Open Shouldn't Mean Exempt: Open-Source Exceptionalism and Generative AI

David Atkinson[1,2]

Abstract

Any argument that open-source generative artificial intelligence (GenAI) is inherently ethical or legal solely because it is open source is flawed. Yet, this is the explicit or implicit stance of several open-source GenAI entities. This paper critically examines prevalent justifications for "open-source exceptionalism," demonstrating how contemporary open-source GenAI often inadvertently facilitates unlawful conduct and environmental degradation without genuinely disrupting established oligopolies. Furthermore, the paper exposes the unsubstantiated and strategic deployment of "democratization" and "innovation" rhetoric to advocate for regulatory exemptions not afforded to proprietary systems.

The conclusion is that open-source developers must be held to the same legal and ethical standards as all other actors in the technological ecosystem. However, the paper proposes a narrowly tailored safe harbor designed to protect legitimate, non-commercial scientific research, contingent upon adherence to specific criteria. Ultimately, this paper advocates for a framework of responsible AI development, wherein openness is pursued within established ethical and legal boundaries, with due consideration for its broader societal implications.

[1] Assistant Professor of Instruction, Business, Government and Society Department, McCombs School of Business, University of Texas, Austin

[2] This paper uses the Allen Institute for Artificial Intelligence (Ai2) as a representative example throughout. I was in-house counsel at Ai2 from June 2023 until January 2025 where I worked on related matters. Everything shared in this paper is already publicly available.

I. Introduction

In the rapidly evolving landscape of artificial intelligence, numerous heavily funded entities, spanning both nonprofit and for-profit organizations, claim to offer open-source generative artificial intelligence (GenAI) tools, such as chatbots and image generators. While the definition of open-source GenAI is hotly contested within AI circles, several key players have emerged as self-proclaimed champions of this movement. The roster includes both nonprofit research institutions and commercial giants.[3] Each claim to meaningfully

[3] 01.AI (Yi), Alibaba (Qwen), Allen Institute for Artificial Intelligence (OLMo), Common Crawl (Common Crawl crawled datasets), Databricks (DBRX), EleutherAI (The Pile), Google (Gemma), High-Flyer Capital

contribute to the open-source ecosystem by sharing datasets, models, code, and other artifacts with minimal restrictions.[4]

To those outside the AI space, open-source projects may seem arcane, given that the artifacts are often only covered in niche publications. However, they function similarly to proprietary models and, in many ways, are poised to impact society broadly, regardless of whether individuals have a direct interest in or interaction with the technology. Unfortunately, these entities often choose to commit the same potentially illegal actions and contribute to the same environmental harms as the closed-source entities they attempt to distinguish themselves from. Indeed, proponents of open-source GenAI often frame these entities, or at least their open-source contributions, as indispensable champions of the public good. For the most fervent advocates, like EleutherAI and the Allen Institute for Artificial Intelligence (Ai2), open source is an innately and unquestionably positive force, where the principle of "openness" often takes precedence over responsible or ethical AI development.[5]

This paper challenges the presumption of innate goodness. The artifacts these entities produce can be distinguished into two categories: mostly open and mostly closed.[6] Based on the criteria this paper later addresses, the camp that is "mostly open" includes the Ai2, EleutherAI, and Hugging Face. The "mostly closed" camp includes 01.AI, Alibaba, Databricks, Google, Meta, Mistral, Stability AI, the Technology Innovation Institute, and xAI. For analytical purposes, this paper employs the names of the most vocal and influential entities from each camp to represent their respective approaches: the nonprofit Ai2, the for-profit Hugging Face, and the for-profit Meta.[7]

Open-source development *is* often a powerful engine for good, and I support it at a conceptual level. It enables a freer exchange of ideas, allows for the interrogation and reproduction of findings, and facilitates more people reviewing and improving code and data than almost any private company could hope to muster. These features enable quicker iteration, more, and more diverse, experimentation, and a deeper understanding of how the technology works.

The central thesis of this paper is that open-source GenAI is not so overwhelmingly beneficial to society that engaging in unethical or illegal practices, including copyright infringement and breach of contract, within an open-source context renders them ethical or legal. Moreover, there is no reason to believe that open-source AI is more beneficial than closed-source AI, and therefore deserving of exemptions and privileges

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Management (DeepSeek-R1), Hugging Face (SmolLM, FineWeb), Kaggle (various datasets), Meta (Llama), Mistral (Mixtral), StabilityAI (Stable Diffusion, Beluga), Technology Innovation Institute (Falcon), xAI (Grok), and various academic contributors like Stanford's RedPajama dataset.

[4] I'll use the word "artifact" to refer to the components of AI systems, like the datasets, code, evaluations, and so on.

[5] *E.g.*, allenai.org: "More than open," "We are open first," and the mouthful "Truly open breakthrough AI"

[6] See Sec. VII(A) *infra*

[7] *E.g.,* Devin Coldewey, *Is Open Source AI Even Possible, Let Alone the Future? Find Out at Disrupt 2024*, TechCrunch (Aug. 27, 2024), https://techcrunch.com/2024/08/27/is-open-source-ai-even-possible-let-alone-the-future-find-out-at-disrupt-2024/ (last visited July 7, 2025).(Ai2, Hugging Face, and Meta invited to discuss open-source at one of the most well-known technology conferences in the world, TechCrunch Disrupt)

closed-source AI is not entitled to. In fact, such practices sometimes cause demonstrable harm, and the open-source GenAI community has failed to provide a satisfactory response to these harms. Instead, ethical and legal concerns are baked into open models that are then freely shared for anyone to use for any purpose, ranging from disinformation[8] and nonconsensual intimate image generation to the proliferation[9] of child sexual abuse material,[10] and are often dismissed as mere byproducts of technological immaturity.[11] The proposed solution, circularly, is that these problems would diminish if only we had *more* open-source GenAI available for research and experimentation. Leading supporters of open-source GenAI appear to overlook or dangerously undervalue the risk that bad actors might intentionally misuse these systems to produce harmful outputs. When such risks are acknowledged, they are often justified as a necessary trade-off for advancing knowledge and understanding.

In contrast to their self-presentation as champions of the public good, open-source GenAI often facilitates copyright infringement and environmental harms, all without upsetting the oligopolistic status quo. Supporters advocate "openness" as if it were inherently a worthy goal. This reductive framing obscures more complex considerations. Openness is an alluringly simple metric, relatively easy to measure, and intuitively appealing. The other arguments for open-source center on several core claims: it's better for the environment, it's better for the marketplace, technological progress is always a net good, and open source democratizes a technology that many techno-elites compare to the discovery of fire or the invention of electricity. This paper will systematically explore—and challenge—each of these claims.

To be sure, there is nothing inherently wrong with open-source GenAI. When pursued responsibly, it can be a potent tool, offering unique avenues for developing a scientific understanding of GenAI technology. It fosters faster innovation and allows for more equitable access to the GenAI supply chain. The problem is that the entities producing the most widely used GenAI artifacts fail to limit themselves to creating the best GenAI models within ethical and responsible bounds. Rather than demonstrating that it is possible to build

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[8] *E.g.*, Angela Yang, *AI Image Misinformation Surged, Google Research Finds*, nbcnews.com (last visited July 7, 2025), https://www.nbcnews.com/tech/tech-news/ai-image-misinformation-surged-google-research-finds-rcna154333.

[9] *E.g.,* Natasha Singer*, Nudes, Deepfakes, and AI: Inside One High School's Fight Against Online Harassment*, N.Y. Times (Apr. 8, 2024), https://www.nytimes.com/2024/04/08/technology/deepfake-ai-nudes-westfield-high-school.html.";Bilva Chandra, *Analyzing Harms from AI-Generated Images and Safeguarding Online Authenticity*, RAND Corp. (2024), https://www.rand.org/content/dam/rand/pubs/perspectives/PEA3100/PEA3131-1/RAND_PEA3131-1.pdf.

[10] *E.g.,* Matteo Wong, *AI Is Triggering a Child Sex Abuse Crisis, The Atlantic (Sept. 18, 2024),* https://www.theatlantic.com/newsletters/archive/2024/09/ai-is-triggering-a-child-sex-abuse-crisis/680053/.; David Thiel, *Investigation Finds AI Image Generation Models Trained on Child Abuse*, Stan. Cyber Pol'y Ctr., https://cyber.fsi.stanford.edu/news/investigation-finds-ai-image-generation-models-trained-child-abuse (last visited July 7, 2025).

[11] Ali Fahardi, CEO of Ai2: "To me, we're having all of these conversations because the technology stack is just not ready yet." Video, *The Increasing Support and Advantages of Open AI With Meta and Hugging Face*, TechCrunch (Sept. 15, 2023), https://techcrunch.com/video/the-increasing-support-and-advantages-of-open-ai-with-meta-and-hugging-face/. at 19:31. He then pivots back to how openness can lead to more progress in understanding AI and improvements in the capabilities of AI. In other words, any harm caused by open source is merely a technology problem that technological progress can solve.

adequate models through cleverness and advances in fundamental research, they measure themselves against for-profit companies (or are themselves for-profit companies), which are driven by powerful incentives to cut corners. This creates a race for first-mover advantage, economies of scale, brand recognition, and network effects that entrench them in the tech ecosystem. Such dynamics foster a culture that is fundamentally at odds with responsible development, to say nothing of relentless pressure to demonstrate exponential growth in users or revenue to appease investors and boost stock prices. These incentives directly conflict with goals such as environmental sustainability, equitable benefit distribution, and resolving complex societal challenges that technological progress alone cannot address.

Despite these tensions, many open-source GenAI advocates maintain that their work is sufficiently paramount to warrant special treatment under existing law.[12] However, providing such exemptions would be profoundly misguided. Open-source developers and researchers should be held to the same ethical and legal standards as any other party; openness alone does not and should not absolve them of responsibility for copyright infringement, negligence, or other harms that apply equally to proprietary systems.

That said, it is reasonable to advocate for carefully circumscribed carveouts specifically for bona fide scientific research that mitigate identifiable legal and ethical harms, provided the research adheres to strict criteria that are often flagrantly ignored today. To fall within a research safe harbor, the institution must meet four conditions: (i) it must be a nonprofit; (ii) the activity's primary purpose must be scientific research, not product development; (iii) all artifacts released by the entity must restrict use to non-commercial purposes and require share-alike licenses; and (iv) access to such artifacts should be gated, available only to verified by researchers affiliated with a nonprofit institution of higher education, or at the direction of such researchers, for the purpose of scholarly research and teaching. Such safeguards would not unduly constrain fundamental research but would instead bolster existing legal frameworks designed to promote the creation and sharing of intellectual property, facilitate robust idea exchange, and stimulate economic growth.

