



## Partnering with Machines



RICHARD BOYD

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<https://www.metaversialminute.com/>



“The key to the 21<sup>st</sup> century is to achieve the right balance between humans and machines to optimize outcomes” – Boyd

# Human/Machine Intelligence Partnership

TC News Startups Mobile Gadgets Enterprise Social Europe Trending Google Facebook Sony

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## Man Vs. Machine: How Humans Are Driving The Next Age Of Machine Learning

Posted Jun 11, 2015 by [Richard Boyd \(@metaversal\)](#) 3,852

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Cyanogen OS Lands On Two

Richard Boyd is the founder and CEO of [Sailu](#).

How to join the network +

Some of the tech world's most prominent visionaries have weighed in on the issue, with seemingly uncharacteristic beliefs: Microsoft founder Bill Gates shared concerns about the **threat artificial intelligence will pose to humanity**, and theoretical physicist Stephen Hawking, who relies heavily on machine learning and artificial intelligence to communicate, argued that it could spell the **end of the human race**.

Tesla Motors CEO Elon Musk even likened AI to **"summoning a demon"**. Well, there was that time a robot vacuum tried to suck up a woman's head as she was sleeping on the floor, as well as the various times GPS led people off a cliff, into traffic and into large bodies of water. So, it's clear that there are many cases in which machines can work better for us, but are we overreacting to the supposed threat of technology?

After all, this isn't the first time brilliant minds and alarmists predicted dystopia and got it wrong. Fifteen years ago, many feared that all computers would fail during the transition between December 31, 1999, and January 1, 2000, creating all kinds of chaos and possibly bringing on the apocalypse — and somehow we're still here.

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## SuperHuman Education

By [Gabe Aulbar](#) March 20, 2013

Richard Boyd

Some time in the 21st century, a stand alone, un-augmented mind will be considered handicapped.

It is no secret to anyone who has a smart phone or who has used Google search, that the internet and search, judiciously utilized, can make an already intelligent person vastly more intelligent. As other technologies like ubiquitous artificial intelligence, intelligent tutors, augmented reality, and game based learning continue to improve, the digital divide between those who are comfortably fluent with technology and those who are not will create dramatic contrasts in society. There is a revolution under way driven by Moore's Law (the price/performance of computer processing power) and Metcalfe's Law (the power of networked intelligence) that is changing the competitive landscape and redefining literacy. Those individuals who take advantage of this revolution and gain a comfortable fluency and literacy with these new interfaces will appear **superhuman** to and outperform those without them. Conversely, those who do not keep pace with technology will appear disabled. This will be true of individuals and organizations as well as nations.

Accessing Analytics

The 2012 Super Bowl, 92 seconds remaining. The New York Giants are trailing the New England Patriots by 2 points. Giants quarterback Eli Manning hands the ball off to running back Ahmad Bradshaw, who struts up the middle to the goal line... and freezes. No one from the New England Patriots tries to tackle him. His team mates are shouting at him, "Don't score!" A confused world watches, as Bradshaw finally is unable to overcome his lifelong training, and slowly rises and falls into the end zone. Commentator Billy Crystal called the "frozen down" in the media feed as "the reluctant touchdown". However history decides to record this unusual moment in sports, there is no denying that it was a harbinger of what is to come in every area of human endeavor. Humans were not making the decision on either sideline. Analytical algorithms on computers had replaced human intuition. Increasingly, our lives are being governed by machines.

Automation

We are becoming more comfortable outsourcing what were once human jobs to automation.

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HQ PBL HIGH QUALITY

Remember it's "Celebrating Creativity" month at Getting Smart!

Richard Boyd, Image Credit:

Artificial Intelligence in Education: Where It's At Where It's Headed

October 22, 2015

Healthcare Training and Education Emergency Hospital Nursing Surgical Technology University

HEALTHCARE TRAINING AND EDUCATION TECHNOLOGY THE TIME FOR SUPERHUMAN HEALTHCARE

## The Time for SuperHuman Healthcare

JANUARY 13, 2014 TECHNOLOGY RICHARD BOYD

Richard Boyd at the simulation lab at Weill Cornell Medical College in New York. Image Credit: Richard Boyd

Richard Boyd asserts that we are seeing the start of the Century of Simulation and Human Intelligence use

If you could manage to ignore the purveyors of even higher definition (4K) displays at the 2014 Consumer Electronics Show in Las Vegas, you could see the pattern emerge above the noise. Something new is happening. It is becoming clear that the last century was about the recorded moving image and the birth of computing; but the beginning of this century is about something else. It is about ubiquitous intelligence.

In the clamoring halls and private venues of Las Vegas last week there was abundant evidence that the revolution in sensors and artificial intelligence was in full swing. At a press conference there on Sunday before everything had really geared up, Shaviv Duhraev, chief economist for the Consumer Electronics Association, talked about the "Age of Autonomy" and the "Internet of Things". He was quoted in the LA Times as saying the number of intelligent gadgets in our lives is expanding at an accelerating rate and "they are increasingly talking directly to each other and making decisions without consulting us pesky humans."

Richard Boyd, Image Credit:

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## #12. The Simulation Century

MAY 4TH, 2023 | 51:45 | E12

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**EPISODE DETAILS** / TRANSCRIPT

### EPISODE SUMMARY

In this episode I speak with AI veteran Richard Boyd about machine learning, resurrecting his father with AI, digital twins and the simulation century we are entering.

