

The collapse of Silicon Valley Bank over two days in March stunned investors. On March 8th the day liquidity concerns surfaced, the U.S. ten-year treasury was yielding about 4.0%. By the 15th, after the bank's closure it was down to 3.45% and by the 24th it was trading below 3.4%. The speed and magnitude of the move qualifies the reaction as a flight to safety. Over the same two-week period the S&P 500 declined about 0.5%, not an indicator the equity market had any concern. While the bank crisis was ultimately contained, bonds and stocks appeared to follow divergent narratives during the second quarter of 2023. Bond markets followed a hawkish Fed, uncertain economy, debt ceiling negotiations, and treacherous geopolitics to a cautious outcome. Stocks seemed to be in a different world, consumed by, among others, artificial intelligence (A.I.), a subject that catapulted tech stocks higher and carried a risky asset class to impressive returns.

Since its public "introduction," last fall through OpenAI's release of ChatGPT, A.I. has dominated conversations and media coverage eliciting a plethora of concerns, ideas, and investor enthusiasm. The wonders of "machine learning" led both the cognoscenti and the adventurous to imagine or pursue innumerable uses for this "new tool." On June 17, The New York Times Business section carried an article titled "How Real People Are Using A.I. Right Now." The article described people planning a garden, using Asian medical tenets to serve up custom cocktails, assisting individuals with dyslexia, identifying diseases in plants, and many more. Millions of people downloaded ChatGPT and asked it to generate letters, poems, toasts, and essays. The speed and credibility with which it delivers quality results draws amazement.

Artificial intelligence, in its broad definition, has been with us for some time most publicly through advancements like "Big Blue" with its predictive abilities and seemingly unlimited skill at complex endeavors like chess. With ChatGPT, many of us are getting a first hands-on glimpse at the evolution of computing and the ability of systems to move beyond the analysis and categorization of data. Generative A.I. like ChatGPT and Bard, advance the ball to the "interpretation" and "association" of data such that the systems can generate responses to prompts in what appears like an intelligent manner by identifying characteristics and relationships in their "data library." Unlike the exact results obtained from most software, generative A.I. delivers credible approximations to questions that do not have exact answers – such as write me an essay. Like previous innovations, generative A.I. elicits a flurry of questions, concerns, debate, and intrigue, including:

- Will this technology eliminate jobs, and take over our lives? Can this advancement be good for society?
- Billions of dollars have been lost to nefarious characters in hackings, impersonations, and data theft. Won't this technology be a boon to criminals?
- For the more sanguine, how can I or my company take advantage of it?

Since humanity has been around, technological advances have been feared as job crushers. The reality has been the opposite, technology has made economies more efficient, expanded output, generated jobs and grown wealth. For currently employed generations the advent of spreadsheets, word processors, email, and Zoom should suffice as evidence. We do not believe the argument that A.I. causes displacement and may go beyond eliminating the need for human intervention in many critical tasks holds water. On Feb. 16, 2023, Kevin Roose a technology columnist for The New York Times, published an article titled, "A Conversation With Bing's Chatbot Left Me Deeply Unsettled." Mr. Roose recounts a lengthy interaction with the system in which the chatbot at times provided odd responses including its desire to be human and that it loved Mr. Roose. In addition to this remarkable story, many users of ChatGPT and Google's Bard have documented factual errors and, at times, outright fabrication, from the systems. This confirms that a fabulously intriguing technology is not yet ready for unchecked adoption and, like others, will always require extensive personal oversight.

A popular and humorous, early 2000s musical called Avenue Q involved actors interacting with puppets. In one funny scene a puppet claims forcefully, “the internet is for porn.” Indeed, in the early days, adoption of the internet may have been quicker by users that found rapid economic benefit and low cost of use. In the modern era, hackers and thieves hide behind the anonymity and reach of current modes of communication. It is likely bad actors will find ways to exploit A.I. for illicit financial gain. However, it is equally likely private companies, the government, and individuals will find sufficient value-add from A.I. that, for society, the benefits outweigh the drawbacks.

A further point should be raised regarding the eventual integration of generative A.I. The show “60 Minutes” had a segment on Google’s product called Bard. In the segment, Scott Pelley speaks with Google CEO Sundar Pichai. During the conversation Mr. Pichai says the technology requires regulation. In general, we are skeptical of regulation because government interference tends to cause inefficiencies and retard development. An important factor related to A.I. in its current state is that it can go down indiscernible paths, as Mr. Roose found out. These derailments are called “hallucinations” resulting from efforts the chatbots are making to identify associations from a vast data library rather than returning a specific piece of data. While there is a lot to be understood about how generative A.I. arrives at certain answers, hopefully regulatory interjection is limited to modest requirements using concepts that are already employed like truth in advertising and warnings when information provided to the public is A.I. generated.

Finally, the opportunities for A.I. are limitless. Microsoft and Google already offer open A.I. services for companies and many have developed internal networks that are delivering vast improvements in efficiency. Like GPS, generative A.I. can easily become a roadmap to frequent daily questions, like what to have for dinner, what movie to see, a fun destination for the weekend, or an appropriate gift for a relative.

As an apt, and encouraging, end to this commentary, I asked ChatGPT, “What are the limitations of generative A.I.?” This was the response:

“Generative A.I., such as GPT-3 has made significant advancements in generating human-like text and content. However, it also has certain limitations:

1. Lack of contextual understanding: While generative A.I. can produce coherent and contextually relevant responses, it doesn’t truly understand the meaning behind words. It operates based on patterns and statistical correlations in training data without genuine comprehension.
2. Inability to reason or provide real-time information: Generative AI relies on pre-existing knowledge and doesn’t have access to real-time information. It cannot reason or think critically like a human, limiting its ability to answer complex questions or provide up-to-date information.
3. Prone to biases and misinformation: Generative AI learns from the data it is trained on, which can include biases and inaccuracies present in the dataset. This can lead to generated outputs that reflect or amplify existing biases or misinformation.
4. Lack of creativity and imagination: While generative AI can generate creative text, it doesn’t possess true creativity or imagination. It primarily regurgitates patterns it has learned from the training data and lacks the ability to generate entirely novel ideas and concepts.



5. Difficulty in maintaining coherent long-form discussions: Generative AI might struggle to maintain coherence and consistency in long-form discussions. It may provide conflicting or nonsensical responses over extended conversations, as it doesn't possess memory of past interactions.

Understanding these limitations is important to ensure that generative AI is used appropriately and that its outputs are critically evaluated by humans.”

There we have it from an amazing tool that will likely transform our lives, but not take them over. As the name indicates, artificial intelligence – like artificial sweeteners or artificial limbs – is a good substitute but never as good as the real thing.

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