Finally, a note to clarify what this paper is *not*. First, this is not an argument in favor of closed-source GenAI. Rather, it advocates for *responsibly developed* GenAI systems that are both safe and ethical. Second, this is not an analysis of AI in general but a targeted exploration of the issues unique to GenAI specifically. Third, the legal discussion is intended to illustrate how the law applies to open-source GenAI, just as it does to proprietary systems. It is not meant to be an exhaustive indictment of every way in which open-source GenAI may violate the law. Fourth, this paper largely avoids differentiating between claims that apply to inputs versus outputs of models. The fact that an action could be illegal regardless of when it occurs is sufficient for this paper's argument. Finally, while this paper primarily focuses on GenAI model developers, it also applies to individuals who build upon open-source GenAI where applicable.

[12] This paper will describe specific examples below, but they include Meta arguing in litigation that its open-weights models are socially beneficial as a way to avoid copyright infringement claims, the EU AI Act exempting transparency requirements for open-source AI models, and Stanford researcher Fei-Fei Li claiming that some provisions in California's 2024 AI bill would "stifle" and "devastate the open-source community," Fei-Fei Li, *'The Godmother of AI' says California's well-intended AI bill will harm the U.S. ecosystem*, YAHOO FIN. (Aug. 6, 2024), https://finance.yahoo.com/news/godmother-ai-says-california-well-123044108.html.), and others.

To understand the implications of open-source GenAI, it is essential to first clarify what "open source" means in the context of artificial intelligence and how these principles are being applied to generative models.

II. Open Source and GenAI

The term "open source" in software emerged in the 1990s, revolutionizing the development and sharing of technology. The virtues of open source are numerous, allowing projects to incorporate the best ideas from anyone in the world willing to contribute. Some of the most impactful open-source projects include frameworks that power AI development (TensorFlow, PyTorch), widely used programming languages (Python, Go, Swift), web browsers (Firefox, Chromium), coding environments (VS Code), and even cryptocurrencies like Bitcoin.

The Open Source Initiative (OSI), widely regarded as the leading authority on open-source standards, outlines ten key criteria that software licenses must meet to qualify as truly "open source." These include principles such as free redistribution, access to source code, the right to create derivative works, and non-discrimination against persons or fields of endeavor.[13]

These principles have successfully governed open-source software for decades, ensuring transparency, collaboration, and innovation. However, AI introduces novel complexities. Unlike traditional software, an AI *system* has several distinct components, including the training data, the code used for training, and the resulting model parameters (also referred to as "weights and biases"). Recognizing this shift, OSI has proposed a working definition for Open Source AI:

> An Open Source AI is an AI system made available under terms and in a way that grants the freedoms to:
>
> - *Use* the system for any purpose and without having to ask for permission.
> - *Study* how the system works and inspect its components.
> - *Modify* the system for any purpose, including to change its output.
> - *Share* the system for others to use with or without modifications, for any purpose.
>
> These freedoms apply both to a fully functional system and to discrete elements of a system. A precondition to exercising these freedoms is to have access to the preferred form to make modifications to the system.[14]

The complications begin with data requirements. The fiercest disagreements in the open-source community stem from how the OSI addresses the data requirement, enabling companies like Meta to claim open-source

[13] *The Open Source Definition*, Open Source Initiative, https://opensource.org/open-sourced

[14] Open Source Initiative, *The Open Source AI Definition*, https://opensource.org/ai/open-source-ai-definition

status on their websites and in commercials while withholding the data used to create their models.[15] Notably, OSI's "Open Source AI" definition does not require entities to fully disclose their data in the same way they must with code. Instead, it mandates only "sufficiently detailed information":

> - Data Information: Sufficiently detailed information about the data used to train the system so that a skilled person can build a substantially equivalent system. Data Information shall be made available under open-source-approved terms.
>   - In particular, this must include: (1) the complete description of all data used for training, including (if used) of unshareable data, disclosing the provenance of the data, its scope and characteristics, how the data was obtained and selected, the labeling procedures, and data processing and filtering methodologies; (2) a listing of all publicly available training data and where to obtain it; and (3) a listing of all training data obtainable from third parties and where to obtain it, including for fee.[16]

By only requiring "sufficiently detailed information," it makes true replication (the ability to reproduce the results by performing the same actions on the same artifacts) of most GenAI systems impossible. At best, another researcher could only hope to *emulate* it (i.e., make a system that functions similarly, but is not identical).[17] This nuance reveals a fundamental truth about openness in AI: it exists on a spectrum rather than as a binary. As researchers Andreas Liesenfeld and Mark Dingemanse argue, "ubiquity and free availability are not equal to openness and transparency."[18] Meta's approach exemplifies such gradations of openness in AI, where some elements may be shared, but full reproducibility—a cornerstone of the scientific method—remains elusive. This paper will explore these components and their varying degrees of openness further below.

A. Benefits of Open-Source GenAI for GenAI Researchers

Before proceeding, it is important to emphasize that this section focuses exclusively on the research-related benefits that allow researchers to examine the models to better understand how open-source GenAI artifacts function and interact. Proponents of legal exemptions for open-source GenAI frequently highlight the contributions to scientific advancement through open experimentation, because when there are no exemptions specifically for open-source software, there can be for scientific research. However, because open-source artifacts are, by design, available to everyone, their research-based merits are often overstated to sidestep the thorny legal issues—such as mass copyright infringement—that plague closed-source systems

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[15] *Open Source AI Available to All, Not Just the Few*, Meta (June 16, 2023), https://www.facebook.com/Meta/videos/open-source-ai-available-to-all-not-just-the-few/472483165627318/.

[16] Open Source Initiative, *The Open Source AI Definition*, https://opensource.org/ai/open-source-ai-definition

[17] Data is not the only limiting factor for reproducibility of models. For example, it'd be all but impossible to exactly replicate the randomized weights when training is initiated unless it is provided by the originator.

[18] Abeba Birhane, Vinay Prabhu, Sang Han, Vishnu Naresh Boddeti & Alexandra Sasha Luccioni, *Rethinking open source generative AI*, FOUN. & TRENDS PRIV. & SEC., Vol. 1, No. 2, pp. 1-38 (June 5, 2024), https://dl.acm.org/doi/10.1145/3630106.3659005.

like GPT-4 and Gemini. In other words, open-source entities tend to focus heavily on a commitment to scientific research as a justification for exemption from laws that would otherwise apply to them.

Given this context, here are compelling reasons why researchers might prefer deploying open-source models on local machines (i.e., on servers not controlled or accessible by GenAI companies) rather than relying solely on API access[19], as is common with systems like ChatGPT, Gemini, and Claude:[20]

1. Experimental Stability and Control

Running a model locally ensures that the system under study remains stable from one day to the next. In contrast, companies like OpenAI or Anthropic may introduce tweaks or updates without warning, a phenomenon known as "model drift." A prominent example was when OpenAI rolled back an update that made their system overly sycophantic.[21] Such unannounced changes undermine experimental control; when the artifact being studied is in constant flux, it becomes impossible to definitively attribute observed outcomes to experimental conditions.

2. Research Continuity and Reproducibility

Closed-source providers can and do deprecate models or discontinue support altogether. For researchers conducting long-term studies around particular models, losing access midway through can derail research efforts and render the replication of results impossible.

3. Avoiding Data Contamination

A common research technique involves administering benchmark questions to models and analyzing their responses. A significant drawback of using proprietary systems is that providers may retain and even train on the very questions researchers submit. This practice, known as "data contamination," erodes the integrity of future evaluations, as models may effectively "learn the test" rather than demonstrating genuine general capabilities.[22] Conversely, with open-source models run locally, the developers have no access to the test questions, ensuring that the model's performance on well-constructed benchmarks remains statistically valid over time.

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[19] An API connection for GenAI is a standardized way for researchers to send requests to and receive information from the GenAI model(s), allowing it to access real-time data or perform external actions. It is a more scalable and direct form of access to the models rather than a chat window intermediating the exchange.

[20] A special thanks to Jacob Morrison from the Allen Institute for Artificial Intelligence for identifying these benefits.

[21] OpenAI, *Sycophancy in GPT-4o: what happened and what we're doing about it*, https://openai.com/index/sycophancy-in-gpt-4o/

[22] Alex Reisner, *Chatbots Are Cheating on Their Benchmark Tests*, https://www.theatlantic.com/technology/archive/2025/03/chatbots-benchmark-tests/681929/

4. Cost-Effective Customization

Open-source systems enable researchers to fine-tune models more economically than developing new models from scratch. Fine-tuning existing open-source models is relatively inexpensive (requiring less compute, electricity, and time) and allows extensive customization. API-based models, on the other hand, often impose strict limitations on customization, making it difficult to isolate and measure the direct impact of fine-tuning efforts on performance.

5. Mechanistic Interpretability

Perhaps the most significant advantage of open-source models is access to the underlying model weights. This transparency enables researchers to conduct in-depth interpretability studies, for example, by identifying which artificial neurons are activated in response to specific inputs. This level of mechanistic insight is unattainable with closed-source "black box" models, where researchers are limited to asking superficial questions about a model's overall capabilities.

In summary, open-source models empower researchers to explore not only *what* models can do but also *how* and *why* they behave in a particular way. Such a level of insight is essential for rigorous scientific inquiry and remains beyond the reach of API-based, closed systems.

The preceding section has demonstrated that open-source GenAI offers researchers significant advantages, such as experimental control, reproducibility, and interpretability. However, the impact of open-source GenAI extends beyond the research community. The following section explores how openness benefits a broader range of stakeholders, including businesses and the general public, through increased transparency, extensibility, and data control.

III. Additional Benefits of Open-Source GenAI

The benefits of open-source GenAI extend beyond research applications. In fact, most open-source developers likely rely on a user base that is comprised chiefly of non-research users.[23] The broader benefits often mirror those of traditional open-source software, including transparency, extensibility, and data secrecy, all while permitting commercial use.

A. Transparency

Transparency enables the ability to “look under the hood.” For GenAI, this primarily requires access to key components, such as model weights and training data. Although the “transparent” model weights themselves remain inscrutable to most people, the datasets offer tangible insight. Such access can empower critical stakeholders, including copyright holders, privacy advocates, and regulatory bodies, to participate in informed discussions about a model’s ethical, legal, and social implications, as currently, model knowledge and capabilities are limited to what they are trained on.

[23] If the focus were exclusively on researchers, one would expect to see more restrictive licenses that limit use to non-commercial or academic purposes only.

However, there are reasons to be skeptical that transparency alone will have the transformative impact that open-source boosters claim. For example, Axios uncritically quoted Ai2's CEO, Ali Farhadi, in noting that "Farhadi said that AI makers won't be able to earn back the public's trust until they can understand how their models produce a particular output — and they won't be able to do that until their data is fully available to researchers."[24]

This position is not well-supported by evidence. Very few members of the public understand how electricity, car engines, cell phones, or internet protocols work; yet, society readily adopted them as they became available, and we continue to use them daily without a second thought. An obsessive focus on "transparency" as a panacea for GenAI's problems too often appears to serve as a convenient excuse to advance preferred policy positions and secure greater funding while avoiding the hard work of actually addressing the harms created by the technology, including the proliferation of misinformation, manipulation, and deepfakes.