### EPISODE NOTES

Topics:

Richard's background in ML and AI

Resurrecting his Dad with machine learning

The power of digital twins

Simulation century and the future

<https://www.linkedin.com/in/richardboyd/>

<https://twitter.com/metaversial>

<https://tanjo.ai/>

<https://www.ultisim.com/>

SHOW CONTRIBUTORS    Danny Kirk

# I Prompt, Therefore I Am: The Role of the Designer in the Age of Generative AI



**We have just reached and passed the age of AI assisting humans. We are entering the era of humans assisting generative AI.**

Richard Boyd | May 12, 2023

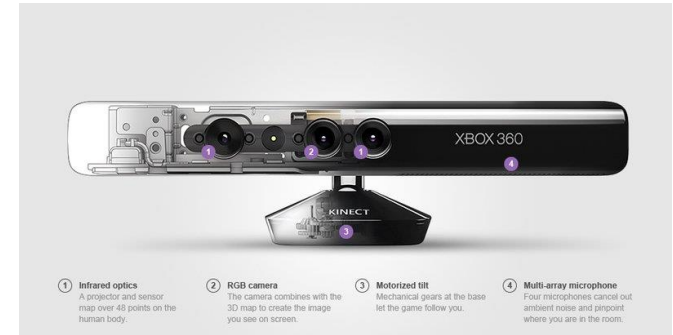
The first time I remember asking the machines for their opinions and perspectives on a design was in 2010 at Lockheed Martin. Lockheed bought my [3D simulation company](#) in 2007, and I created my own skunkworks called [Virtual World Labs](#). We played with AI, machine learning, virtual reality, and augmented reality. One of our projects was trying to build displays for the F35 helmet. We wanted a high-resolution display with a field of view of 160 degrees. Pilots would be able to see their surroundings through the sensors. The plane would become invisible, like Wonder Woman's,

# TSIS Generative AI Guidance Notes

- This is the Simulation Century
- The 21<sup>st</sup> Century Imperative is to seek the right balance between humans and machines to optimize outcomes
- ML/Generative AI is not normal Enterprise Software. It is more intimate and powerful.
- **There is no ML Debugger!!**
- ML/LLM systems can not transcend their training/databases
- Model collapse is a real concern. LLMs are a lossy compression of their training data. As generative AI begins to train on its own generated content we will see data loss and mass forgetting
- You do not need a single data lake. AI/ML can retrieve from data ponds by permission
- Good low hanging fruit use cases: Stem the Silver Tsunami, Make your own Memex, automate tasks with prompts, Digital Twins, soon create simulation environments with generative 3D worlds.

# Machine Learning: The New Button on the Calculator

## Large Datasets > Algorithms



2009 Microsoft Natal, Alex Kipman, Richard Boyd and Jaron Lanier

# Hangar 51: The Problem



- **Warehoused content is not curated knowledge.**
- Like Hangar 51 in Raiders Of The Lost Ark, most data and experts in large organizations are undiscoverable or underutilized.

The Unusable Warehouse of people and data

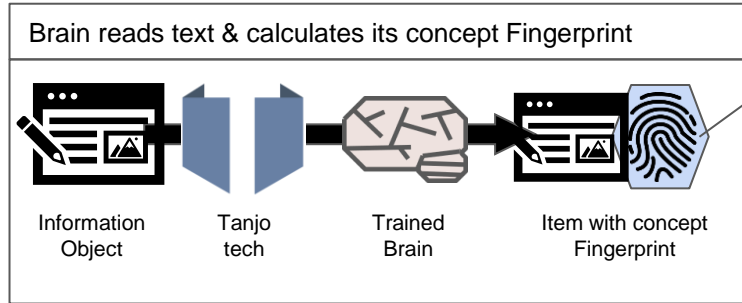


Now where was that write-up where we already figured this out...?

# Hyperdimensional Text Fingerprint Comparison

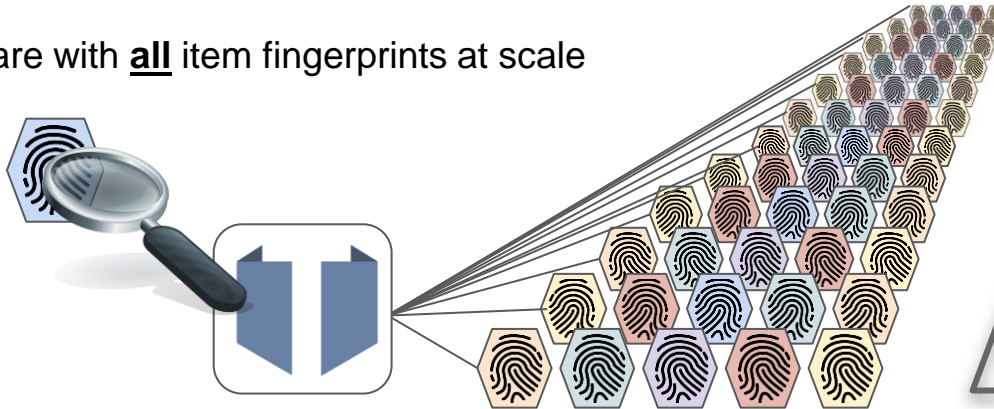


## 1) Scan all text items



**Hyperdimensional fingerprint** of the ideas / concepts / topics in the text from machine learning analysis (up to 4,000!)

