

In my comment, I briefly advised the administration on how to best capitalize on this incredible opportunity. I'd like to go a bit more in-depth here regarding my proposals, primarily the first two.

## 1. Abstain from Regulation

There has been an unfortunate rush in the wake of the release of ChatGPT to stop AI development. Early in 2023, some even proposed a 6-month moratorium on AI development. There has been a lot of handwringing and concern about these models that have been largely unwarranted.

Much of the worry is due to the sensationalism of “AI,” playing on fears rooted in pop culture hits like “The Terminator,” that, if taken seriously, are a gross misrepresentation of the technology.

Large language models (LLMs) and generative AI are statistical models that have been tuned for performance on desirable tasks. They are represented by a combination of computer code and learned parameters, also called weights, that can be stored in standard file formats. It pains me that I have to say this, but they are not sentient. They are not different in kind from any other computer code or data. They are the state of the art in what is a long history of machine learning techniques that have been applied for decades in many domains.

I state these facts because some seem to believe we are dealing with something fundamentally different, but this is simply the latest, albeit very exciting, chapter of the computer revolution. Even armed with this understanding, some are still fearful of what LLMs can do, but we must consider if this is really any different than the anxiety that has accompanied the release of many other new technologies. One only needs to spend a few minutes perusing the “Pessimists Archive” to see that beneficial technologies such as the telephone, the lightbulb, the bicycle, the airplane, the car, the radio, the television, and of course, the computer, were subject to “hysteria, technophobia and moral panic”<sup>1</sup> at one time or another.

In the rush to “do something,” it is extremely unfortunate that open-weight models have fallen under the crosshairs of the alarmist crowd. Openness and transparency are exactly what we need at this moment as we collectively develop this powerful technology. Restricting its development to solely “closed-source” would, as I mentioned in my comment, “curtail economic growth, jeopardize the scientific process, and restrict rights to freedom of speech and expression.”

We are at an important moment in our economic and fiscal history. We have recovered well from the pandemic, and thanks to improvements in the supply chain and tightness by the Federal Reserve, inflation has come down to manageable levels. Unfortunately, there are still storm clouds on the horizon, most prominently the large debt-to-GDP ratio that hangs over us like a financial sword of Damocles.

Raising taxes or cutting spending is not politically viable at present, but if left unchecked, we may eventually have to resort to damaging austerity measures that will cause unnecessary financial hardship for many Americans. Our best option to improve the debt-to-GDP ratio is to focus on the denominator—growth.

We need to accelerate economic growth to pay our debts and secure the nation's finances. Economic growth will also provide more jobs, abundance, and prosperity for Americans at a time when, despite strong economic metrics, most still rate the U.S. economy as “bad.”<sup>2</sup> Fortunately, new technologies provide opportunities for economic growth, and foundation models are no exception. They are primed to unleash an exhilarating new wave of economic growth right when we need it.

The economic promise of large language models is enormous. Much as steam and combustion engines powered the industrial revolution that propelled the United States to economic leadership in the world, the computer, the Internet, and now artificial intelligence are powering us to new heights, even as foreign adversaries are nipping at our heels. Central to our success has been, and will be, openness and transparency: open research, open source, and open-weight models.

The Generative Pre-trained Transformer (GPT) architecture that powers ChatGPT and many other LLMs owes its success to open-source research.

The famed Transformers paper, “Attention is All You Need,” was published by Google in 2017. The irony that OpenAI, not Google, was the first to commercialize the technology is not lost on the community. Google, for its part, has come roaring back with the powerful Gemini series of models with strong capabilities and large context windows that have significant economic promise to help many companies automate previously expensive or impossible workloads.

However, as it is obvious, these companies stand on the shoulders of machine learning giants; researchers, and institutions who have paved the way with groundbreaking and foundational work that makes these models possible. Needless to say, further advances are in the offing as the research community will continue to push the frontier of what is possible. But to do that critical research, access to large open-weight models is necessary.