B. Extensibility and Modification

A key advantage of open-source models is their extensibility—the ability for users to build upon the existing artifacts. Rather than developing new GenAI models from scratch, businesses can create an application "wrapper" (for example, a custom user interface) or fine-tune an open-source model for a specific application, such as chatbots for real estate websites or specialized coding assistants. Numerous companies already employ this strategy across diverse sectors, including law (e.g., Harvey), search (e.g., Perplexity), coding (e.g., Cursor), digital media (e.g., Adobe), and medical notetaking (e.g., Abridge). While many of these firms currently use closed models, the potential for deep modification is significantly broader with open-source alternatives.[25]

C. Data Secrecy

Another benefit that appeals to businesses is enhanced control over their proprietary data. Although many GenAI companies offer enterprise-level subscriptions promising data protection and assurances against using client inputs for further training, the most robust safeguard against information leakage involves deploying "on-premise" (i.e., on company-owned servers) or self-hosted models (i.e., hosted on third-party servers). Open-source solutions enable on-premise deployment, ensuring that proprietary data and internal processes remain under company control.

While open-source GenAI provides tangible benefits in terms of transparency and flexibility, these practical advantages are only part of the story. Many organizations also pursue open-source strategies for reputational, market, and regulatory reasons. Next, this paper examines these strategic motivations, revealing how openness is leveraged not just for technical progress, but also for competitive and legal positioning.

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[24] Ali Farhadi, *AI Summit*, Axios (June 5, 2024), https://www.axios.com/2024/06/05/ali-farhadi-ai-summit?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axioslogin&stream=top.

[25] The lack of adoption by wrapper companies of open-source models also reveals how open-source models are not upsetting the tech giant oligopoly.

IV. Strategic Motivations for Embracing Open Source

While core open-source GenAI principles typically emphasize scientific research and societal advancement, many companies also promote open-source identities for strategic reasons that are less altruistic in nature. These include enhancing one's reputation, gaining market influence, and securing favorable legal and regulatory treatment.

A. Reputation and Market Advantages

Companies benefit reputationally by positioning themselves as champions of a populist, open approach to AI. They adopt slogans like Meta's "Available to all, not just the few"[26] or Hugging Face's mission to "democratize good machine learning, one commit at a time."[27] They also proclaim commitments to "Building breakthrough AI to solve the world's biggest problems"[28] with their "Truly open breakthrough AI" as with Ai2.[29] Such branding builds goodwill and fosters greater adoption of their models and platforms, creating increased opportunities for collaboration, funding, talent acquisition, and broader influence in the AI landscape.

Each entity's strategic approach to open source is unique. For instance, Hugging Face provides a central hub for developers to discover, share, and collaborate on pre-trained models, datasets, and evaluation metrics. This community-driven strategy positions Hugging Face as an indispensable resource in the AI ecosystem. Active community participation creates powerful network effects that continuously enhance Hugging Face's ecosystem value and increase switching costs for users, much like social media platforms. By serving as the go-to platform for open-source AI, Hugging Face has secured a comfortable share of the market for AI dataset and model sharing.[30] This positioning enables them to sell additional services and tools, further solidifying their business model and expanding their influence.

Meanwhile, Meta derives multiple benefits from providing the most downloaded open-weights models. By releasing models like Llama, Meta effectively crowdsources a massive amount of free research and development labor. The global community fine-tunes, evaluates, and builds upon their models, leading to

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[26] *See* the series of Meta advertisements with this catch phrase: *Open-Source AI: Available to All, Not Just the Few*, Facebook (June 16, 2023), https://www.facebook.com/Meta/videos/open-source-ai-available-to-all-not-just-the-few/480468301772528/.; *Open-Source AI: Available to All, Not Just the Few*, Facebook (June 16, 2023), https://www.facebook.com/Meta/videos/open-source-ai-available-to-all-not-just-the-few/2145330219233115/.; *Open-Source AI: Available to All, Not Just the Few*, Facebook (June 16, 2023), https://www.facebook.com/Meta/videos/open-source-ai-available-to-all-not-just-the-few/2372423423093997/.

[27] Hugging Face, https://huggingface.co/huggingface.

[28] Allen Inst. for AI, About, https://allenai.org/about.

[29] https://allenai.org/

[30] *E.g.*, As of September 2024, Hugging Face hosts over one million open AI models. https://the-decoder.com/hugging-face-is-growing-fast-with-users-creating-new-ai-repositories-every-10-seconds/

rapid improvements, bug fixes, and novel applications that Meta might not have conceived of or executed as quickly independently.[31]

Notably, the goodwill of releasing models is so potent that even OpenAI, which has been famously not open for several years in almost any way, is slated to share an open-weight model in mid-2025.[32] This is despite OpenAI already being the most influential GenAI company as measured by annual recurring revenue.[33]

B. Legal and Regulatory Advantages

Motivations for embracing open-source GenAI extend beyond reputational or market-based considerations. Equally important to many companies are potential legal benefits derived from open-source positioning.

The EU AI Act

The EU AI Act allows exemptions for "AI models that are released under a free and open source license, and whose parameters, including the weights, the information on the model architecture, and the information on model usage."[34] These exemptions include not having to comply with "transparency-related requirements."[35] Those transparency requirements are outlined in Article 50 and include the requirement that providers of AI systems designed to interact directly with individuals must inform users that they are dealing with an AI system unless it's obviously not an AI system. Similarly, open-source model providers are exempt from the obligation imposed on providers of AI systems that create synthetic audio, images, video, or text (including general-purpose AI) must ensure these outputs are machine-readable and detectable as artificially generated or manipulated, using effective and reliable technical solutions.

The other primary exemption for open source is from the general requirement for providers of general-purpose AI models to maintain comprehensive and updated technical documentation for their models, including details on training, testing, and evaluation results. Additionally, those providers, but not open-source model providers, must create and make available information and documentation to developers who integrate their general-purpose AI models into other AI systems. The documentation must clearly explain the model's capabilities and limitations to help integrators comply with the AI Act.[36]

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[31] Meta isn't known for innovation: it created Stories to copy Snapchat, Reels to copy TikTok, blue verification checkmarks to copy Twitter, Roll Call to copy BeReal, Threads to copy Twitter, disappearing messages to copy Snapchat, filters to copy Snapchat, etc.

[32] OpenAI's Open-Source AI Model Is Delayed, THE VERGE, https://www.theverge.com/news/685125/openais-open-source-ai-model-is-delayed

[33] ARR can be a proxy for how useful a product is. Presumably, people would not pay for something if they didn't find it valuable. The Information, AI-Native Startups Pass $15 Billion Annualized Revenue, https://www.theinformation.com/articles/ai-native-startups-pass-15-billion-annualized-revenue

[34] https://artificialintelligenceact.eu/recital/104/

[35] https://artificialintelligenceact.eu/recital/104/

[36] https://artificialintelligenceact.eu/article/53/

Notably, The Act's exemption "from compliance with the transparency-related requirements should not concern the obligation to produce a summary about the content used for model training and the obligation to put in place a policy to comply with Union copyright law, in particular to identify and comply with the reservation of rights pursuant to Article 4(3) of Directive (EU) 2019/790 of the European Parliament and of the Council."[37]

US Copyright Law

This paper will focus solely on U.S. copyright law, both for simplicity and because it is likely the most consequential of all copyright laws globally.[38] There is no open-source exemption in U.S. copyright law. However, there is an affirmative defense to claims of copyright infringement for "fair use." The introductory paragraph to the fair use section states that "the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), *scholarship, or research*, is not an infringement of copyright." (emphasis added)[39]

As noted a few times already, one of the key stances of some open-source GenAI entities is that their models are for research purposes. Additionally, the first of the four fair use factors described in the statute says that the commercial nature of the use must be considered. While the commercial nature is obvious when people must pay to use a model, the issue becomes murkier when the model is free to use with the hope that the user will sign up for other services (as with Hugging Face) or when the free models are part of a platform that is for-profit (as with Meta).

Privacy

A final type of legal exemption that entities may seek to lean on for open-source GenAI is from privacy laws. The two most relevant laws, due to their scale, are the General Data Protection Regulation (GDPR) under the EU and the California Privacy Rights Act (CCPA/CPRA).

The GDPR provides scientific research exemptions. "For the purposes of this Regulation, the processing of personal data for scientific research purposes should be interpreted in a broad manner including for example technological development and demonstration, fundamental research, applied research and privately funded research."[40] Assuming this criterion is satisfied,[41] and further assuming that the privacy rights granted to individuals "are likely to render impossible or seriously impair the achievement of the specific purposes, and

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[37] https://artificialintelligenceact.eu/recital/104/

[38] The US produces most of the highest grossing films globally (https://www.boxofficemojo.com/year/world/2024/), the most streamed songs on Spotify (https://en.wikipedia.org/wiki/List_of_Spotify_streaming_records), the most bestselling books (https://lithub.com/these-were-the-bestselling-books-of-2024/), and so on.

[39] https://www.law.cornell.edu/uscode/text/17/107

[40] https://gdpr-info.eu/recitals/no-159/

[41] For example, is the entity truly engaged in fundamental research and experimenting to discover something scientifically, or is it mostly focused on just trying to replicate what closed-source companies have already done and releasing it for use by the masses?

such derogations are necessary for the fulfillment of those purposes,"[42] the research becomes exempt from the right of access by the data subject, the right to erasure ("right to be forgotten"), the right of rectification, the right to restriction of processing, and the right to object.[43]

The CPRA also has some notable exemptions. For one, it doesn't apply to non-profits like Ai2. For another, businesses "shall not be required to comply with a consumer's request to delete the consumer's personal information if it is reasonably necessary for the business, service provider, or contractor to maintain the consumer's personal information in order to…*Engage in public or peer-reviewed scientific, historical, or statistical research* that conforms or adheres to all other applicable ethics and privacy laws, when the business's deletion of the information is likely to render impossible or seriously impair the ability to complete such research, if the consumer has provided informed consent."[44] (emphasis added)

The discussion of strategic motivations has shown that open-source GenAI is often promoted as a means to gain market share and regulatory favor. However, these incentives must be balanced against the legal frameworks that govern the development of AI. The paper now turns to an analysis of why open-source GenAI should not be categorically exempt from existing laws, emphasizing the need for consistent legal accountability.

V. Open Source and the Law: Why Open-Source GenAI Shouldn't Be Exempt

While some regulations, like the EU AI Act, have already carved out exemptions for open-source GenAI, extending such special treatment to other laws would be a profound mistake. Treating open-source AI as categorically different from its closed-source counterparts would create a dangerous precedent that undermines fundamental legal principles.

The following analysis builds on my previous scholarship.[45] Section V only outlines a few ways open-source datasets and models may violate the law, demonstrating that these concerns are not merely hypothetical. It is not meant to be exhaustive or to imply that *all* open-source datasets and models are unlawful.