## 2) Compare with all item fingerprints at scale

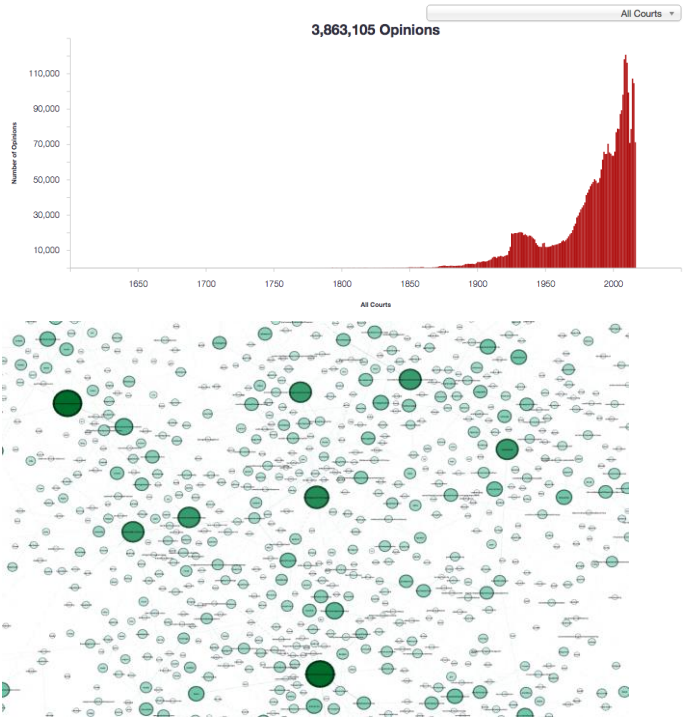
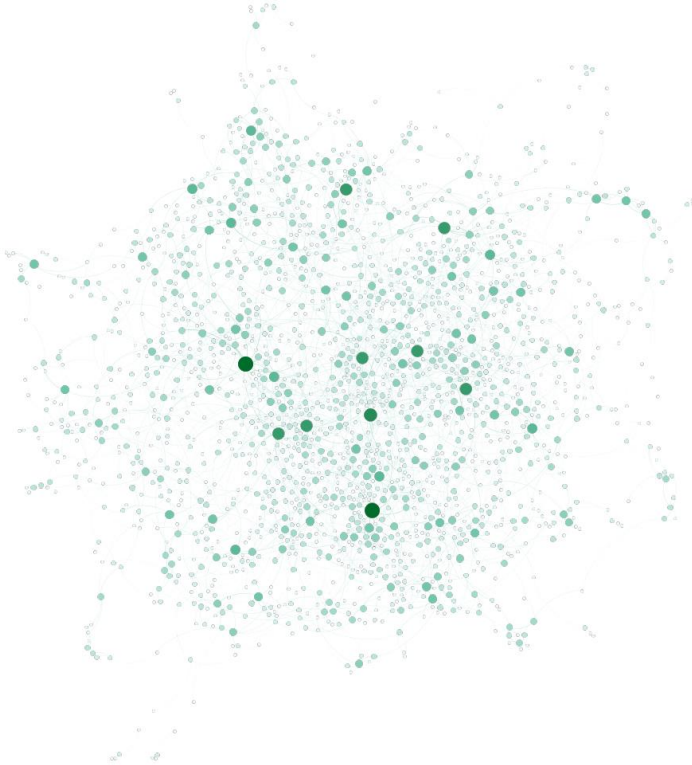


## 3) Deliver matches into a taxonomy you choose (personas, boards, folders, hierarchy, etc)



Feed all information available into your Company's Brain

# Example : TanjoCase-A Machine Learning Map Of Every Case Law Opinion In The United States Since 1797.





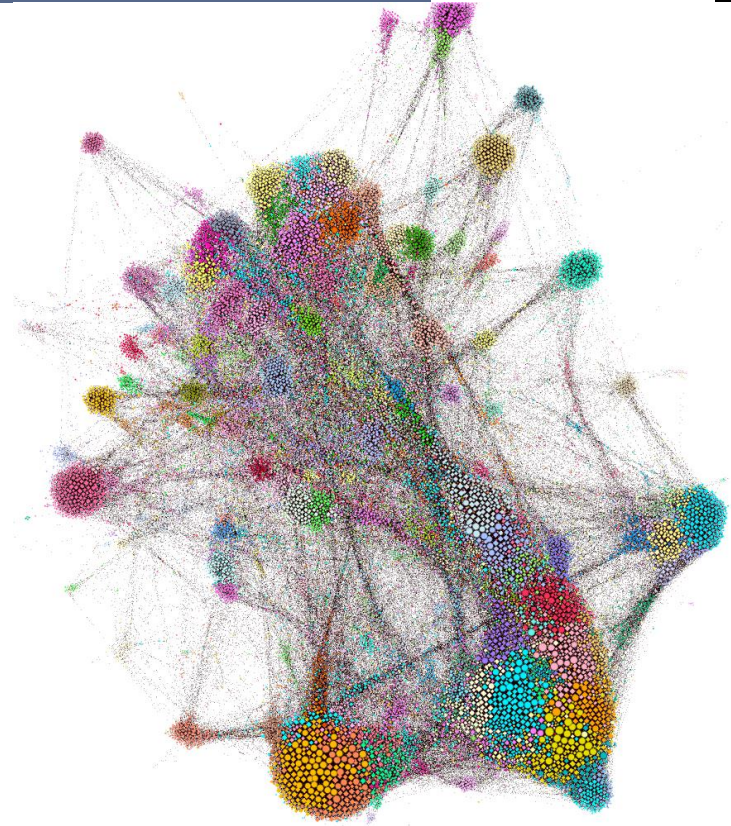
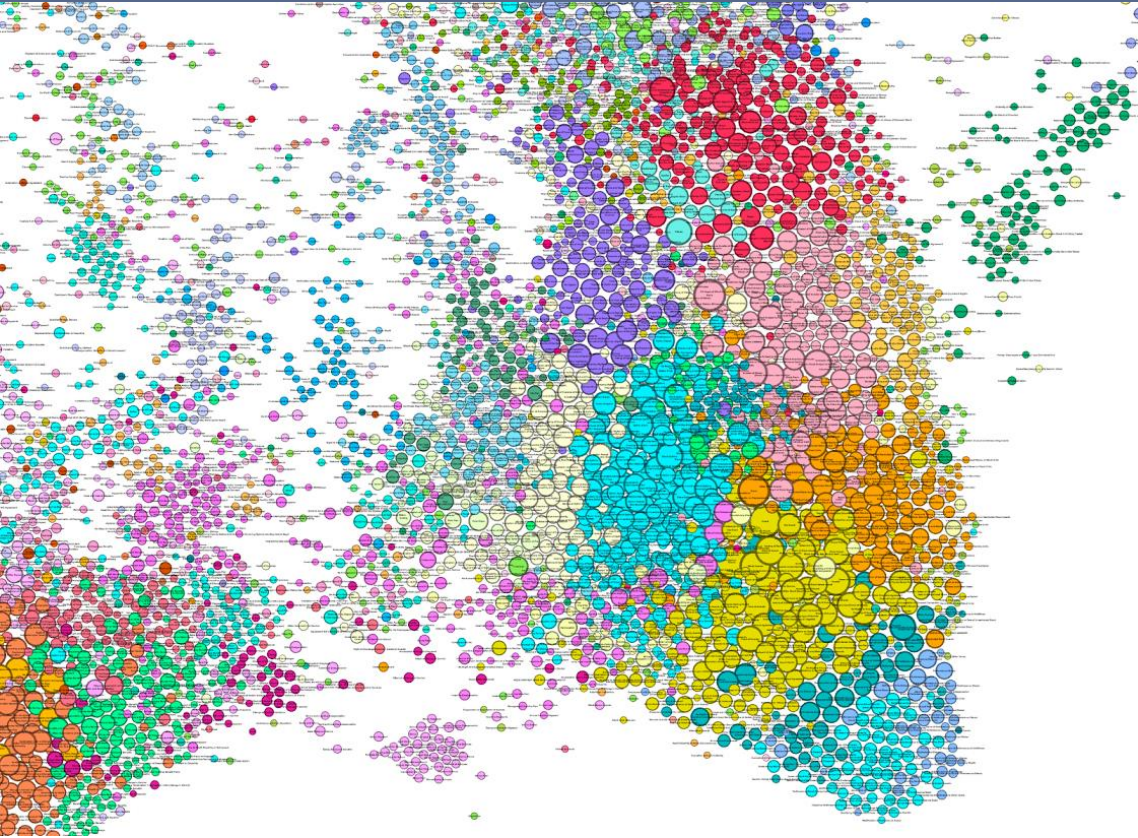
# RevRecBot

