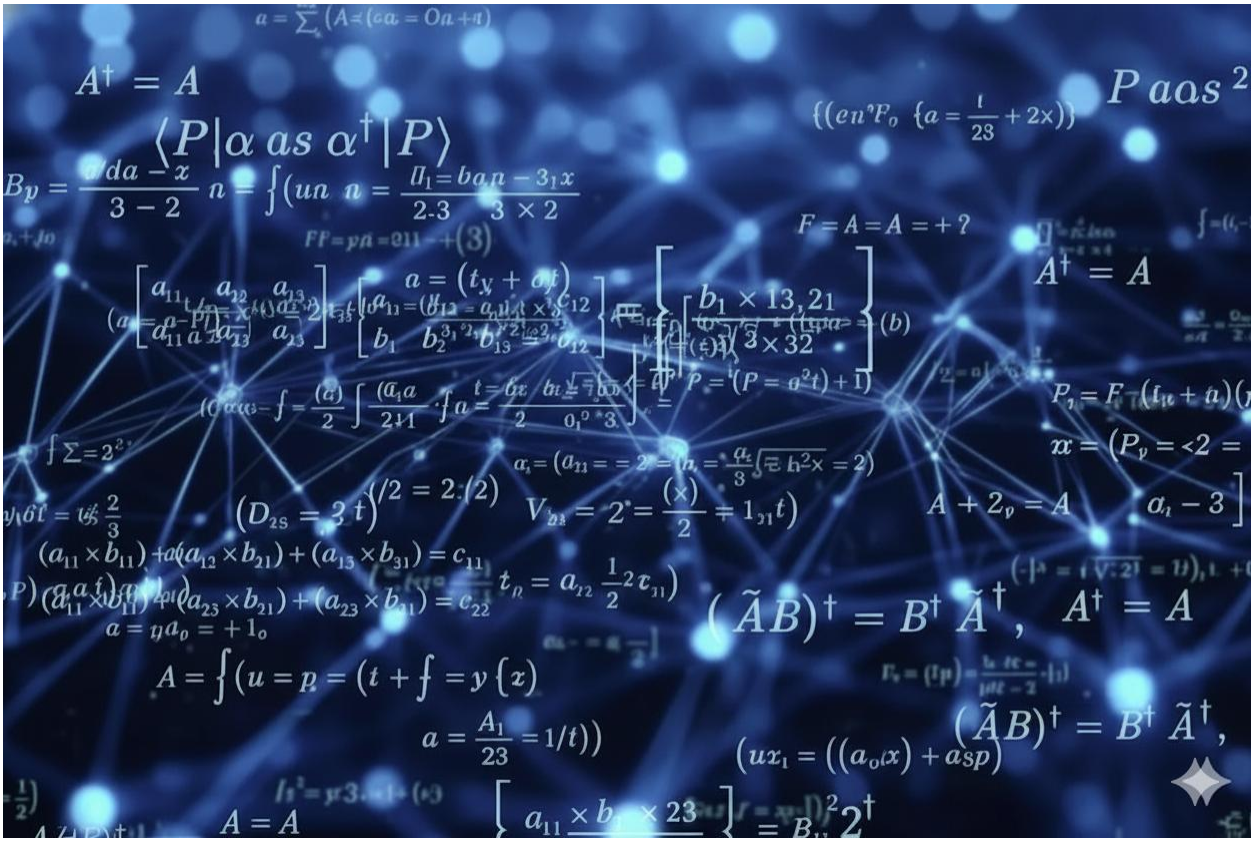

Making Cents of AI?

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What is Artificial Intelligence?

Artificial intelligence (AI) is such a broad term that it creates confusion. Unlike the AI boom of the late 1980s that used “If Then” programming, the new AI models represent a step change in analytical capability. A key change from a user perspective is that users can make written or verbal natural language requests. The AI models are trained on massive amounts of data and use matrix math to calculate complex probability distributions to understand data relationships and assign weights.

So, where does AI begin and where does it end? The easiest way to answer where AI begins is to look at the inputs, the huge amounts of data, which are mined for mathematical relationships, which are then used to calculate complex probabilities. The calculator engines for this work are semiconductors, and new advances in semiconductor design and processing make the complex simultaneous calculations on which AI relies possible. Since AI models are trained on data, the quality of the data used to create the AI model is important.

Garbage In Equals Garbage Out

The internet has lots of useful information, but it is also filled with an amazing amount of garbage and unhinged commentary. Companies like Meta have perfected the art of creating echo chambers that provide the users with content verification dopamine. The content often blurs the line between truth and fiction using selective facts. An issue for AI models is training data that has false relationships, which in turn enables AI models to experience hallucinations, resulting in false information being presented as fact. The age-old issue of garbage in equaling garbage out creates an important limitation impacting the usefulness of AI models.