This section will first dismantle the false equivalence between open source and scientific research before providing an overview of why open-source GenAI should not be automatically exempt from copyright law,

[42] https://gdpr-info.eu/art-89-gdpr/

[43] https://gdpr-info.eu/art-89-gdpr/

[44] *The California Privacy Rights Act of 2020*, https://thecpra.org/

[45] David Atkinson, Jena Hwang, and Jacob Morrison, Intentionally Unintentional: GenAI Exceptionalism and the First Amendment, 23 First Amend. L. Rev. 173 (2025); David Atkinson, Unfair Learning: GenAI Exceptionalism and Copyright Law (unpublished 2025); David Atkinson, Putting GenAI on Notice: GenAI Exceptionalism and Contract Law, NW. U. L. REV. ONLINE (forthcoming 2025)

contract law (via terms of service), licensing, or privacy law.[46] The unavoidable conclusion in each instance is that the law must apply with equal force to open-source and closed-source entities, and model developers who engage in unlawful conduct must be held liable regardless of their chosen distribution method.

A. The False Equivalence of Open Source and Scientific Research

Open-source GenAI entities often cloak their arguments under the guise of scientific research, scholarship, and innovation. While these entities presumably genuinely believe their work contributes to societal progress, they may also strategically equate open source with scientific research because they understand that the law looks favorably on research. As shown above, this favorable treatment manifests in specific legal exemptions in the General Data Protection Regulation (GDPR)[47], the EU Copyright Directive[48], and the California Privacy Rights Act (CPRA)[49]. Similarly, exemptions under the EU AI Act specifically benefit open-source AI models.

It is likely not coincidental that in Ai2's "comment" to the U.S. Copyright Office's Notice of Inquiry on copyright and artificial intelligence, Ai2 mentions the word "research" 30 times. Ai2 focuses its justification for open-sourcing its AI artifacts solely on how it will benefit researchers, nonprofits, and governments:

- Open and transparent AI Models promote technical advancements that lead to more ethical models. Current technology gaps, such as the ability to watermark or remove personally identifiable information, *can only be solved if researchers have access to the full details of AI Models*. Some of the ethical challenges that exist are technical problems that are yet to be solved (emphasis added)
- Openness is a prerequisite for external audits and scrutiny. In order to identify potential risks, create tools for harm mitigation, *and build AI literacy within the research community and the general public, AI researchers* need access to all Artifacts within an AI System for analysis (emphasis added)
- Reproducibility is a key tenet in scientific research. Open research has been a key component of the rapid progress in the development of AI technologies. *From academic departments to research labs*, the ability to replicate and build upon prior work has led to technical and economic advances. For example, the open release of BERT in 2018 led to a flurry of innovations in NLP4 (emphasis added)
- Equitable access. The training of AI Models is extremely computationally expensive, costing millions of dollars to complete. This creates an unbalanced concentration of power where only a small handful of companies and institutions have the resources to undergo the process, which in turn

[46] This paper does not discuss other important and relevant laws and regulations such as torts or antitrust, or adjacent issues such as AI governance or national security.

[47] How GDPR Changes the Rules for Research, IAPP, https://iapp.org/news/a/how-gdpr-changes-the-rules-for-research (last visited July 7, 2025).

[48] Reed Smith, *AI in Entertainment and Media* (Feb. 2024), https://www.reedsmith.com/en/perspectives/ai-in-entertainment-and-media/2024/02/text-and-data-mining-in-eu.

[49] Gregory A. Gidus, *The Research Exception to the CCPA's Right to Deletion — Will It Ever Apply?*, Carlton Fields (2019), https://www.carltonfields.com/insights/publications/2019/research-exception-ccpa-right-deletion-apply#:~:text=Consultancies%20News%20Offices-,The%20Research%20Exception%20to%20the%20CCPA's%20Right%20to%20Deletion%20%E2%80%94%20Will,%20%20>*.

> gives those companies exclusive access to data and research avenues. By making our OLMo model openly available, *we hope to empower academic institutions, government agencies, and other nonprofit organizations* with access to a state-of-the-art AI Model (emphasis added)[50]

The conclusion of their comment states that:

> AI is developing and improving at an astounding pace, and numerous AI Models and AI Systems already exist that will be affected by any decisions made by the Copyright Office, Congress, or the Courts. AI has tremendous potential to improve lives, and it also poses risks and harms. We contend that an important way to reduce the latter is *through increased scientific research* which includes access to robust and diverse data sources. We believe our recommendations allow for the flourishing of AI innovation while balancing the purpose of copyright law and the needs of copyright owners. *As a research-first nonprofit institute* that believes in an ethical, interdisciplinary, science-focused approach free from any profit motive, we appreciate the opportunity to share our thoughts and extend an offer to be of future assistance, as needed.[51] (emphasis added)[52]

Hugging Face performs a similar obfuscation. Their opening paragraph states that "The following comments are informed by our experiences as an open platform for state-of-the-art (SotA) AI systems, *working to make AI accessible and broadly available to researchers* for responsible development." (emphasis added).[53]

They go on to favorably quote researchers who championed the open-source model GPT-Neo, which was trained on the freely shared Books3 dataset of nearly 200,000 books protected by copyright: "Our research would not have been possible without EleutherAI's complete public release of The Pile dataset and their GPT-Neo family of models." In other words, sharing those copyrighted books with everyone is a *good* thing in the view of Hugging Face.[54]

However, equating openness and scientific research is a fallacy. It is entirely possible, and indeed common, to open source a model with no intention of contributing to scientific research. The over one billion downloads of Llama are not driven by a billion people who are suddenly and deeply interested in scientific

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[50] Allen Institute for Artificial Intelligence, Response to the U.S. Copyright Office, Library of Congress Notice of inquiry and request for comments (RFC) (Nov 1, 2023) https://www.regulations.gov/comment/COLC-2023-0006-8762

[51] Allen Institute for Artificial Intelligence, Response to the U.S. Copyright Office, Library of Congress Notice of inquiry and request for comments (RFC) (Nov 1, 2023) https://www.regulations.gov/comment/COLC-2023-0006-8762

[52] Allen Institute for Artificial Intelligence, Response to the U.S. Copyright Office, Library of Congress Notice of inquiry and request for comments (RFC) (Nov 1, 2023) https://www.regulations.gov/comment/COLC-2023-0006-8762

[53] Hugging Face, Response to the U.S. Copyright Office, Library of Congress Notice of inquiry and request for comments (RFC) (Nov 1, 2023) https://www.regulations.gov/comment/COLC-2023-0006-8969

[54] Hugging Face, Response to the U.S. Copyright Office, Library of Congress Notice of inquiry and request for comments (RFC) (Nov 1, 2023) https://www.regulations.gov/comment/COLC-2023-0006-8969

research. Moreover, if an activity is otherwise unlawful, making it open source does not render it lawful. Scientific research neither requires nor is defined by open-source distribution.

More importantly, even when the stated goal *is* research, the method of release matters. For example, Ai2 does not need to release models and datasets under a permissive commercial license, such as Apache 2.0 or ODC-BY,[55] in order to promote scientific progress; it could use a more restrictive license limited to non-commercial research. If the true purpose were scientific advancement, restrictive licensing would better serve that goal while preventing commercial exploitation.

Depending on the training data or potential for malicious use, open-source artifacts may be highly detrimental to society. A flat exemption or even leniency for open-source could allow entities to engage in otherwise illegal activities, such as releasing datasets of pirated movies, songs, and books as open-source under the guise of scientific research. This creates a regulatory loophole that undermines the very purposes for which these exemptions were designed.

It stands to reason that when privacy laws like the GDPR or CCPA/CPRA create carveouts for nonprofits or scientific research, they do so with the understanding that the data will be used primarily or exclusively for nonprofit or scientific research purposes. The logic of these exemptions collapses if the entity simply aggregates and cleans vast amounts of data—some of it scraped in violation of terms of service or copyright or even torrented from known pirate sites—and then releases it for anyone, including for-profit companies, to use for any purpose. In essence, if entities like Ai2 are able to collect and re-share data under these exemptions where another for-profit entity could not, then the carveout becomes a loophole. The for-profit entity needs only to wait until Ai2 does what the for-profit company could not legally do itself, then download the data, code, and model that Ai2 releases for free.

A similar controversy is brewing over the EU AI Act. Currently, there is no clear definition of what constitutes open source in the Act. Meta has aggressively marketed its Llama models as open source, however, and is almost certainly vying to claim the open-source exemptions under the EU AI Act. Meta is not alone. In their coalition paper about the EU AI Act, GitHub, EleutherAI, Hugging Face, LAION, and others write that "Open foundation models like those developed by EleutherAI, LAION or BigScience's BLOOM are *first and foremost research artifacts*…"[56] (emphasis added). Yet none of their most popular artifacts are actually limited to research purposes. This disconnect between stated purpose and actual implementation reveals the strategic nature of the "research" framing.

Ultimately, an activity that is otherwise unlawful does not become lawful simply because it is labeled "open source" or "for research" in marketing material. Moreover, scientific research does not require violating laws, and open source does not require a commercial-use free-for-all.

[55] This paper will explain these licenses in more detail below.

[56] *Supporting Open Source and Open Science in the EU AI Act*, GitHub Blog (July 2023), https://github.blog/wp-content/uploads/2023/07/Supporting-Open-Source-and-Open-Science-in-the-EU-AI-Act.pdf.

B. Copyright

Copyright law is implicated at nearly every stage of the GenAI lifecycle, and open-source entities are no more inherently innocent than their proprietary counterparts.[57] They reproduce (by scraping) vast amounts of copyrighted material without authorization or copy datasets others have compiled by scraping, they distribute these works by packaging them into datasets, the models they train and release can generate infringing derivative works, and they distribute these models with few use restrictions. Moreover, entities like Hugging Face, which hosts the datasets and models that are trained on these datasets and make them freely and easily downloadable, are often aware of legally suspect datasets (e.g.., ones that likely contain at least thousands of copyrighted works without copyright owner authorization)[58] but take no action to remove the datasets from their platform.

The Fair Use Analysis

Ultimately, all these entities are relying on fair use to protect them. Fair use is an analysis under copyright law consisting of four factors:

1. the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
2. the nature of the copyrighted work;
3. the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
4. the effect of the use upon the potential market for or value of the copyrighted work. [59]

If the factors, when weighed together, favor fair use, then there is no infringement of copyright.

Some scholars note that the use of copyrighted works to create GenAI is unlike other uses where courts have found fair use, in part because GenAI, unlike indexing the web for search or identifying the functional code to make games compatible with video game consoles, is dependent on the expressiveness of the works it is trained on. Whereas Google Search would work the same regardless of whether the content of a website was random words, GenAI only works well if it is trained on coherent, expressive, high-quality data. In other words, GenAI could not exist without exploiting the expressiveness of the works on which it is trained.[60]

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[57] Interestingly, prominent legal scholars such as Mark Lemley and James Grimmelmann taken an opposing view. Ars Technica, *Study: Meta's Llama 3.1 Can Recall 42 Percent of the First Harry Potter Book*, Ars Technica (June 2025), https://arstechnica.com/features/2025/06/study-metas-llama-3-1-can-recall-42-percent-of-the-first-harry-potter-book/./ ("There's a degree to which being open and sharing weights is a kind of public service," Grimmelmann told me. "I could honestly see judges being less skeptical of Meta and others who provide open-weight models.")