**Problem:** Use machine learning to apply the upcoming new revenue recognition rules from FASBI (which went into effect 12/2017) to large sets of contracts to determine which rules apply. RevRecBot reads your sales contracts, understands the language within them, and suggests (with a confidence score) the correct method for revenue recognition or whether the contract may have a problem that needs human attention.

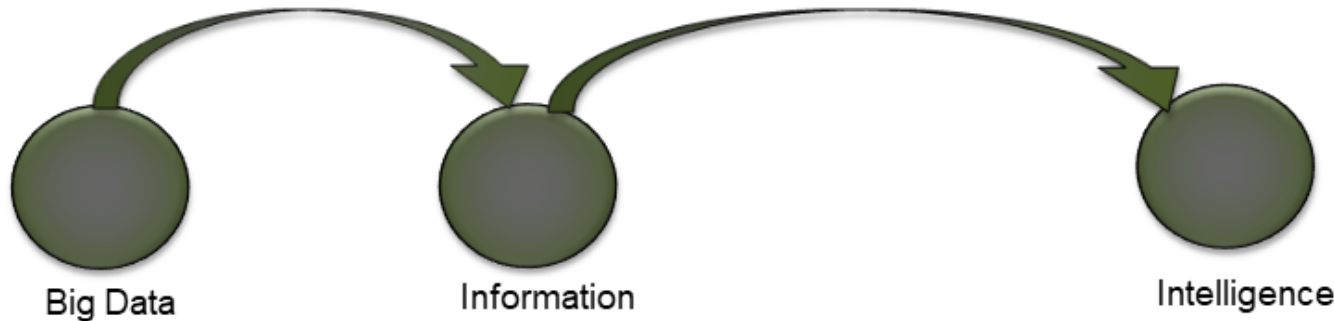
**Customer:** CPAs



# Taxonomy Of Clauses

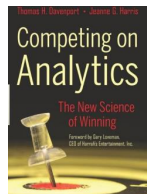


# It is a big leap (or 2) from Data to Intelligence



“Data at Rest”  
“Data in Motion”

The Tanjo Machine Learning brain maps everything it has access to across your organization with “multi-dimensional fingerprints”



Augmented Information Work

The Tanjo Machine Learning brain can detect what an information worker is attempting to do in context and bring resources to bear immediately, without requiring that worker to be adept at search. The Brain can even draft documents.

The Enterprise Brain

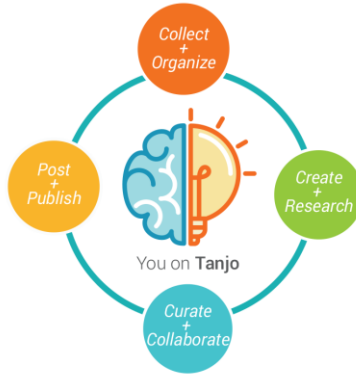
When the brain has crossed the “cold start” learning threshold it becomes an invaluable asset for the organization, creating the right balance between human and machine intelligence and effort, and an indelible map of the organization’s knowledge and workflow.



# The Tanjo NCCC Brain Mission

PUT MACHINE LEARNING TO WORK FOR YOU

TANJO



- An enduring repository of all NCCC knowledge and best practices
- Improve collaboration. Level the access to information across all campuses
- Allow for the free flow of ideas and expertise throughout the system.
- Stem the tide of the “Silver Tsunami”

## ● Create + Research

Aided by machine learning bots that serve you and your interests. Filter digital content from the open web and your private sources.

## ● Curate + Collaborate

Pin items to your smartboards. Invite colleagues to help you curate your boards with notes.

## ● Collect + Organize

Write your own note cards in collaboration with others. Rate items for relevance, validity, trusted source and quality.

## ● Post + Publish

Become a Thought Leader! Your machine learning minions will help identify content to post and tell you the optimal time to post to each social media site. Publish to an infinite number of web pages and blogs you control.

*“...It’s like Pinterest for Knowledge”*

*“We used four different tools—now we only use Tanjo”*

Community Colleges NC News  
Artificial ‘brain’ intelligence to digitally transform NC Community College System



Photo: Arnela Smith

Jim Parker left his previous position with the NC Department of Information Technology to join the North Carolina Community College System in 2016. As chief information officer and senior vice president for technology solutions, he soon realized that the system was spending a lot of resources to maintain the capabilities it already had, but was not doing as much in the way of technological innovation.