There has been an explosion of research and commercial applications in the past 15 months since the release of ChatGPT. These have been largely possible due to the wave of open-weight models released under liberal licenses for the community to explore, fine-tune, and deploy. These include but are not limited to, models such as Llama 2, Mistral/Mixtral, and Google’s recently released Gemma models. The Zoo of models has supported all kinds of research both for capabilities and for the important safety research that many labs have been actively engaged in.

Regulating or limiting the distribution of these models in any way would

hamper the scientific process. Specifying arbitrary parameter count cutoffs is shortsighted. State-of-the-art (SOTA) models may be many times larger than the cutoffs in the near future (or may already be, according to Jensen Huang<sup>3</sup>), and future architectures may have completely different parameter counts by orders of magnitude that make these cutoffs irrelevant.

But most importantly, regulating models above (or below) such thresholds is misguided. If new emergent capabilities come online at 100 billion-plus, 1 trillion plus, sized models, then the community should have access to models in these size classes both for capabilities and safety research. To restrict such models in any way is to fly blind, right when it may be most important to see clearly.

Regulating open-weight models not only curtails economic applications and hamstring scientific research, but it could also be a violation of our country's First Amendment which enshrines free speech and the freedom of expression. The First Amendment protects not only the right to speak and express oneself but also the right to receive information and ideas. Regulating the distribution of open-weight models could be seen as a form of prior restraint, limiting the free exchange of ideas and information within the AI research community and the broader public. Such restrictions could have a chilling effect on the development and sharing of new knowledge and technologies, ultimately undermining the very principles of free speech and open inquiry that our nation holds dear.

Regulations could set a dangerous precedent that could be abused for political purposes. We already see how the Chinese Communist Party is requiring LLMs in their country to toe the party line. Dictated by the executive branch, or other branches of government for that matter, in future administrations could promote convenient propaganda or censor inconvenient truths. It's an alarming path that we should steer from.

## 1. Promote open-source

I would go so far as to say that we should be considering ways that we can actively promote the open-sourcing of LLMs and other generative AI models.

Why? A few reasons:

1. Open-source models benefit the research community, small, medium, and enterprise-sized businesses, and individuals with the following benefits, at a minimum, that generally aren't as available with closed-source APIs:
  - a. Knowledge sharing
  - b. Self-hosting
  - c. Introspectability
  - d. Fine-tuning
2. Open-source models, and software for that matter, are a public good, so economically there are far too few of them! The optimal amount of open-source software and models is probably much more than we have

now. To get to the ideal level of sharing, especially for something as costly to produce as large frontier generative models, some level of subsidization is necessary.

3. Open-source models are transparent. Closed-source models are by contrast, opaque. We don't know how they were trained, on what data, and largely what they are capable of. Every time a new closed-source model is released via APIs or other interfaces, we are left at the mercy of the providers to inform us of their capabilities and possible risks. Thankfully, with open-weight models, we can immediately introspect the architecture and make good assumptions about its capabilities and risks by comparing it to similar models. Additionally, with open-source models, we may have access to the training data, code, etc., and get much more insight into how the model works.

You'll notice that I used the term "open-source" instead of "open-weight" models. Open-weight models are a terrific boon to the community, but open-source models, with data, code, and weights, are superior and what we should actively promote.

A great example is OLMo, a "Truly Open LLM and Framework" from the Allen Institute for Artificial Intelligence. It "is intentionally designed to provide access to data, training code, models, and evaluation code necessary to advance AI through open research to empower academics and researchers to study the science of language models collectively." It includes "full pretraining data", the "training code and model weights," and an "evaluation

suite used in the development, complete with 500+ checkpoints per model, from every 1000 steps during the training process and evaluation code under the umbrella of the Catwalk project.”<sup>4</sup>

This is the gold standard in open research and what we should be actively promoting. It would take both capabilities and safety research to the next level, unlocking tremendous scientific and economic benefits for the United States. We need much more transparency about the data that is being used to train these models. Training code reveals any particular heuristics that could benefit other models and evaluations are critical to measuring performance on a wide array of important metrics. Access to truly open models would allow better application in fields with sensitive access to personal data such as health and finance. Fully open models would bring down the cost of inference through the sharing of best practices, unlocking new use cases and workflows that improve productivity. Open source also allows researchers to “red team” models in the open and enhance the safety of all models, not just a handful of private institutions.