[58] This does not include other legal issues, like Hugging Face hosting "5000 models used to generate nonconsensual sexual content of real people." Emanuel Maiberg, *Hugging Face Is Hosting 5,000 Nonconsensual AI Models of Real People*, 404 Media, https://www.404media.co/hugging-face-is-hosting-5-000-nonconsensual-ai-models-of-real-people/

[59] 17 U.S. Code § 107

[60] There are other important distinctions. Google search connects creators with people they likely want to reach, for example, whereas GenAI often does not effectively connect people directly to creator content.

An Absurd Approach to Fair Use Analysis

My argument is a step removed from the one above. I posit that whatever people may think about how the four factors apply to GenAI, any argument a GenAI company can make for fair use applies with equal or greater force to any individual human who also wants to argue that their downloading and reading, watching, or listening to copyrighted works is fair use.[61] Human use is more transformative than GenAI use, for example. It takes far less data for humans to generalize and develop far more impactful insights, including all scientific discoveries and genres of art. Additionally, humans are far less likely to unfairly compete with copyright owners because humans are far less capable of memorizing and regurgitating copyrighted works. Therefore, if a court were to decide that a GenAI company's use is fair use, they must also support the notion that any human's use of copyrighted works without authorization is fair use as long as they do not produce an infringing output. This reductio ad absurdum reveals the weakness of the fair use argument for GenAI companies.

The Scale of Copyright Infringement

Nearly all uses of copyrighted works by GenAI companies—open-source or otherwise—should be considered infringement. Major GenAI datasets are composed of trillions of tokens scraped from the internet, a corpus that is overwhelmingly protected by copyright. The sheer scale of this appropriation is staggering. For context, Ai2's OLMo 2 13B was trained on up to five trillion tokens,[62] Hugging Face's SmolLM2 was trained on approximately 11 trillion tokens,[63] and Meta's Llama 4 was trained on 30 to 60 trillion tokens.[64] These are just three of nearly two million models available on just a single website: Hugging Face.[65] Just the five most downloaded text generation models (as in, not including image-to-text, image generation, text-to-image, and all other forms of GenAI) have been downloaded over 50 million times.

The sheer number of freely available models and their apparent popularity suggest that, in the aggregate, open-source models could cause at least as much harm to copyright owners as the proprietary models that are typically the focus of litigants. If courts determine that each version of open models must be litigated, the volume could quickly make litigation infeasible for all but the most well-endowed plaintiffs. Furthermore, some platforms, such as Amazon's Bedrock and Google's Vertex AI, could make switching between models relatively easy for users, meaning that when one model is taken down for infringement, another could pop up and take its place, resembling a game of whack-a-mole, but perhaps more like whack-a-Hydra-head.

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[61] David Atkinson, Unfair Learning: GenAI Exceptionalism and Copyright Law (unpublished 2025)

[62] OLMo 2 (7B and 13B), Allen Institute for Artificial Intelligence, *https://allenai.org/olmo*.

[63] Loubna Ben Allal et al., SmolLM2: When Smol Goes Big — Data-Centric Training of a Small Language Model, https://arxiv.org/html/2502.02737v1#:~:text=To%20attain%20strong%20performance%2C%20we,%2C%20and%20instruction%2Dfollowing%20data.

[64] *Kadrey v. Meta Platforms,* No. 3:23-cv-03417-VC-TSH, 2025 WL 56789 (N.D. Cal. Mar. 24, 2025), https://storage.courtlistener.com/recap/gov.uscourts.cand.415175/gov.uscourts.cand.415175.489.0.pdf

[65] Hugging Face, https://huggingface.co/models?sort=trending; Not all models on this site are GenAI models, but at least 100,000 are.

Known Use of Pirated Content

Many of these datasets, used by both open and closed models, are known to contain material from notorious pirate sites. This is not inadvertent scraping but deliberate acquisition of content that was information mostly stolen from the copyright owners either by hacking the websites hosting the content, using stolen credentials or credentials acquired fraudulently to log into those sites without authorization, downloading the content, and move it to the pirate website; or, by accessing content with authorization and stripping it of its Digital Rights Management software and then moving it to pirate sites.

From the litigation in *Kadrey v. Meta,* we know that Meta torrented hundreds of terabytes of content from pirate sites, including books and articles.[66] Even if it remains unclear whether open-source providers like Hugging Face or Ai2 have engaged in similar practices, the potential for infringement is evident, as neither entity has unequivocally stated it hasn't and won't use such data. Their silence on this issue is deafening.

Specific Examples of Problematic Datasets

A specific example of a problematic dataset is the Books3 dataset, which was supported by EleutherAI and comprises nearly 200,000 pirated books. Hugging Face hosted the link to Books3, and, although aware of the dataset's contents, was reluctant to remove it. It was the website hosting the actual content that ultimately removed the dataset link, not Hugging Face. This is concerning because it may amount to knowingly hosting a link to a dataset of pirated books, thereby facilitating actions that could potentially constitute mass copyright infringement. As discussed below, Books3 is not the only incident like this on Hugging Face. This pattern of behavior is inconsistent with supporting the rights of copyright holders.

A similar concern arose from LAION-5B. It took years before researchers identified over a thousand instances of child sexual abuse material in a dataset that was widely used to train image generators.[67] It demonstrated that the risks at issue are not limited to copyright but extend to privacy and bodily autonomy.

The "Publicly Available" Fallacy

GenAI companies often justify their practices by arguing that the content is "publicly available." This logic is deeply flawed. Almost all data is or can be made "publicly available" without the copyright owner's permission. Public availability does not equate to placing material in the public domain; creators share their work to gain revenue, reputation, or exposure, not to forfeit their rights. Meta has taken this flawed reasoning to its logical extreme, arguing that even the pirated data counts as "publicly available" data because the pirate

[66] Interestingly, of the over forty lawsuits against GenAI companies, only one defendant claims to be open source: Meta. It's unclear why other open-source providers have so far remained unscathed. In theory, it should be easier to prove infringement from reproduction (especially when the open-source entity releases the training dataset), derivatives (when then model regurgitates substantially similar outputs to the training data), and distribution (when copies are stored in the model, because the entity is giving those copies to others by releasing the models). For example, some researchers and law professors have shown that "Llama 3.1 70B memorizes some books, like Harry Potter and 1984, almost entirely."

[67] https://cyber.fsi.stanford.edu/news/investigation-finds-ai-image-generation-models-trained-child-abuse

sites are accessible to anyone.[68] This reasoning would effectively nullify copyright protection for any work accessible online.

Similarly, when companies invoke "permissive licensing" for code, they elide the fact that permissive licensing is different from "unlicensed" or "without restrictions." Even permissive licenses contain binding legal obligations.

Unique Challenges for Open-Source Models

Another copyright issue with open-source GenAI is that safeguards, such as filters, can be removed, making it impossible to prevent infringing outputs from being generated. For instance, blocking the ability to generate "in the style of" a particular artist won't work once the model is downloaded. This is a known issue.[69] This means that if the model is able to regurgitate infringing content, then the open-source entities are knowingly distributing copies of copyrighted works without an efficient means to prevent infringement.

Vicarious and Contributory Infringement

Typically, for closed-source GenAI companies like OpenAI, the company would be required to take action to prevent future infringing outputs once made aware that they are happening, or else they could be liable under vicarious or contributory copyright infringement. Vicarious infringement "allows for Party A to be found liable for the infringing acts of Party B if (i) Party A had the right and ability to control the infringing activity and (ii) Party A had a direct financial interest in the infringement."[70] Contributory infringement "requires that (i) Party A makes a material contribution to the infringing activity, while (ii) having knowledge or a reason to know of the direct infringement by Party B."

For open-source models, open-source entities cannot add patches or filters to downloaded models or datasets, nor can they delete them, even after being made aware that their model or dataset is infringing. However, the open-source company may still benefit financially, as Zuckerberg has noted that Meta benefits from releasing open-source artifacts in multiple earnings calls.[71] It cannot be the case that a company is no longer

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[68] *Kadrey v. Meta Platforms,* No. 3:23-cv-03417-VC-TSH, 2025 WL 56789 (N.D. Cal. Mar. 28, 2025)., https://storage.courtlistener.com/recap/gov.uscourts.cand.415175/gov.uscourts.cand.415175.501.0.pdf ("To train Llama, Meta copied third party datasets containing Plaintiffs' works from publicly available websites…")

[69] *How to Regulate Unsecured AI*, CIGI (last visited July 7, 2025), https://www.cigionline.org/articles/not-open-and-shut-how-to-regulate-unsecured-ai/#:~:text=Ability%20to%20remove%20safety%20features,running%20on%20their%20own%20hardware.

[70] David Atkinson and Jacob Morrison, *A Legal Risk Taxonomy for Generative Artificial Intelligence*, (unpublished manuscript) https://arxiv.org/html/2404.09479v3

[71] Zuckerberg, M. & Dorell, K. Fourth Quarter 2023 Results conference call (2024); Zuckerberg, M. & Crawford, D. First Quarter 2023 Results conference call (2023) ("[PyTorch] has generally become the standard in the industry […] it's generally been very valuable for us […] Because it's integrated with our technology stack, when there are opportunities to make integrations with products, it's much easier to make sure that developers and other folks are compatible with the things that we need in the way that our systems work.")

liable for infringing outputs simply because it has chosen to release a model and no longer controls it. The act of initial distribution with knowledge of likely infringement potential should establish liability.

Some entities, like Hugging Face, don't merely release their own open-source artifacts; they also host open-source artifacts for others. As mentioned above, this meant they hosted the link to a dataset known to contain nearly 200,000 pirated books. They also host thousands of other datasets with mostly copyrighted material, including articles,[72] books,[73] webpages (like C4), lyrics,[74] scripts,[75] and code.[76] This is not inadvertent hosting—the information about the contents of these datasets is publicly available and well-documented.

The *Washington Post*, working in collaboration with Ai2 researchers, noted that the widely-used dataset called the Colossal Clean Crawled Corpus (C4) consisting of Common Crawl datasets (which, again, only collect samples from websites), which is one of the most popular training datasets and one hosted by Hugging Face, contains data scraped from at least 28 known notorious pirate sites.[77] In other words, Hugging Face is arguably facilitating copyright infringement by knowingly hosting such datasets. Moreover, they profit from doing so. They don't host the datasets out of the kindness of their hearts. Rather, they do it to generate revenue. As of August 2023, following their last funding round, they were valued at $4.5 billion. This substantial valuation demonstrates the commercial value derived in part from hosting potentially infringing content.