Cleaning Data

For AI models to be more effective and avoid hallucinations, a new professional expertise, referred to as data governance, is coming into its own. Data governance for AI models is focused on standardizing data, removing duplicate data, and searching for the source of errors and removing erroneous information. The cleaned data reduces computing time and improves the accuracy of the AI models while reducing the frequency of AI model hallucinations. Data governance is a rapidly expanding field, since review and verification are critical for increasing the usefulness of AI models. Information technology companies are starting to tie performance bonuses to data cleanliness. Data governance specialists are also systematizing the process for gathering of new input data to ensure data cleanliness.

Confusing AI term – Tokenization

A key item to understand is that computers do not process text, they only process numbers. Each alphabetic character or part of a word is assigned a unique numeric identification. The process associated with converting language into numeric data that can then be processed by a computer is called “tokenization”. Tokenization rules were developed in the 1960s to enable computers to process words. Grammar correction requires tokenized data since computers can only process numeric data. In the 1990s, language models were developed, but it was not until 2017 when a new methodology for processing data was developed, which assigns weights of importance while processing all relevant data simultaneously.

What are the limits of AI?

The goal of the massive capital expenditures by AI model developers is Artificial General Intelligence (AGI), where an AI model matches or exceeds human cognitive capabilities across virtually any

intellectual task. In many respects it is an arms race. Who can build the next 10x in computing power? The speed of the development is alarming since there are security vulnerabilities in AI programs being rushed to market and there is very little regulatory structure. A current rush item is creating AI agents that carry out tasks on the behalf of users (e.g. booking travel). While many uses offer real benefits, bad actors are also actively using AI programs to exploit security vulnerabilities and create a new level of AI enabled criminal activity.

Will AI Models Run Out of Data?

A new trend in AI model development is using synthetic data, or data that imitates real-world data but is not collected from actual events or people. A specific goal of using synthetic data is to train the AI model weights assigned to data. As the data sets grow, there is a natural convergence in responses provided by the AI models. A question arises, how many AI models with similar sounding answers are needed? Will competition for customers lead to higher customer acquisition costs? Another potential industry change is the commercialization of quantum computers, which have the potential to process data at dramatically faster speeds than traditional AI computers.

Impacting White Collar Jobs

University students who recently graduated are finding it harder to get a job as AI impacts the number of white-collar entry-level jobs and internships. Mid-level and senior jobs have not been impacted significantly, but what happens if consulting, advertising, law and financial jobs are broadly reduced? When does AI become a political factor as the divide between the haves and the have-nots grow? These are challenging questions that could impact job growth and retirement contributions, which in turn could impact financial markets.

AI Chip Supply-Chain Dependencies

AI development is increasingly becoming a national effort. China is committed to national AI development, which has economic and military implications. Nation states could disable IT systems with an army of AI hacking agents. China's military through its Joint Sword series of exercises is advancing its capabilities to blockade Taiwan. What happens if access to AI chips is cut off? Taiwan produces over 90% of the world's high end AI chips. Just like rare earth materials, the U.S. has a critical dependency on AI chips. Through a combination of stick and carrot trade actions, the Trump Administration has been aggressively using tariffs and tariff exemptions to force companies to expand their U.S. investment in U.S. AI chip production.

Unproductive AI Slop

AI models have mastered the art of generating smart-sounding content that really says nothing. Users are dropping emails in AI models. The AI model-generated multi-paragraph response often fails to say anything substantive. Some of the AI slop is experimentation. Two of the frequent user answers in AI use studies indicate that laziness or a lack of confidence are key AI use drivers. Productivity enhancements require critical review of edit suggestions. Another interesting trend is that Open AI's ChatGPT is increasingly being used as a decision therapist.

Blue Book Examination Books

When ChatGPT was released in November 2022, one of the most engaged user groups was students. During each of the past three summers when schools are not in session, ChatGPT user growth has fallen during June, July, and August as student engagement of the AI model has fallen. Teachers at the high

school and university level seek to teach critical reasoning, which is a key life skill. A particularly challenging issue for students is that they do not have the benefit of subject matter expertise, so it is harder for them to know when an AI model is producing false information and hallucinating. Teachers are assigning more in class assignments and writing exercises where AI models cannot be used, so teachers can more accurately assess student mastery of the subject material. Tests are increasingly shifting back to the Blue Book Examination Books. Covid almost put the Pennsylvania based maker of Blue Books out of business, but now the biggest challenge for the company is responding to a surge in orders.