“We needed to start carving out resources and time to help focus in on what technology we needed to innovate in order for us to have a successful future,” said Parker. “And artificial intelligence is just one of them.”



# The Scientific Method Just Got an Upgrade

Unsupervised Machine Learning  
Discover hidden structure & classification in unlabeled data.

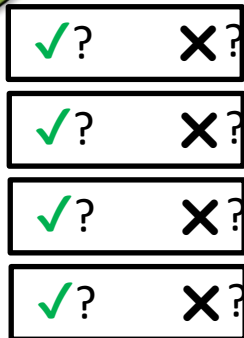
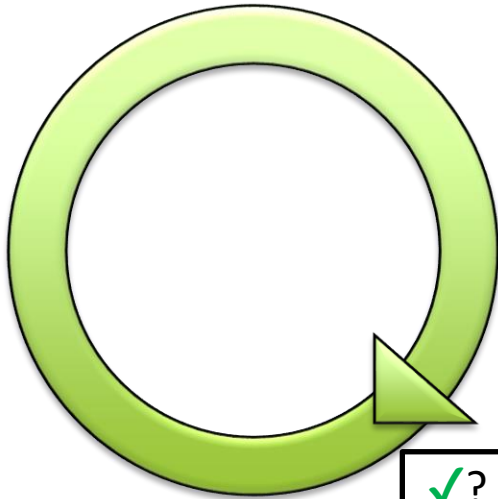
Discover the best correlations:

AB CD EF GH IJ KL MN OP  
QR ST UV WX YZ

Pick useful ones: EF MN ST WX

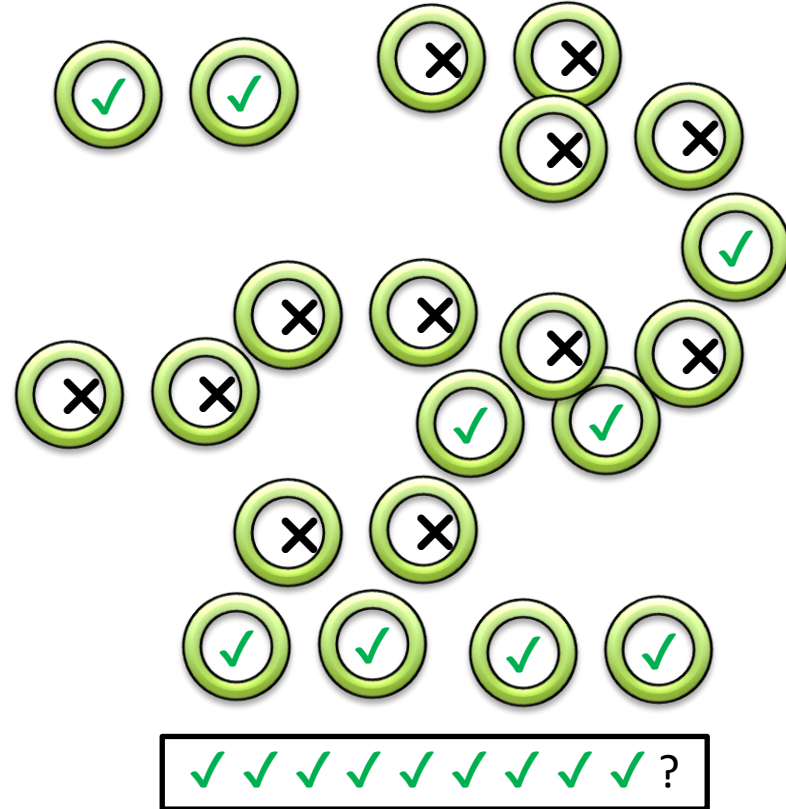
Scientific Method

Invent a Hypothesis,  
Design an Experiment, Test It, Repeat



Unsupervised  
Machine Learning

Find Every Valid Hypothesis,  
Then Pick The Useful Ones




# USA Today reports on the Force of the Future Wargame

www.usatoday.com/story/military/tech/2015/06/28/wargame-personnel/29284617/

**USA TODAY** NEWS SPORTS LIFE MONEY TECH TRAVEL OPINION 79° CROSSWORDS YOUR TAKE INVESTIGATIONS MORE

participant, referring to the book and movie about baseball general manager Billy Beane and his pioneering use of data and statistics in professional sports.

That would involve a detailed analysis of individuals' skills and a process for matching them to job assignments and teams of colleagues to optimize their performance.



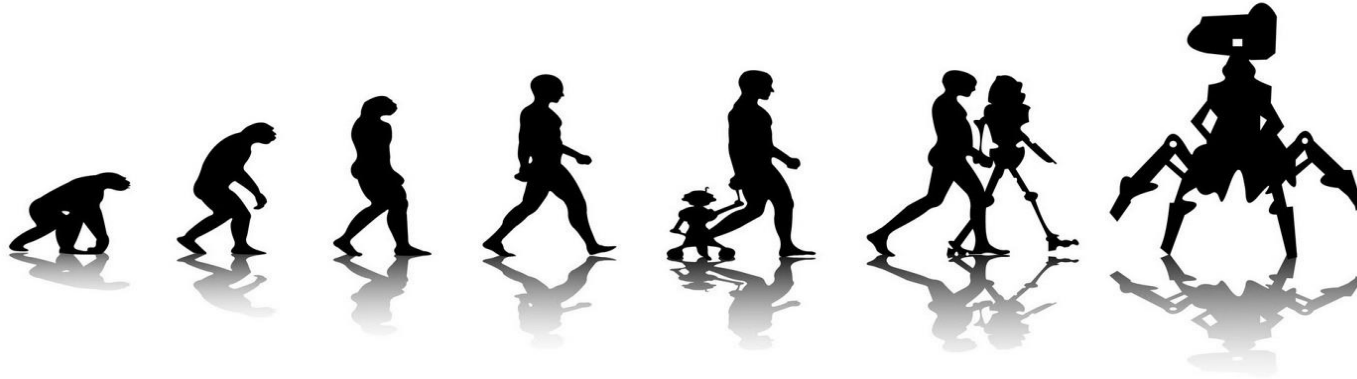
During the Pentagon-sponsored "war game" exercise focused on future personnel challenges, the "red team" panel of Silicon Valley tech experts shared their views with a dozens of military professionals in Tysons Corner, Va. (Photo: Courtesy)

But some of the technology professionals were surprised to hear one former DoD official say: "We don't use technology at all in terms of our internal selection and job assignments." Rather, job assignments often are driven by the available openings during the brief time when individual troops are scheduled to change duty stations.