Industry Acknowledgment of Copyright Concerns

While copyright seems like an obvious reason most companies don't share their training data, Ai2's CEO sees things differently. In response to the question "Why aren't more AI developers sharing training data for models they say are open?" in an interview with *Fast Company*, he replied:

"If I want to postulate, some of these training data have *a little bit of questionable material in them*. But also the training data for these models are the actual IP. The data is probably the most sacred part. Many think there's a lot of value in it. In my opinion, rightfully so. Data plays a significant role in improving your model, changing the behavior of your model. It's tedious, it's challenging. Many companies spend a lot of dollars, a lot of investments, in that domain and they don't like to share it."[78] (emphasis added)

This candid admission reveals the industry's priorities: the copyrighted works of others are viewed as less important than the trade secrets of the GenAI companies that exploit these works. Copyright holders' rights

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[72] *See, e.g.,* Andy Reas*, frontpage-news*, Hugging Face, https://huggingface.co/datasets/AndyReas/frontpage-news. (last visited July 7, 2025)

[73] *See, e.g., Anti-Piracy Group Shuts Down Books3, a Popular Dataset for AI Models*, Interesting Eng'g (n.d.), https://interestingengineering.com/innovation/anti-piracy-group-shuts-down-books3-a-popular-dataset-for-ai-models [https://perma.cc/4P45-R4QJ].

[74] *See, e.g.,* brunokreiner*, genius-lyrics*, Hugging Face, https://huggingface.co/datasets/brunokreiner/genius-lyrics.

[75] *See, e.g.,* IsmaelMousa*, Movies*, Hugging Face, https://huggingface.co/datasets/IsmaelMousa/movies.

[76] *See, e.g.*, BigCode, *starcoderdata*, Hugging Face, https://huggingface.co/datasets/bigcode/starcoderdata.

[77] https://www.washingtonpopen-sourcet.com/technology/interactive/2023/ai-chatbot-learning/

[78] Ali Farhadi, *AI2's Ali Farhadi Advocates for Open-Source AI Models. Here's Why*, Fast Company (Apr. 16, 2024), https://www.fastcompany.com/91283517/ai2s-ali-farhadi-advocates-for-open-source-ai-models-heres-why.

matter very little to GenAI entities (even, apparently, in an open-source entity leader's estimation), but the companies want to go out of their way to protect their own intellectual property. This selective respect for intellectual property rights is both hypocritical and legally indefensible.

The Takeaway

To the extent that copyright law applies to closed-source models and datasets, it also applies to open-source models and datasets. Making GenAI artifacts open source does not change the above analysis in any meaningful way. Therefore, these entities should either refrain from using the copyrighted content or obtain a license for it.

C. Terms of Service Violations

When scraping the web to create massive datasets, companies tend to scrape every page of the websites they visit. After all, all else being equal, more data is better than less data when training a model. Most sites have some terms of service or terms of use.[79] Some sites require users to accept these terms when they visit, thereby making the terms enforceable. This is the case when the user must click an "I Accept" box, for example, before accessing the site's content, and is known as "clickwrap." More often, sites only include a link to the terms at the bottom of the website. This is known as "browsewrap." As long as users don't click on the link, the terms are typically unenforceable.

Clickwrap is a form of constructive notice. That is, courts presume you had a fair opportunity to review the terms before accepting them, and that's what makes the terms enforceable. You do not need constructive notice if there is actual notice. Actual notice is when you actually visit the terms rather than merely clicking "I accept" next to a hyperlink to the terms.

The issue is that when bots scrape every webpage (and even when they only scrape a sample of webpages, as Common Crawl does), including the terms pages, the bot deployer (i.e., the AI company or the company working on behalf of the AI company) then has actual notice of the terms, no different from when a human clicks on them. And, as described above, when you click on the link, the terms become binding. This creates actual notice that should bind the scraping entity to the terms.

[79] Tangentially related, OpenAI has publicly stated that they are investigating and reviewing indications that DeepSeek, a Chinese AI startup, may have violated OpenAI's terms of service. The core of their claim revolves around a technique called "distillation," involves repeatedly querying OpenAI's models (like ChatGPT) at scale and using the generated outputs as training data for DeepSeek's own competing AI. OpenAI's terms of use explicitly prohibit users from "automatically or programmatically extract data or Output" and "use Output to develop models that compete with OpenAI." OpenAI believes DeepSeek's alleged distillation practices directly violate these contractual terms.

The prevalence of this issue is evident in the data itself. The C4 dataset contains 424 URLs from a "terms" page. This demonstrates that scraping bots routinely encounter and ingest terms of service pages, creating widespread constructive notice of usage restrictions.[80]

If the terms say something like "You may not use any content on this website to train an AI system," but then a GenAI company uses the content to train an AI system, they are likely breaching the contract. Importantly, there is no exemption in the law for open-source companies to ignore contract law. The open-source nature of the final product does not excuse the initial breach of contract.

D. Licensing Violations and Attribution Failures

Code, datasets, and models are typically shared under licenses, which are a form of contract that outlines how individuals and entities may use copyrighted material. Most licenses, including common open-source licenses like MIT and Apache 2.0,[81] are not a free-for-all; they come with conditions, most notably the requirement to provide attribution to the original creator. For example, here are the requirements under Apache 2.0:

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- You must give any other recipients of the Work or Derivative Works a copy of this License; and
- You must cause any modified files to carry prominent notices stating that You changed the files; and
- You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- If the Work includes a "**NOTICE**" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You

[80] Moreover, C4 if just one of many datasets used to train models. No highly trained model is trained on just C4. In all likelihood, the additional datasets include additional terms webpages.

[81] According to the Open Source Initiative, "For Pypi, the package manager for Python [the most common language for AI research], components under the MIT and Apache 2.0 licenses dominate, at 29.14% and 23.98% respectively." Many open-source GenAI models are released under Apache 2.0., including those by Ai2, Mistral, LAION, Hugging Face, Salesforce, Amazon, and xAI.Ecosystem Graphs: The Social Footprint of Foundation Models, Stan. U. Inst. for Hum.-Centered AI (last visited July 30, 2025), https://crfm.stanford.edu/ecosystem-graphs/index.html?mode=table.

distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

The Attribution Problem in GenAI

Traditionally, adhering to these terms was trivial. If you used some code written by someone else, you could easily give them credit and use the appropriate license when you wrote your code. But training GenAI is a different beast. When a model generates code, it is incredibly difficult, if not impossible, to trace that output back to all its original licensed sources to provide the required attribution. This presents a problem for GenAI companies because the judge in *Doe 1 v. GitHub* allowed plaintiffs to pursue contract claims based on license violations, a claim for which fair use is not a defense.[82] In *Doe 1*, the plaintiffs, primarily software developers, allege that Copilot was trained on their copyrighted open-source code from public GitHub repositories without proper attribution or adherence to the terms of the open-source licenses (e.g., MIT, GPL, Apache). They claim that Copilot's generated code snippets are identical or substantially similar to their original work, constituting copyright infringement and a violation of license conditions by failing to provide attribution. The court's precedent establishes that license violations can be pursued as contract claims, independent of copyright analysis.

It is important to note that open-source licensing does not imply unrestricted use of code. Organizations such as EleutherAI or Ai2 may redistribute, modify, or create derivatives of open-source code, but they are still obligated to adhere to the original license terms. The popular Apache 2.0 license, for example, requires sharing a copy of the Apache 2.0 license, prominently notifying others when changes are made to the files, and providing attribution to the code creators. Perhaps unsurprisingly, no popular open-source model complies with these open-source license terms. Instead, they tend to argue that merely because the code was made public, they are permitted unrestricted use for training GenAI models. This argument fundamentally misunderstands the nature of open-source licensing.

The inability to comply with a license should not be a legal excuse to disregard the creator's wishes and the license's requirements. Rather, it should mean that open-source GenAI companies must either find an alternative solution (e.g., paying to use the content without restrictions) or refrain from using it altogether. The technical difficulty of compliance does not excuse legal violations.

E. Privacy Law Violations and Data Protection Failures

There are three primary issues with privacy and open-source GenAI and they could affect inputs to models (the training data) and the outputs (what the models generate): (i) current filtering techniques can only reliably identify a few types of personally identifiable information; (ii) releasing datasets widely

[82] *DOE 1 v. GitHub*, Inc., No. 4:22-cv-06823 (N.D. Cal. Feb. 11, 2025)

disseminates any personally identifiable information (PII) they contain; and (iii) there is no way to remove PII from a downloaded open-source model once it has been released.

Limited Effectiveness of PII Filtering

First, removing PII from training data is far more difficult than it sounds. A study by researchers from Ai2 and Hugging Face found that of eight common types of personal data (phone numbers, email addresses, US bank numbers, US social security numbers, IP addresses, credit card numbers, IBAN codes, and names), filtering tools could accurately and routinely identify only three: phone numbers, email addresses, and IP addresses.[83] This means that if a GenAI company wants to remove PII from its training data, it can only do so with high accuracy for fewer than half of the most common types of personal information. Consequently, here is how Ai2 explained its process to filter PII for its largest training dataset:

Data sampled from the web can also leak personally identifiable information (PII) of users (Luccioni and Viviano, 2021; Subramani et al., 2023). Traces of PII are abundant in large-scale datasets (Elazar et al., 2023), and language models have also been shown to reproduce PII at inference time (Carlini et al., 2022; Chen et al., 2023b). Dolma's size makes it impractical to use model-based PII detectors like Presidio (Microsoft, 2018); instead, we rely on carefully-crafted regular expressions that sacrifice some accuracy for significant speed-up. Following Subramani et al. (2023), we focus on three kinds of PII that are detectable with high precision: email addresses, IP addresses and phone numbers. For documents with 5 or fewer PII spans, we replace the span with a special token (e.g., |||EMAIL_ADDRESS|||); this affects 0.02% of documents. Otherwise, we remove entire documents with higher density of PII spans; this affects 0.001% of documents. In data ablation experiments, we find that execution details around PII (e.g., removal versus special token replacement) had no effect on model performance, which is expected given the tiny percentage of affected data.[84]

Amplified Risks in Open-Source Distribution

Second, for closed-source companies like OpenAI, the PII in their datasets remains hidden from public view, and they can at least attempt to filter PII from the model's output. With open source, these minimal safeguards all but disappear. Instead, anyone can access the datasets and view any PII therein. This can potentially transform privacy violations from contained incidents into widespread data breaches, depending on which law(s) may apply. And because all safeguards can easily and even unintentionally be removed from models once they are downloaded, open-source entities cannot control what PII may be generated by the open-source models. Moreover, some entities, such as Hugging Face, host datasets comprising information scraped from

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[83] Nishant Subramani et al., *Detecting Personal Information in Training Corpora: an Analysis*, in Proc. of the 3d Workshop on Trustworthy Nat. Language Processing 2023, at 208-220 (Ass'n for Comput. Linguistics 2023), https://aclanthology.org/2023.trustnlp-1.18/.

[84] Luca Soldaini et al., Dolma: an Open Corpus of Three Trillion Tokens *for Language Model Pretraining Research*, in Proc. of the 62nd Ann. Meeting of the Ass'n for Comput. Linguistics (Volume 1: Long Papers) 15725, 15725–15788 (Ass'n for Comput. Linguistics 2024), https://aclanthology.org/2024.acl-long.840/.

social media sites, which are likely to contain personal data and enable others to infer additional information about users.[85]

The Impossibility of Data Deletion

Third, removal and suppression techniques for GenAI models are severely limited.[86] It is challenging or impossible to determine where a specific type of PII for an individual resides within massive GenAI models, and it can also be difficult or impossible to discern the relationship between model weights and model outputs. This means that data deletion requirements are all but impossible to comply with. Once personal information is embedded in a model's weights and that model is distributed, the data essentially becomes unretractable.