Maryland's AI Disadvantages

Maryland has a 6% digital tax, which discourages companies from locating information technology assets in Maryland. Simultaneously, Maryland has been importing 40% of its electricity, which has led to steep electricity rate increases as demand grows. This puts Maryland at a disadvantage, when trying to attract energy intensive data centers. During 2025, the cost of capacity power in Maryland increased 698%. Maryland needs to increase baseload power production, while switching to cleaner natural gas. In 2020 Maryland passed a tax exemption for data centers, but only one hyperscale datacenter in Frederick is nearing completion. Another challenge for Maryland is the PJM Connector, which is planned to cut through beautiful farm country, solely to provide power to datacenters in Virginia.

Corporate Data Mining

Corporations are realizing the value of their data and are increasingly committed to developing proprietary AI models and establishing controls that limit and/or prohibit data sharing with other AI models. Large and mid-sized companies and organizations are increasingly trying to find ways to develop proprietary AI models that give them a competitive advantage. How can more be done with less? Ultimately, this will result in AI models scaling the corporate ladder.

Unprecedented Commitments

Open AI has made over $1.5 trillion in contract commitments during 2025 but lost over ($5 billion) last year. In June, Open AI announced $10 billion in recurring revenue, while at the same time announcing a continued commitment to unprofitable operations. In September, Open AI reported 700 million users with just 5% of users paying for ChatGPT. Users in emerging markets exceed U.S. users, but how does Open AI monetize users with less disposable income? Nvidia's promise to invest $100 billion in Open AI so it can buy Nvidia chips raises circular financing red flags. The power needs of data centers are stressing U.S. power generation capacity, electricity grids and local water supplies. Without building more power generation capacity, AI computation rationing and blackouts are growing threats. Up to 40% of data center energy consumption can be for cooling. Amazingly, the Stargate Abaline, Texas data center under construction will use more than 50 times the number of chillers than New York City's Empire State building.

Closing Thoughts

There is still a need for humans in the loop that actually create documents and use critical reasoning to establish fact from AI model fiction. Asking for "all sources in quotations" helps the user avoid quoting false sources. Data fencing and a lack of profitability will challenge ChatGPT's business model. Open AI reported in September that approximately 70% of ChatGPT's use is non-work. Further, having 81% of ChatGPT's users outside the U.S. is an additional factor making monetizing users difficult. To break even on Open AI's $1.5 trillion worth of commitments associated with ChatGPT there would need to be 1.3 billion users paying $95 a month, which is a far cry from the 40 million users paying $20 a month in October.

The potential for AI models in an array of industries including helping design new aerospace structures, analyzing proteins for new drug discovery, and red lining legal documents are promising. Corporate customers are prepared to pay for and invest in AI models that can offer proprietary productivity gains. The current AI land grab is dramatically pushing up the breakeven cost of AI models, which increases the potential for losses on AI investments. The biggest geopolitical threat to AI is the loss of Taiwan's independence, which produces over 90% of the AI chips. Over investing is part of the human experience whether AI models are included or not. Historic data does not make a user rational, but if used to pressure test ideas it can be helpful to have a research assistant. With over 10% of the world's population using AI models, it is important to understand how AI models are shaping the world we live in and offering a new extension for strategic thinking.

Table 1. The AI Ecosystem

Category	Leading Companies / Models
Top AI Models / Search Engines	ChatGPT (*OpenAI*), Copilot (*Microsoft*), Gemini (*Google*), Perplexity AI, Claude (*Anthropic*), Grok (*xAI*), R1 (*DeepSeek*), Qwen (*Alibaba*)
Top AI Chip Design Software Companies	Cadence, Synopsys
Top AI Chip Designers (Fabless – No Manufacturing Facilities)	Nvidia, Broadcom, Qualcomm *(building fab)*
Top AI Chip Manufacturers	Taiwan Semiconductor Manufacturing Company (TSMC), AMD, Huawei, Intel, Arm Holdings
Top Lithography and Chip Production Equipment Producers	ASML, Applied Materials, Lam Research, KLA, Tokyo Electron
Top AI Memory Producers	Micron, SK Hynix, Samsung
Top Cloud Providers	Amazon Web Services, Microsoft Azure, Google Cloud Platform, Oracle Cloud, Alibaba Cloud, IBM Cloud *(Kyndryl)*
Top AI Data Processors	Snowflake, Databricks
Top Cloud Security Providers	Palo Alto Networks, CrowdStrike, Cloudflare, Netskope, Zscaler, SentinelOne, Check Point

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