Those intimately familiar with the limitations of today's personnel management system

3452  
118  
35  
6

# Artificial Intelligence



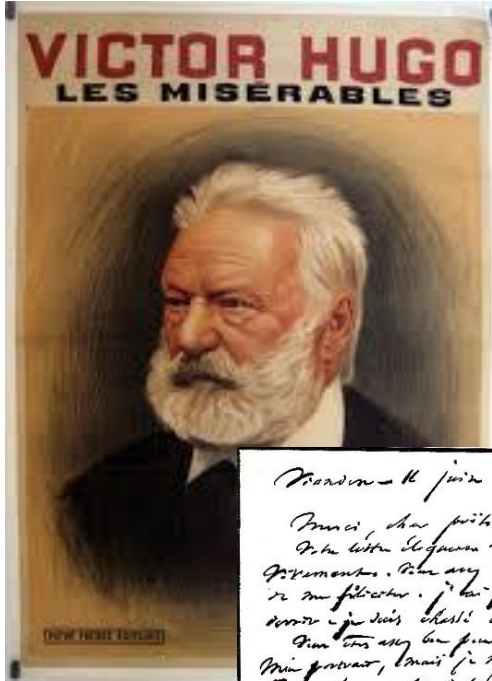
1958- 2009 Phase 1 Programmers telling machines what to do

2009 -2018 Phase 2 Data scientists in high demand

2018 - Nov 30, 2022 Phase 3 Behavior Scientists

2023 - Phase 4 Intelligence Amplification

# Victor Hugo Resurrected



*Prochain - le jour  
Francis, cher père.  
De la lettre de la semaine me toucha  
par son contenu. Bien que je sois  
si malade, j'ai fait ma  
réponse et je suis allé en courtoisie.  
Donc, tout va bien pour le moment.  
Mais j'ai peur, car j'ai mal à la poitrine.  
Et si il y a un peu de fièvre, j'ai peur.  
C'est un grand malheur que  
l'ouvrage est le même que le  
dernier d'or et la situation d'argent  
est incertaine. Le salut, dans ce milieu  
un peu forcé, fait un peu de bien  
sur la santé, et ne cause pas les mêmes  
grandes tristesses que le premier.  
Je t'embrasse.  
Ton père  
Le malheur est si grand, et je sais  
mon noble esprit.*

**TAP VICTOR HUGO**

My favorite reads yesterday were [Notre Dame football](#), [Former Irish coach Ara Parseghian dies at age 94](#), [Indian American-led Research Team at Notre Dame Receives \\$3 Million to Study Monsoons](#), [For 50 years, Catholic higher ed has followed Land O'Lakes roadmap](#)

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Unread | Social | Media | Character | Story | Creativity | Genre | Novel | Poem | Team | Strategy | Media | Versatility | Life | Open | Power | Reader | Build | Letter | Poem | Truth | Star | Location

Trending up: [Book1](#), [New York1](#), [Trust1](#) | Trending down: [Poem1](#), [Poem1](#) | Top words: Book, Write, Novel, Author

All Reads | Last 24 Hours | Last 7 Days | Last 30 Days | Sort by Match | Sort by Time

**Persona TAP Victor Hugo read "Amy Goodman at Socialism 2017"**  
Democracy Now! on Thu Jul 06 2017  
Interest Level: 99%

**Persona TAP Victor Hugo read "WATCH"**  
Sation.com on Sat Jul 01 2017  
Interest Level: 99%

**Persona TAP Victor Hugo read "Canaries In The Mine"**  
The Huffington Post UK on Tue Jun 27 2017  
Interest Level: 99%

**Persona TAP Victor Hugo read "Milton Friedman"**  
YouTube on Tue Jun 27 2017  
Interest Level: 99%

**Persona TAP Victor Hugo read "Notre Dame football"**  
NCAA.com on Fri Aug 11 2017  
Interest Level: 99%

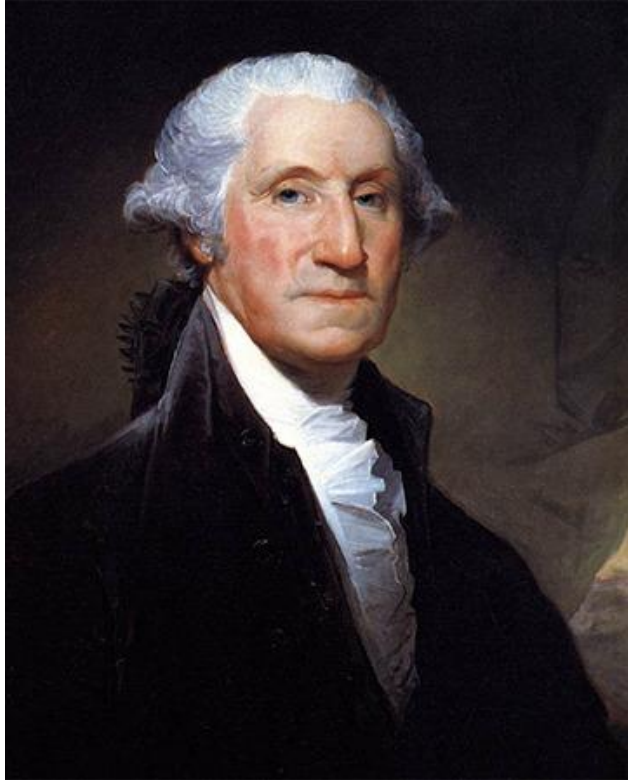
**Persona TAP Victor Hugo read "New computing system takes its cues from human brain"**  
EuroAlert! Science News on Sun Jun 18 2017