This leaves a stark choice: either GenAI companies must risk knowingly violating privacy laws, or society must weaken its privacy laws to accommodate the technical limitations of AI. The question is whether we value this specific form of technological progress more than the fundamental right to privacy.

F. Law Conclusion

The legal analysis has revealed that open-source GenAI faces many of the same risks and responsibilities as proprietary systems, and that exemptions based solely on openness are both problematic and potentially harmful. Beyond the law, however, open-source advocates often invoke broader public policy arguments to justify special treatment. The following section evaluates these policy claims, questioning whether open-source GenAI truly delivers on promises of market disruption, democratization, and societal benefit.

VI. Public Policy and Open Source

Beyond purely legal arguments, open-source GenAI entities often advance policy claims to justify exemptions from existing laws and regulations. Even when their practices do not align with the letter and spirit of applicable law, proponents argue that their work serves vital societal purposes. These advocates contend that open-source practitioners serve a greater good, even when their methods may undermine the intellectual property, contractual, and privacy rights of content creators—the very system that incentivizes the creation and sharing of data these GenAI systems require for training. For such proponents, the perceived benefits are so blindingly obvious and certain that ignoring the law is deemed entirely justified.

Open-source entities also often strive to match the capabilities of proprietary, state-of-the-art models. This mimicry is problematic because GenAI entities rely on model evaluations as a way to demonstrate progress and compare models. However, these evaluations tell us little about the ethical or responsible development

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[85] Samantha Cole, *Someone Made a Dataset of One Million Bluesky Posts for Machine Learning Research*, 404 Media (Oct. 18, 2023), https://www.404media.co/someone-made-a-dataset-of-one-million-bluesky-posts-for-machine-learning-research/.

[86] See, e.g., A. Feder Cooper et al, Machine Unlearning Doesn't Do What You Think: *Lessons for Generative AI Policy, Research, and Practice*, Preprint. Prior version presented at the 2nd Workshop on Generative AI + Law at ICML '24, https://arxiv.org/pdf/2412.06966

of models. Instead, model evaluation tends to focus on qualities most likely to influence adoption, such as toxicity, accuracy, bias, and user-friendliness. Few people will choose one model over another solely because it produces 10% fewer carbon emissions, but most users will opt for a model that is 10% more accurate. This adoption preference explains why the benchmarks most revered by GenAI entities are MMLU, HellaSwag, GSM8K, and ARC-C rather than the results of third-party environmental impact audits or assessments of the amount of publicly available and properly licensed data used in training. The focus on adoption is also why it's likely no coincidence that open-source GenAI entities lack public ethics charters, much less those with enforceable provisions.

Furthermore, an argument that open-source GenAI must be built irresponsibly, unethically, and illegally because it represents the only way to understand state-of-the-art LLMs is analogous to a biologist claiming they shouldn't need to experiment on worms or mice, just on humans, if they are ever to understand important aspects of human biology. Instead, the open-source community could utilize the vast amount of public domain and properly licensed material to the best of their ability. The practice of risking damage to the economy and environment should not be taken lightly or assumed as a given to conduct important and fundamental research.

Arguments frequently advanced by open-source proponents center on marketplace advantages, the democratization of a technology likened to humanity's most profound discoveries, environmental benefits, an unquestioning belief in technological progress, and how open source makes GenAI safer. This paper will critically examine each of these claims, demonstrating why such policy arguments do not warrant special legal exemptions for open-source GenAI. To be clear, the point of this section is not to say that there are *no* benefits from closed-source or open-source AI, or that open-source AI is categorically bad. Rather, the point is that there are no overwhelming benefits from open-source AI that justify relaxed ethical and legal standards.

First, this analysis will address claims that open-source GenAI inherently leads to market disruption and democratization. It will investigate whether these assertions hold true in absolute terms. If open-source models do not demonstrably increase market competition or democratize GenAI, then these arguments cannot justify preferential treatment.

Next, the article will pivot to a comparative analysis, evaluating whether open-source GenAI is truly superior to its proprietary counterparts in terms of environmental impact, innovation, and safety. This section will operate in relative terms because a lack of empirical data makes a review based on absolute terms impossible, and advocates for legal exemptions for open-source models implicitly argue for their inherent superiority over closed-source alternatives. Therefore, for these policy arguments to justify such exemptions, they must convincingly demonstrate that open-source GenAI offers a marked advantage over proprietary options in these areas.

A. Oligopolies and Open-Source GenAI

A common—but mistaken—assumption is that open source inherently boosts competition by eroding or preventing oligopolistic control by Big Tech companies in the GenAI market. The reasoning is that by open-

sourcing GenAI, startups and small companies can break free from dependence on tech giants such as Amazon, Google, Meta, Apple, and Microsoft, or directly compete with them.

Illustrating this perspective, *Wired* profiled Shawn Presser, the creator of the Books3 dataset at the center of some of the most consequential ongoing litigation. According to the article:

In his eyes, it leveled the playing field for smaller companies, researchers, and ordinary people who wanted to create large language models. He believes people who want to delete Books3 are unintentionally advocating for a generative AI landscape dominated solely by Big Tech-affiliated companies like OpenAI. "If you really want to knock Books3 offline, fine. Just go into it with eyes wide open. The world that you're choosing is one where only billion-dollar corporations are able to create these large language models," he says.[87]

While the notion of leveraging open source to disrupt established market power sounds compelling and noble in theory, it flops in practice. Books3 became available in October 2020, yet nearly five years later, only a handful of massively capitalized companies, including OpenAI, Google, Meta, and Microsoft, continue to dominate the GenAI landscape.

When commentators discuss open source as a means to disrupt large tech companies, they often envision it as the triumph of a scrappy underdog. However, history is replete with examples of for-profit companies using open-source software as a way to gain or maintain their competitive edge. In other words, being open-source, *per se*, is not the primary reason for market disruption, but rather a large, mostly closed-source for-profit using open-source as a tool to take on another large, mostly closed-source for-profit.

For example, numerous for-profit entities have funded open-source projects specifically to counteract their competitors. Consider IBM's billion-dollar strategic investment in Linux—a move designed not out of pure altruism, but to challenge its chief business adversary, Microsoft. An even more striking example is Google's Android operating system: by investing heavily in Android, Google transformed it into the world's most widely used mobile operating system, with each iteration reinforcing its ecosystem in its competition with Apple. Google Chrome's development follows a similar strategic narrative in its competition with Internet Explorer.

This pattern represents the norm rather than the exception when Big Tech is involved. Across multiple key technology sectors, despite the disruptive potential of open-source innovation, market concentration remains a dominant force. Consider these examples:

[87] Emma Barnett, *The Battle Over Books is Being Fought on Three Fronts*, WIRED (July 7, 2025), https://www.wired.com/story/battle-over-books3/.

Sector	Dominant Players	Market Share/Notes
Cloud Services	AWS (Amazon), Azure (Microsoft), Google Cloud (Google)	~63% market share[88]
Mobile Operating Systems	Android (Google), iOS (Apple)	~99.5% market share[89]
Desktop Computers Operating Systems	Windows (Microsoft), iOS (Apple)	~86% market share[90]
Datacenter AI Chips	Nvidia, Intel, AMD	~65%, 22%, and 11% respectively[91]
GenAI Platforms	ChatGPT (OpenAI), Microsoft Copilot, Gemini (Google)	~87% market share[92]
Social Media	Facebook/Instagram (Meta), TikTok (ByteDance), YouTube (Google)	Concentrated among a few large firms

[88] *Worldwide market share of leading cloud infrastructure service providers*, STATISTA (2019), https://www.statista.com/chart/18819/worldwide-market-share-of-leading-cloud-infrastructure-service-providers/.

[89] *Mobile Operating System Market Share Worldwide*, STATCOUNTER GLOBAL STATS (Feb. 2025), https://gs.statcounter.com/os-market-share/mobile/worldwide/#monthly-202502-202502-bar.

[90] *Desktop Operating System Market Share Worldwide*, STATCOUNTER GLOBAL STATS (Feb. 2025), https://gs.statcounter.com/os-market-share/desktop/worldwide/#monthly-202502-202502-bar.

[91] Data-Center AI Chip Market – Q1 2024 Update, TECHINSIGHTS (last visited July 7, 2025), https://www.techinsights.com/blog/data-center-ai-chip-market-q1-2024-update.

[92] Evan Bailyn, *Top Generative AI Chatbots by Market Share*, FIRST PAGE SAGE (Sept. 2024), https://firstpagesage.com/reports/top-generative-ai-chatbots/.

Another striking instance of open-source benefiting tech giants is AI development frameworks. These frameworks offer significant strategic advantages to their corporate creators, such as Meta (PyTorch) and Google (TensorFlow), by accelerating AI development and ensuring robust, predictable deployment. These companies leverage their frameworks to standardize AI construction, creating modular, "Lego-like" systems that enable seamless integration with their proprietary platforms. Google's TensorFlow exemplifies this strategy by optimizing for its Tensor Processing Unit (TPU) hardware, thereby bolstering its cloud AI computing dominance. Moreover, these frameworks serve as gateways to profitable services, allowing companies to shape researchers' and developers' work practices and ultimately define the trajectory of the AI field by cultivating user familiarity with their preferred ecosystem and seamlessly integrating externally created innovations into their proprietary, commercially driven products. This approach effectively outsources innovation and internal research and development.[93]

There is no compelling reason to believe that this trend of oligopolies dominating every profitable space will change due to the emergence of open-source GenAI projects. While the advantage of customizability in open source is real, most consumers and small businesses prioritize convenience over customizability. Using a production-ready API (e.g., from OpenAI) is often far more practical and more cost-effective than building a GenAI model from scratch or implementing and maintaining an open-source model. Thus, market forces continue to favor well-resourced, for-profit enterprises.

Moreover, Big Tech wields significant soft power. By strategically funding select researchers, sponsoring influential conferences, and shaping academic discourse, companies like Google, Microsoft, Nvidia, and Amazon effectively determine which research questions are pursued and which criticisms are voiced. As GenAI research becomes increasingly expensive and researchers become more dependent on Big Tech funding, these advantages further consolidate Big Tech's market dominance.

The following table illustrates the valuations of major players in the GenAI space before and after the debut of ChatGPT, which sparked the chatbot arms race. Predictably, the tech giants' valuations ballooned, far outpacing the gains of GenAI startups for reasons detailed below.[94]

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[93] Zuckerberg, M. & Crawford, D. First Quarter 2023 Results conference call (2023) ("[PyTorch] has generally become the standard in the industry […] it's generally been very valuable for us […] Because it's integrated with our technology stack, when there are opportunities to make integrations with products, it's much easier to make sure that developers and other folks are compatible with the things that we need in the way that our systems work."), https://s21.q4cdn.com/399680738/files/doc_financials/2023/q1/META-Q1-2023-Earnings-Call-Transcript.pdf

[94] It's true that the relative rate of growth is faster for the startups, but this is because it's easier to go from a small number to a bigger one than from a huge number to a huger one. If you have a baby and it grows from five pounds to ten pounds, that's a 200% growth, even though it only added five pounds! If you weigh 200 pounds and you add fifty more, that's just a 25% increase. But another way to think about it is: would you rather have an extra $300 billion or an extra $2 trillion? Finally, it's notable that, except for Hugging Face, only the Big Tech companies are profitable.

