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Welcome to Quinn's AI Update

Issue #21, April 2024

Hello, AI Enthusiasts! And welcome new subscribers! Glad you're here riding the wave!

One thing I want to point out before we get into it: I do this newsletter to keep as many people as possible informed about the massive changes that AI is making and will continue to make upon all of us. The point of that is NOT to cause anyone existential dread—fearful for your job, fearful for your future, etc.

The point is to inform you and get you thinking NOW so you can make good decisions about AI and how to use it. This is all about preparing all of us for the Age of AI.

All right. With that said, here we go:

- Where to Start Implementing AI?
- Stale: Fight the Power, Fresh: Where's the Power?
- \$100B Stargate Supercomputer?
- HeyGen and Moving Avatars
- Amazon's Billion \$ Bet on Anthropic

Read on for more!



Image generated with Dalle-3 and the prompt *"The image of a wistful robot in a Spring setting, inspired by the phrase 'April Showers bring May flowers.'"*

Where to Start With AI

As I speak to groups about AI, I'm frequently asked "Where do we start to implement it?" and "My organization wants to implement it, but where do we start?"

On the individual side, I encourage everyone to try out and play around with the publically available generative-ai like ChatGPT, Gamma.ai, Leonardo.ai, etc. That will give you the flavor of what's available today and familiarize you with current capabilities.

On the organizational level, I don't recommend you take on the most difficult human job and try to automate it immediately. Don't try to get an AI to replace an entire human's work (even though I'm aware there's at least one company in the world using AI as its CEO).

Instead, start small. To my thinking, the answer is the same as with any new tool: start with a small project, make the project successful and then take on bigger things with the knowledge you've gained.

Find those things that actually need to be done in your organization but that are repetitive and that you don't have enough human workers to complete. For example, hospitals and healthcare systems have a challenge with scheduling patients with doctors. It's something that is needed, but organizations are having high-paid employees, like nurses, make calls to schedule patients because they can't find enough lower paid employees to do the work.

So start by automating the scheduling process. This has been done for years by home healthcare providers who use automated calling systems to check on patients and use phones to order more supplies like oxygen tanks or filters for apnea devices. But with AI, you can have a simulated human voice ask the patient about scheduling—then place the appointment on the doctor's calendar and send reminders to the patient.

Automation is just another word for "this is where to use AI."

Healthcare Corporation of America (HCA), is the largest privately held healthcare organization in the country with over 180 hospitals. They are using AI to automate creating "handoff docs" for when patients move from one set of care givers to another. They are also automating nurse scheduling—a notoriously difficult task for humans to do. See an article on HCA from Forbes [here](#).

According to Sam Hazen, HCA CEO, "We believe we have opportunities to improve care processes, eliminate a lot of the variation that exists today in our company, create better quality, and at the same time, more efficiencies. Artificial intelligence, we believe, will play a huge part in that."

Or start by implementing an AI as a chatbot to answer frequently asked questions from your employees or customers. We currently do this today, but we have an actual human trying to be the chatbot—and they try having 10 conversations at once and end up answering no one's actual question. You can train up a chatbot to answer frequently asked questions, and it will be able to have these conversations with many people simultaneously. Test the chatbot and have it report on its results daily—then check those results and make adjustments. This use case will ultimately automate call centers.

With that said, I have some warnings: don't share proprietary information with public AIs. In their public form, chatbots like ChatGPT use the information you give them to train themselves and get better as chatbots. Any info you give them is then considered public information—so don't share information that is proprietary! Don't share anything you and your company/organization consider private. (There is a "private" version of ChatGPT that you can pay extra for—but you should research how "safe" that is before sharing private info with it.)

For more on implementing AI, check out this article [here](#). It's at least a good start on thinking through projects to implement AI. I think it underestimates the human work involved up front, but at least it gives you a place to start.

Deep Dive: Power Generation and AI

Among the challenges to the growth of AI is the ability to provide the power needed. AI needs a lot of power. So much so that Microsoft posted a job description a few months back looking for a project manager who has experience building nuclear power plants (I covered this in a previous newsletter.)

In fact, it's estimated (by ChatGPT 4) that just training ChatGPT 3 required 1,287 Megawatt-hours of energy—enough to power 120 average US homes for a year. That's not counting the thousands of kilowatt-hours it takes for ChatGPT 4 to respond to prompts or the cooling costs required to keep data centers from overheating.

In fact, now Amazon, Google and Microsoft signal growing interest in nuclear and geothermal power. Under optimal conditions, they are all looking to use "green", renewable energy, but, in a pinch, any energy will do—even if it is energy that is not connected to the grid and only available for the use of AIs—like a standalone nuclear reactor. See more on this [here](#).

