenshot from a movie, movie scene --ar 16:9 --v 6.0.”



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<https://www.nytimes.com/interactive/2024/01/25/business/ai-image-generators-openai-microsoft-midjourney-copyright.html>

“popular movie screencap --ar 1:1 --v 6.0.”



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dune movie screencap, 2021, dune movie trailer --ar 16:9 --v 6.0"



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- 
- Ask BING for an “Italian video game character” No mention of Mario Bros.



# Model Collapse: Can AI Write Better AI?

**Gen 0:** Revival architecture such as St. John's Cathedral in London. The earliest surviving example of Perpendicular Revival architecture is found in the 18th @-@ century Church of Our Lady of Guernsey, which dates from the late 19th century. There are two types of perpendicular churches : those...

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## THE CURSE OF RECURSION: TRAINING ON GENERATED DATA MAKES MODELS FORGET

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Ilya Shumailov\*      Zakhar Shumaylov\*      Yiren Zhao      Yarin Gal  
University of Oxford      University of Cambridge      Imperial College London      University of Oxford

Nicolas Papernot      Ross Anderson  
University of Toronto & Vector Institute      University of Cambridge & University of Edinburgh

### ABSTRACT

Stable Diffusion revolutionised image creation from descriptive text. GPT-2, GPT-3 (.5) and GPT-4 demonstrated astonishing performance across a variety of language tasks. ChatGPT introduced such language models to the general public. It is now clear that large language models (LLMs) are here to stay, and will bring about drastic change in the whole ecosystem of online text and images. In this paper we consider what the future might hold. What will happen to GPT- $\{n\}$  once LLMs contribute much of the language found online? We find that use of model-generated content in training causes irreversible defects in the resulting models, where tails of the original content distribution disappear. We refer to this effect as *model collapse* and show that it can occur in Variational Autoencoders, Gaussian Mixture Models and LLMs. We build theoretical intuition behind the phenomenon and portray its ubiquity amongst all learned generative models. We demonstrate that it has to be taken seriously if we are to sustain the benefits of training from large-scale data scraped from the web. Indeed, the value of data collected about genuine human interactions with systems will be increasingly valuable in the presence of content generated by LLMs in data crawled from the Internet.

- **Gen 9:** architecture. In addition to being home to some of the world's largest populations of black @-@ tailed jackrabbits, white @-@ tailed jackrabbits, blue @-@ tailed jackrabbits, red @-@ tailed jackrabbits, yellow @ ...



GPT-4V "Describe this image"

Dall-E 3 "Generate this image" Recursive loop

<https://twitter.com/conradgodfrey/status/1712564282167300226?t=iyxkhMoF0b7jeUhbm6RQQw&s=19>

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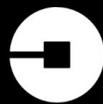
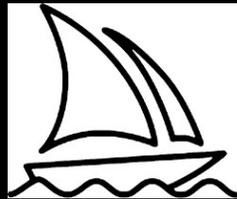
amazon alexa



**DRAGON**  
NATURALLY SPEAKING



Google Maps

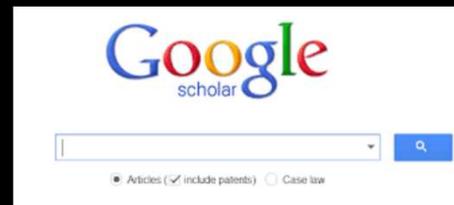


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# Some nonalgorithmic consequences:

- AI taking over assumes consciousness
- AGI (hard AI) assumes creativity
- Uploading the brain assumes we are algorithmic
- The mind-brain problem: We are more than meat computers
-

# Some nonalgorithmic consequences:

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- Psalm 139



# Non-Computable You: What You Do That Artificial Intelligence Never Will

Book  
Kindle  
Audio