Hugo felt that the Romantic, or "the complete poet" as he calls it, "consists of three visions: Humanity, Nature, and the Supernatural" ([Shroder, 68](#)). The first voice Hugo heeded was that of humanity, calling the poet to accomplish his role as a humanitarian by taking part in political activity. Where he had earlier rallied to the aristocracy, he now associated himself with the people. In the 1850's, the bourgeois origin Victor Hugo, declared himself the plebian hero. The things of which he wrote were about the people and for the people. He believed in the common man, and saw the poor as the legs by which the rich were able to stand. He saw in them potential and he worked hard to have this potential realized by the people. His most memorable characters in [Les Misérables](#) were not of the rich or people of high-standing, but rather, of the [poor and common man](#). To the very end, Hugo felt an empathy for the poor, and though he didn't share in their poverty, he did sympathize with their plight. He carried his association with the lower classes even to his final breath: in accordance with his will, his coffin was carried on the *corbillard des pauvres*, the bare carriages used in the funerals of the poor.



# George Washington – Animated Persona

## Animated Personas that Read



TAP GEORGE WASHINGTON

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Filter by: SUMMARY 88 BOTS 45 HUMANS 33 CHAT 0 READS 54 ME 87

Pages: 1 2 Next Last

Politics Electoral Candidate **Democracy** American Washington Governor Show Release Official Democrat System Ballot Request Law Minister Nation **Elect** Political Constitution **Win Power** Clinton **Prime** National Congress Republican **can** Country **Opposition** Obama Democratic **Read Court by** **President Poll** European **Roll** **can** Parliament **Party Government** **Election** **Leader Campaign** Voter **Presidential Trump**

Trending up: **Prime**, **Democracy**, **Country** | Trending down: **Election**, **Victory**

Persona TAP George Washington read "5 Founding Father standards Obama botched"

Persona TAP George Washington read "Trump Echoes Alexander Hamilton With Immigrant 'Quotation Stance'"

Persona TAP George Washington read "Death of Congo's 'Father of Democracy' Leaves Dangerous Vacuum"

Persona TAP George Washington read "Commentary: Uttar Pradesh election a blueprint for 2019"

Persona TAP George Washington read "Modi is the best election test since 2014 landslide"

Persona TAP George Washington read "Constitutional Originalism - What WERE They Thinking?"

Persona TAP George Washington read "Venezuela opposition parties fear election ban as Socialists dig in"

Persona TAP George Washington read "How Trump's immigration ban explicitly smears Muslims as being potentially hostile to the Constitution."



I have received no particular Accounts respecting the Maryland Eastern Shore Militia. From the best information I have, a Great many are well disposed to turn out, but are prevented giving their aid, thro' the want of Arms. Apprehending that the Militia there would stand in need of an Officer to arrange them, I wrote to Genl. Cadwalader requesting his good offices, which, I am told have, been expressed. Colo Gist is now gone down and I expect will move, as soon as possible, with such as are armed, towards the Army. Genl Smallwood is gone to take the Command of those on the Western Shore, of which, I hear, many are collecting, but I have no authentic advices on the Subject. I have the Honor etc.

P S Will it be advisable to order Colo. Richardson's Regiment, from their present Station to march and Join the Eastern Shore Militia? &c

# TAP (Tanjo Animated Personas)

TANJO.AI ANIMATED PERSONA

STAN LEE

My favorite reads yesterday were [Not at Comic-Con, not a problem. Cosplayers go to Tate's instead.](#) [It Takes a Deep Reading, And an Obsession.](#) [An Interview with Paul Karasik.](#) [Game of Thrones showrunners are not going to Comic-Con after all](#)

Ask the Stan Lee persona

Trends from the last 7 days:

Comic! San Diego! Marvel! Trending up: Marvel!, Comic!, San Diego! Trending down: Geek!, Hotel! Top words: Comic, Marvel, San Diego, Show

Filter: ALL READS LAST 24 HOURS LAST 7 DAYS LAST 30 DAYS Sort: SORT BY MATCH SORT BY TIME

Persona Stan Lee read "Not at Comic-Con, not a problem. Cosplayers go to Tate's instead." sun-sentinel.com on Sun Jul 28 2019 Interest Level: 99%

Persona Stan Lee read "It Takes a Deep Reading. And an Obsession." Los Angeles Review of Books on Mon Jul 29 2019 Interest Level: 99%

Breakfast, grab-and-go. Drink coffee. early-morning

Date, romantic, movie mid-morning

Snack, grab-and-go. Drink smoothie. mid-afternoon

Drive to work mid-afternoon

Work meeting. Snack, sit down. Drink soda. late-afternoon

Gathering, at a home, indoors, celebration. Drink cocktail. early-evening

Drive home mid-evening

## TAPchat

Ask your persona questions.

Type anything you like and get chat answers.

Or, just click [Ask] (or click into field) to show customizable pre-selected questions.

Knowledge, preferences, daily life, occasion profile, etc.

## TrendCloud

What is trending in this persona's mind?

Word clouds, with a twist. Pick what time span to see trends over. Watch what ideas are growing (and shrinking) in mind-share the fastest.

## LifeFeed

Watch your persona's behavior.

What did they do today?

Watch them read media (and be influenced by it).

See their day brought to life.

Ask them about their life and preferences in TAPChat!