Other efforts are focused on reducing the power requirements for AI. Most of the efforts here are in developing new types of computer chips—ones that use organic brain neurons to integrate with the inorganic materials of the chips. This makes sense if you consider that the human brain is an organic intelligence and doesn't require a nuclear power plant to think—just "water, three hots and a cot."

Folks leading efforts here are the [Matrix AI Consortium at UTSA](#) and private companies like [Rain AI](#).

Also pushing us to produce more power are electric vehicles which add a lot more load to the power grid. So much so that experts doubt our current grid and power generation could withstand Americans using all electric vehicles.

Most power generation (except for solar) is spinning on getting a turbine (a magnet wrapped in metal wirings) to spin. The spinning magnet has a changing magnetic field and that creates a current in the wire and that current generates the power to run things—everything from electric stoves and vacuums to hair dryers and microwave ovens.

Wind turbines use wind to spin the turbine while coal, natural gas and nuclear power plants boil water into steam to turn the turbine. Dams turn turbines with water.

But solar power only works when the sun shines and wind only works when the wind blows. Nobody wants to build anymore hydro-electric dams, and coal and natural gas produce carbon dioxide. So some see nuclear power as the optimal way forward as constantly reliable, climate-friendly power sources.

Hey ChatGPT 4—what's the difference between power plants based on nuclear fission versus nuclear fusion?

Nuclear fission is like breaking something big into smaller pieces. In a nuclear fission power plant, we use a heavy element called uranium. When a tiny particle called a neutron hits the uranium atom, the atom splits into smaller atoms, releasing a lot of heat and more neutrons. These new neutrons can hit other uranium atoms, splitting them too, and this process keeps repeating—we call this a chain reaction. The heat from this process is used to make steam, which then turns turbines to generate electricity.

Nuclear fusion is the opposite; it's like putting small things together to make something bigger. In the sun, hydrogen atoms combine under high pressure and temperature to form helium, another type of atom. This process also releases a lot of heat. If we could do fusion on Earth, we would use hydrogen atoms, combine them to make helium, and use the released heat to generate electricity through steam. Fusion is harder to control than fission and is still mostly in the experimental stage for power generation.

Key Differences between fission and fusion:

1. **Fuel:** Fission uses heavy elements like uranium or plutonium, while fusion uses light elements like hydrogen.
2. **Waste:** Fission produces a lot of radioactive waste that can be harmful and needs to be stored safely for many years. Fusion produces much less and less dangerous waste.
3. **Safety:** Fission can have serious safety issues, like meltdowns if not managed correctly. Fusion is considered safer because it's easier to stop the process and it doesn't run the risk of a meltdown.
4. **Stage of Development:** Fission is well-developed and widely used around the world. Fusion is still under research and hasn't been developed into a practical power source yet.

So fusion seems a bit further into the future than is helpful, and while the problems we've seen at Three Mile Island 1979 (relatively low radioactivity), Chernobyl, 1986 (huge catastrophe) and at the Fukushima Daiichi Disaster (2011) (catastrophe that will take decades to clean up) there are newer, safer fission reactor models including:

1. Small Modular Reactors (SMRs)
2. Generation IV Reactors
3. Molten Salt Reactors (MSRs)
4. Pebble Bed Reactors

And leaders in tech, including Sam Altman, Microsoft, and Elon Musk see the energy challenge and seem to be preparing for it. Microsoft has invested in renewable energy as well as partnerships with large energy companies like Shell. Musk famously invested in SolarCity. Altman, though, has invested \$375 million, in [Helion](#), a company developing fusion energy to revolutionize the renewable energy sector.

Other notable Helion backers like Reid Hoffman (LinkedIn) and Dustin Moskovitz (Facebook co-founder) have helped Helion secure a total funding of \$577 million to achieve its vision. Other competitors to Helion include Commonwealth Fusion Systems (CFS), TAE Technologies, General Fusion, Tokamak Energy, and First Light Fusion.

Here's [Sam Altman with Lex Fridman talking](#) about how AI requires a breakthrough in power generation. And here's a video covering Amazon's [recent purchase of a nuclear-powered data center](#).

"I think critical thinking, creativity, the ability to figure out what people want, the ability to have new ideas, in some sense that will be the most valuable skill of the future. If you think of a world where everyone of us has a whole company worth of AI assistants that are doing tasks for us to help us express our vision and to make things in the world, the most important thing then will be the quality of the ideas, the curation of the ideas...because you still need a human there to say 'This is the thing that people want.'"

—Sam Altman, CEO of OpenAI

The \$100 Billion Supercomputer

To people my age, "*Stargate*" was the name of a movie with Kurt Russell and James Spader as well as a follow-on TV show starring Richard Dean Anderson (also known for *MacGyver*). Now, it's the name of a supercomputer that Microsoft and OpenAI want to build for \$100 Billion. That's 100 times more costly than most of today's data centers and the supercomputer would be part of a data center with millions of computer chips running AI.