To incentivize fully open-source models, we should consider:

1. Grants
2. Compute Reimbursements
3. Tax Incentives

Among other potential policy tools, I think these could be the most effective



at producing the optimal level of open-source material for the industry to thrive.

Researchers need more grant money to explore both capability and safety research, institutions and individuals should be subsidized with substantial compute reimbursements for large training runs when they transparently share the fruits of their efforts with the community and tax credits should be considered for organizations that contribute R&D investments to the larger industry.

By actively prioritizing the open-source community, we can accelerate the engine of economic growth and ensure that everyone benefits from the latest chapter of the Internet revolution.

### 1. Encourage Transparency

We should encourage transparency in the industry, not with regulations, but we should prompt the largest labs to share more information about:

1. Training data
2. Safety measures, if any, implemented
3. Hallucination rates

We should be clear as an industry about what data we are using that could potentially bias results, safety measures that have been implemented that could be helpful, but may also introduce unintended consequences, and we should be very open about hallucination and where LLMs get things wrong, especially for end users who may not be aware.

If institutions and individuals fully open-source their models, then these questions will be readily answered by anyone, but for closed-source models, we should ask for at least a minimal model “nutrition facts” before using it individually or in business processes.

## 1. Ensure the Rights of Americans

It is critical as AI advances that we continue to protect the rights of all Americans to privacy and protect them from “Big Brother” surveillance. Rules about the use of AI in government departments should be thoughtfully considered to ensure that it is not used to curtail the freedoms or privileges of citizens.

While we must be vigilant in safeguarding Americans’ rights, there are also significant opportunities for AI to improve government efficiency and bolster national security. By carefully balancing these considerations, we can harness the power of AI to make our government work better for the people it serves.

## 1. Use AI to Improve Government

And lastly, while the use of LLMs and generative AI in government must be carefully decided, I would encourage its use for the following use cases:

1. Improve the efficiency of government. As noted before, government spending may become a serious problem if we don’t either a) increase taxes (politically unfeasible), b) cut spending (even more unfeasible), or c) grow the economy (that’s what AI is for). However, another important measure we can take is streamlining government processes and reducing costs. For example, if we can automate 50% of the IRS’s

work, we can either have a smaller workforce and lower costs, or agents can collect more revenue from tax evaders, or both. Either way, it's an improvement to the bottom line.

2. Machine learning technologies can be immensely helpful for maintaining national defense. Algorithms can monitor and detect threats at a level we cannot on our own. I'm sure this is already being done today, but the LLMs enable large-scale processing of textual documents in a way that surpasses previous natural language processing (NLP) methods that could be a serious boon to the security apparatus.
3. Ultimately, we are in a race with other nations, and we must assume that foreign adversaries will try to weaponize the technology. That is why we must stay at the forefront of the generative AI revolution with an open and robust research community that is supported and cooperative with the defense department. Through open and transparent research, the industry should make any possible uses by foreign adversaries public as soon as possible and collaborate with the government to identify and thwart potential threats. The best defense against AI in foreign hands will be even better AI in ours.

In conclusion, this is my advice for taking full advantage of this pivotal moment in our technological journey: Abstain from regulating open-weight models; instead, we should be promoting the sharing of open-source models to benefit the entire community. We should also be encouraging transparency from closed-source deployments, ensuring that the government respects the rights of Americans, and leveraging generative AI to make our government

more efficient and to bolster our national defense.

1 <https://pessimistsarchive.org>

2 <https://www.cbsnews.com/news/poll-state-of-the-union-divided-economic-outlook-improving/>

3 <https://www.hpcwire.com/2024/03/19/the-generative-ai-future-is-now-nvidias-huang-says/#:~:text=The%20latest%20state%2Dof%2Dthe,to%20go%20train%2C%20Huang%20said.>

4 <https://allenai.org/olmo>