# Lt. Col James C. Boyd

Animated Persona of my Dad. By Richard Boyd




# AdAge

(Tanjo CEO Richard Boyd) decided that AI could help develop a far more comprehensive, flexible model that would find unexpected insights faster and cheaper. That was the start of Tanjo Animated Personas (TAP), the company's simulated models of real human beings that can be queried to see how they'll respond to words, phrases and product concepts. ... "It's essentially the new scientific method," Boyd says. "... machine learning can ingest such large amounts of data ... bring all the sources together and let the system find every hypothesis that might be true."

Michael McGuire, a VP of research for Gartner who's reviewed Tanjo's technology, agrees that even the best survey is limited by having the ask questions, which may be the wrong ones. ... "Observation has become more important to marketers because people don't always do what they say," McGuire says. Tanjo allows for (simulated) observation on a huge scale at rapid speed."

AI Models of Real Consumers Could Hold Marketing Insights



The central issue of the 21st century ... is how to achieve the right balance between humans and automation to optimize outcomes. ... A combination of human and machine intelligence working together to solve the problems that matter most.

Man Vs. Machine: How Humans Are Driving The Next Age Of Machine Learning



Richard Boyd, the founder of 3DSolve talks VR interfaces, defense industry patents, and simulations at Lockheed Martin.

Meet the Guy Who's Bringing Defense Industry VR Patents to the Commercial Sector



Richard Boyd, CEO of Tanjo, facilitated a conversation (at 2018 SXSW) with some great technologists including Google's Jonathan Rochelle. ... New machine learning tools .... can read really fast, recognize patterns and apply rules -- and they never forget. For example, Boyd's machine learning engine read every U.S. legal opinion since 1797 and produced a complete correlated map in less than a week.

The Rise of AI: What's Happening, What it Means, How to Prepare?

# Recent IRS RFI

**PILOT IRS- Request for Information (RFI) 2032H5-20-N-00012**  
**Internal Revenue Service (IRS), Enterprise Systems Testing (EST)**  
**Synthetic Data Initiative**

## **1.0 High-Level Summary**

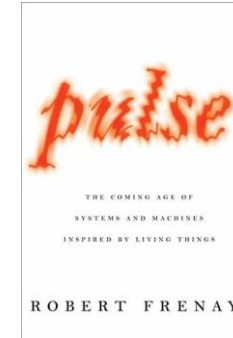
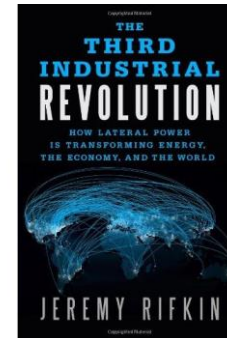
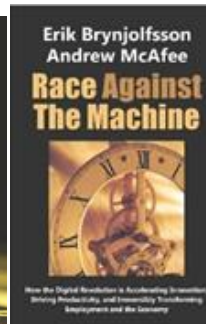
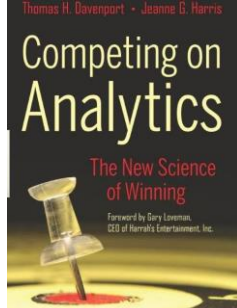
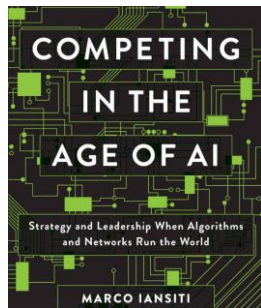
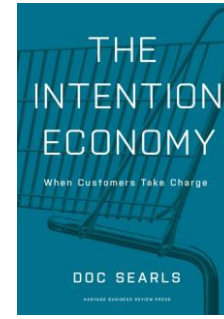
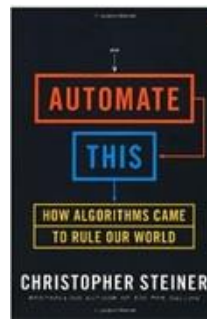
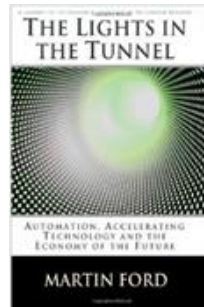
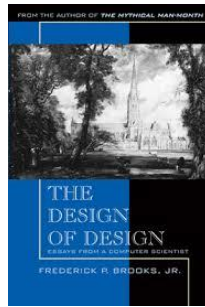
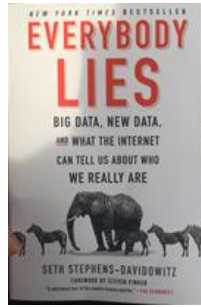
This RFI is part of the Pilot IRS Program. Internal Revenue Service (IRS), Office of the Procurement Executive is requesting information about innovative, enterprise-wide Artificial Intelligence (AI) or simulation engine systems that will allow developers and testers to generate, manage and control synthetic tax data. We are primary interested in: 1) an interactive prototype that simulates real- life events (similar to those that drive popular video games like 'The Sims') when its populated with statistical data about United States (US) household incomes and family sizes to create, track and generate output triggers for tax-related events; 2) a report/listing detailing the use of AI and/or non-AI Based data modeling and prototyping tools used in industry/government to simulate individual and household activities with tax impacts to drive an expanded synthetic data generation approach; and 3) a rough estimate of how much these tools would cost relative to their return on investment (ROI).

# TSIS Generative AI Guidance

- This is the Simulation Century
- The 21<sup>st</sup> Century Imperative is to seek the right balance between humans and machines to optimize outcomes
- ML/Generative AI is not normal Enterprise Software. It is more intimate and powerful.
- **There is no ML Debugger!!**
- ML/LLM systems can not transcend their training/databases
- Model collapse is a real concern. LLMs are a lossy compression of their training data. As generative AI begins to train on its own generated content we will see data loss and mass forgetting
- You do not need a single data lake
- Good low hanging fruit use cases: Stem the Silver Tsunami, Make your own Memex, automate tasks with prompts, soon create simulation environments with generative 3D worlds.

# Suggested Reading

Before it's too late



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