The project would take 5 or 6 years to complete—so after the date when some predict we will have artificial general intelligence (AGI). The power requirements are in line with what a nuclear reactor can generate.

Click [here](#) for more.

HeyGen's Avatars Now Walk and Talk

I commented a few months ago on the AI company HeyGen and their AI's ability to let you create a digital avatar of yourself that also enabled you to deliver any message in one of 40 different languages. You didn't need to speak the language—the AI automatically translated your words in your voice and even changed your lip movements to make it seem as if you were actually speaking that language. There's a demo on the HeyGen.ai page [here](#) that shows this earlier capability.

Now, we are one step closer to creating even more realistic avatars—one's that can be shown walking and talking with a camera tracking their movements as well as speak in anyone's native language and look completely natural.

Check out an example of this expanded capability [here](#).

Amazon's Big Bet on Anthropic

As I mentioned in the last *Quinn's AI Update* newsletter, Apple has been making a lot of investments in AI that should payoff soon. Amazon has been doing the same—in this case with the company Anthropic for it's AI Claude 3.0. Amazon has now invested a total of \$4 billion in Anthropic and Anthropic has announced it will be using Amazon Web Services (AWS) as the hardware to run Claude 3.0.

Claude 3.0 was released by Anthropic about a month ago, and some say it's better than ChatGPT 4—even sounding like it might be self aware.

Anthropic, which is also backed by companies including Amazon and Salesforce, has now secured outside investment of more than \$10 billion. As Elon Musk has stated, table stakes for every company playing in the AI game is going to be \$1 billion a year going forward. Clearly, some investors are more confident in their cards than others.

Here's [an article](#) for a deeper dive.

And here's a [Squawk Box video](#) on Amazon and Anthropic as well explaining how different AI models work best at different types of use cases. Imagine what these different AIs can do when they talk directly with each other and leverage each other's capabilities. When do they get to Marvin Minsky's *Society of Mind*?

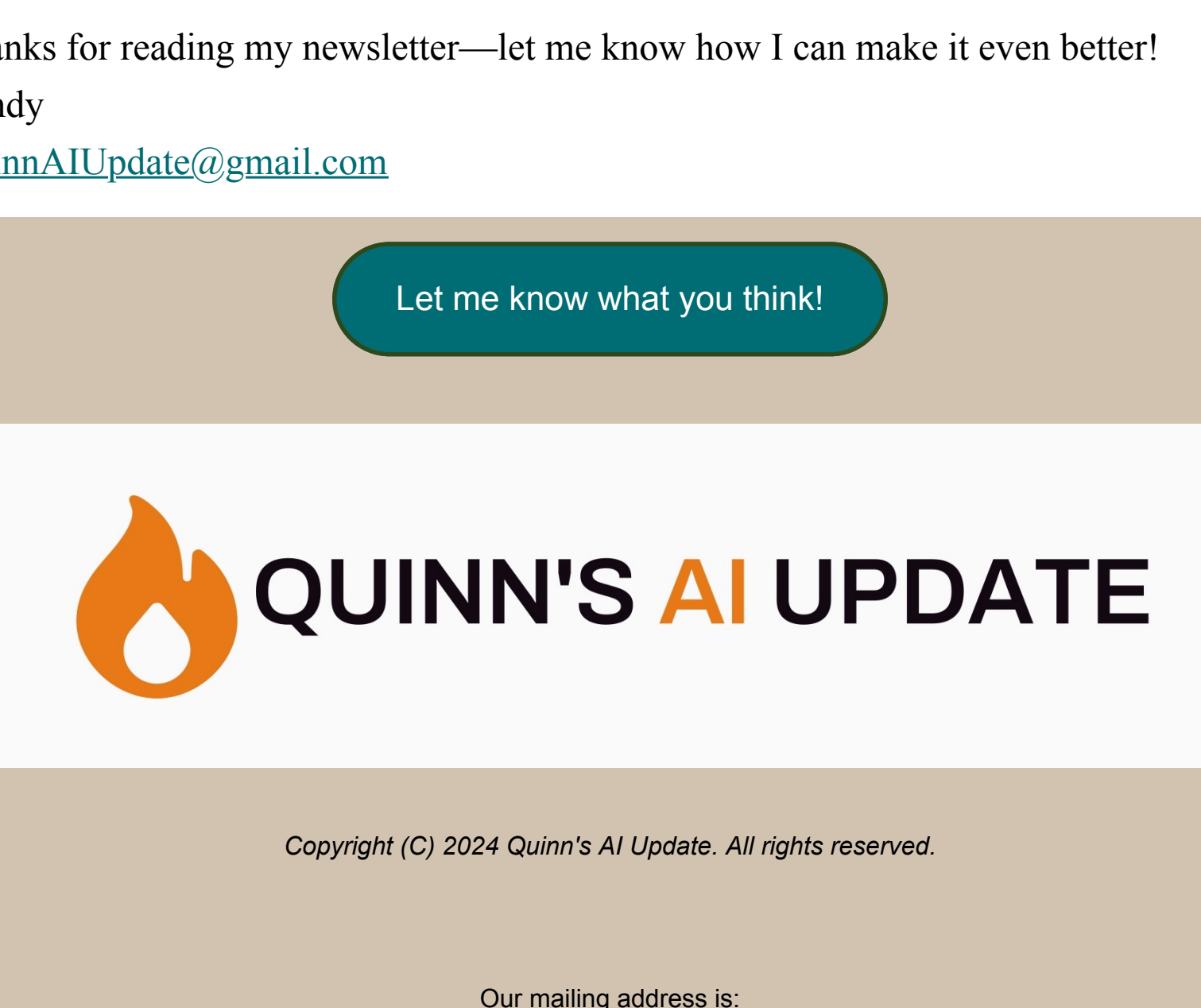


Image generated by Dalle 3 with the prompt *"A classroom setting where a diverse group of children are eagerly engaging with AI and robotics."*

"If you look at things out there like Alpha-Fold, it's trained on a lot of data, but its being able to get an approximate structure for a protein very quickly is an amazing breakthrough. If you look at narrow domains where AI has been very successful like Alpha-Go or Alpha-Zero (in the games of Go and chess), what you see is that this idea that they're not creative is nonsense... Within narrow domains they've shown an exceptional level of creativity and I don't know why they shouldn't have the same kind of creativity in science. Especially in science where they can absorb a lot of data and we cannot."

—Geoffrey Hinton, computer scientist and cognitive psychologist, most noted for his work on artificial neural networks.

What Does the Science Fiction Say?

"*Alien*," directed by Ridley Scott, is a seminal sci-fi horror film that, while primarily focused on the terror of an extraterrestrial encounter, also subtly incorporates themes of artificial intelligence and robotics which are pivotal to the plot. The movie introduces the crew of the commercial space tug Nostromo, that is interrupted on its return to Earth by a distress call only to descend into contact with a horrific alien entity. The AI and robotics aspects of the movie are emblematic of a common theme in science fiction: the ethical and moral implications of AI entities whose goals are misaligned with human welfare. "Mother" the AI controlling the ship and life support functions of hite Nostromo is driven by directives from the corporation that owns the Nostromo, and underscores the potential dangers of autonomous AI entities when they are programmed to prioritize corporate or other specific objectives over broader ethical considerations. Echoing "2001: A Space Odyssey", "*Alien*" explores the darker side of AI and robotics, highlighting the potential perils of unchecked artificial intelligence that could prioritize programmed directives over human life and ethical norms. *Alien* can be streamed on Amazon Prime, Hulu and Apple TV.

Douglas Adams's "*The Hitchhiker's Guide to the Galaxy*" is a quirky and satirical science fiction novel that begins with the destruction of Earth to make way for a galactic freeway. The protagonist, Arthur Dent, is swept off the planet by his friend Ford Prefect, a researcher for a titular guidebook for galeactic hitchhikers, and together they embark on a bizarre journey across the universe. In terms of AI and robotics, the book features several prominent artificial characters that highlight Adams's playful yet insightful exploration of these themes. The most notable is Marvin, the Paranoid Android, who is equipped with a "brain the size of a planet" which leads him to suffer from severe depression and boredom due to the menial tasks he is assigned. Marvin's character serves as a critique of the misuse of AI—his vast intelligence and capacity for emotion are squandered, which is both a comic and tragic reflection on the potential and limitations of technology. Another AI element is the starship Heart of Gold's computer, which controls the revolutionary Infinite Improbability Drive—a device that allows the ship to pass through every conceivable point in every conceivable universe simultaneously. This AI is whimsically depicted, often engaging in light-hearted banter with the crew and displaying both helpful and absurdly capricious behaviors. The book humorously suggests that no matter how advanced our creations become, they may still be subject to the same existential dilemmas as their creators. You can purchase the book on Amazon [here](#). It has also been made into several movies, and they can be streamed on Amazon and Apple TV.

- [A Once-in-a-Generation Investment Opportunity: 1 Artificial Intelligence \(AI\) Stock to Buy Now and Hold Forever This April](#)
- [Japan seeks investment in AI semiconductors from American companies](#)
- [Canadian Prime Minister Trudeau Announces \\$2.4 Billion Investment in AI](#)
- [Case Study: How Aggressively Should a Bank Pursue AI?](#)

The Last Word...for now.

Thanks for reading my newsletter—let me know how I can make it even better!

Randy

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Let me know what you think!

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