Company	Products	Valuation Q3 2022	Valuation 6/17/2025
Tech Giants			
Microsoft	CoPilot, Phi, Azure	$1.7 trillion[95]	$3.55 trillion
amazon	Titan, Bedrock	$1.1 trillion[96]	$2.29 trillion
Google	Gemini, Google Cloud	$1.2 trillion[97]	$2.15 trillion
Meta	Llama	$363 billion	$1.77 trillion
GenAI Startups			
OpenAI	ChatGPT, GPT-4, DALL-E	$1.5 billion[98]	$300 billion[99]

[95] *Microsoft Market Cap,* MACROTRENDS, https://www.macrotrends.net/stocks/charts/MSFT/microsoft/market-cap (last visited July 7, 2025).

[96] *Amazon Market Cap*, MACROTRENDS (last visited July 7, 2025), https://www.macrotrends.net/stocks/charts/AMZN/amazon/market-cap.

[97] *Google Market Cap*, MACROTRENDS (last visited July 7, 2025), https://www.macrotrends.net/stocks/charts/GOOGL/alphabet/market-cap

[98] Joanna Glasner, *The Biggest Funding Rounds for OpenAI and Silicon Ranch This Week*, CRUNCHBASE NEWS (Mar. 1, 2023, 11:24 AM PST), https://news.crunchbase.com/venture/biggest-funding-rounds-openai-silicon-ranch/#:~:text=If%20that%20occurs%2C%20OpenAI%20will%20have%20a%20post%2Dmoney%20valuation%20of%20%24300%20billion.&text=The%20company%20raised%20a%20%24103%20million%20Series,has%20raised%20%24350%20million%2C%20per%20the%20company.

[99] CNBC, *OpenAI Closes $40 Billion in Funding, the Largest Private Fundraise in History*, Softbank, ChatGPT (Mar. 31, 2025), https://www.cnbc.com/2025/03/31/openai-closes-40-billion-in-funding-the-largest-private-fundraise-in-history-softbank-chatgpt.html.

	Grok	Did not exist	$75 billion (targeted)[100]
	Claude	$5 billion[101]	$61.5 billion[102]
	Mistral Large, Mixtral	Did not exist.	$6 billion[103]
	Command R	Unknown (less than $2 billion)[104]	$5.5 billion[105]
	SmolLM	$2.2 billion[106]	$4.5 billion[107]

This data suggests that the CEO of Ai2 may have been overzealous about the headway open source can make. When DeepSeek's "reasoning" model debuted, he was quick to proclaim that "We're celebrating this

[100] Reuters, Musk's xAI Talks to Raise $10 Billion at $75 Billion Valuation, Bloomberg News Reports, (Feb. 14, 2025).

[101] *Google Invests $300 Million in Anthropic as Race to Compete with ChatGPT Heats Up*, VentureBeat (last visited July 7, 2025), https://venturebeat.com/ai/google-invests-300-million-in-anthropic-as-race-to-compete-with-chatgpt-heats-up/.

[102] *Anthropic Raises Series E at $61.5B Post-Money Valuation*, Anthropic (May 23, 2024), https://www.anthropic.com/news/anthropic-raises-series-e-at-usd61-5b-post-money-valuation.

[103] *What is Mistral AI? Everything to Know About the OpenAI Competitor*, TechCrunch (May 23, 2025), https://techcrunch.com/2025/05/23/what-is-mistral-ai-everything-to-know-about-the-openai-competitor/#:~:text=The%20$16.3%20million%20convertible%20investment,extension%2C%20implying%20an%20unchanged%20valuation.

[104] Cohere, *Wikipedia*, https://en.wikipedia.org/wiki/Cohere (last visited July 7, 2025).

[105] *Cohere Raises $500M to Beat Back Generative AI Rivals*, TechCrunch (July 22, 2024), https://techcrunch.com/2024/07/22/cohere-raises-500m-to-beat-back-generative-ai-rivals/.

[106] TechCrunch, Aug. 24, 2023, https://techcrunch.com/2023/08/24/hugging-face-raises-235m-from-investors-including-salesforce-and-nvidia/.

[107] Kyle Wiggers, *Hugging Face raises $235M from investors, including Salesforce and Nvidia*, TechCrunch (Aug. 24, 2023, 7:00 AM PDT), https://techcrunch.com/2023/08/24/hugging-face-raises-235m-from-investors-including-salesforce-and-nvidia/.

moment as a proof point that open source will win."[108] However, the evidence suggests that the Big Tech oligopoly is actually winning.[109] But even among small tech companies, the money mostly flows to just a handful of companies. As Axios notes, "In Q2, more than one-third of all U.S. venture dollars went to just five companies."[110]

The enduring market dominance of well-resourced companies stems from their role as indispensable suppliers of the essential components of the GenAI supply chain. Multiple levers favor Big Tech in the GenAI market, and none appears likely to be significantly challenged by open-source initiatives:

Lever	Notes
Network effects	Occurs when the value of a product or service increases as more people use it. Essentially, each new user adds value for existing users, creating a positive feedback loop that benefits all parties. This is the case with Hugging Face, where more users hosting and sharing more AI artifacts make the platform more valuable and useful.
Access to proprietary datasets	Companies such as Google (via YouTube), xAI (via X), and Meta (via Facebook and Instagram) benefit from exclusive datasets that power their AI models.
Capital resources	Training cutting-edge models—such as Gemini Ultra 1.0, which was estimated to cost $191 million to train[111]—is feasible only for companies with deep pockets. Moreover, many GenAI startups are not yet profitable.[112]

[108] Ali Farhadi, *Open Source Will Win: Allen Institute for AI CEO Ali Farhadi on the New Era of Artificial Intelligence*, GeekWire (Feb. 20, 2025), https://www.geekwire.com/2025/open-source-will-win-allen-institute-for-ai-ceo-ali-farhadi-on-the-new-era-of-artificial-intelligence/ (last visited July 7, 2025).

[109] Nvidia's stock dipped when DeepSeek debuted its models, but the stock recovered and is now at an all-time high, again demonstrating how undisruptable the tech giants are.

[110] Dan Patrick, *AI is Eating Venture Capital, or at Least its Dollars*, Axios (Jul. 3, 2025), https://www.axios.com/2025/07/03/ai-startups-vc-investments

[111] Stanford HAI, *2025 AI Index Report*, https://hai.stanford.edu/ai-index/2025-ai-index-report.

[112] https://techcrunch.com/2025/01/05/openai-is-losing-money-on-its-pricey-chatgpt-pro-plan-ceo-sam-altman-says/; https://venturebeat.com/ai/anthropic-raises-3-5-billion-reaching-61-5-billion-valuation-as-ai-investment-frenzy-continues/#:~:text=Revenue%20skyrockets%201%2C000%25%20year%2Dover,revenue%20multiple%20shows%20market%20maturation

Access to compute	Firms like xAI claim access to over 200,000 GPUs,[113] while Meta asserts that its infrastructure rivals the capacity of 600,000 H100 GPUs.[114]
No known business model that can usurp power from Big Tech	There is no known business model capable of eroding the integrated ecosystems of Big Tech; for example, it seems unlikely that Perplexity could unseat Google in the search market.
High-interest investment environment	This makes it more expensive for smaller companies to get the capital they need in order to develop GenAI that can compete with Big Tech
Access to markets: Google, Apple, Amazon, Meta, X, Samsung, etc.	Big Tech companies routinely secure preferential agreements—such as early access or discounted pricing—to integrate external models into their ecosystems. Examples include: ● OpenAI and Snapchat[115] ● xAI and Telegram[116] ● Gemini and Samsung (though Samsung may swap in Perplexity)[117]

[113] Lora Kolodny, *Elon Musk: xAI and Tesla to keep buying Nvidia, AMD chips*, CNBC (May 20, 2025, 4:28 PM EDT), https://www.cnbc.com/2025/05/20/elon-musk-says-he-expects-to-keep-buying-gpus-from-nvidia-and-amd.html#:~:text=If%20that%20occurs%2C%20OpenAI%20will%20have%20a%20post%2Dmoney%20valuation%20of%20$300%20billion.&text=The%20company%20raised%20a%20$103%20million%20Series,has%20raised%20$350%20million%2C%20per%20the%20company.

[114] https://engineering.fb.com/2024/03/12/data-center-engineering/building-metas-genai-infrastructure/#:~:text=The%20future%20of%20Meta's%20AI%20infrastructure&text=future%20of%20AI.-,By%20the%20end%20of%202024%2C%20we're%20aiming%20to%20continue,equivalent%20to%20nearly%20600%2C000%20H100s.

[115] Aisha Malik, *Snapchat Launches an AI Chatbot Powered by OpenAI's GPT Technology*, TechCrunch (Feb. 27, 2023), https://techcrunch.com/2023/02/27/snapchat-launches-an-ai-chatbot-powered-by-openais-gpt-technology/.

[116] Rita Liao, *xAI to pay Telegram $300M to integrate Grok into app*, TECHCRUNCH (May 28, 2025, 1:04 PM PDT), https://techcrunch.com/2025/05/28/xai-to-pay-300m-in-telegram-integrate-grok-into-app/.

[117] Wes Davis, *Google is paying Samsung an 'enormous sum' to preinstall Gemini*, The Verge (Apr 26, 2025), https://www.theverge.com/news/652746/google-samsung-gemini-default-placement-antitrust-trial (last visited July 7, 2025).; Jay McGregor, *Samsung Galaxy Phone, Tablet Free Perplexity AI Offer*, Forbes (June 23, 2025), https://www.forbes.com/sites/jaymcgregor/2025/06/23/samsung-galaxy-phone-tablet-free-perplexity-ai-offer/.

	• Perplexity and Motorola[118] and PayPal[119]
Access to top talent	The advanced expertise required to develop leading GenAI systems is in scant supply. In response, companies like Meta have offered compensation packages ranging from $10 million to $100 million—amounts that startups simply cannot match.[120]

Ultimately, the companies best positioned to dominate GenAI are those with control over the foundational infrastructure required for training, deployment, and commercialization. This reality becomes apparent when examining how just a handful of the largest companies continue to dominate critical segments of the GenAI development supply chain:

Compute Providers	• Amazon (AWS) • Google (Google Cloud) • Microsoft (Azure)
Proprietary Platforms for Data	• Amazon (Amazon.com) • Google (YouTube, Google search index) • Meta (Facebook, Instagram, Threads) • Microsoft (Bing search index)
Model Development	• Amazon (Titan) • Apple (MM1) • Google (Gemini, Gemma) • Meta (Llama) • Microsoft (Phi)

[118] Perplexity AI, *Announcing Our Global Partnership with Motorola*, perplexity.ai (last visited July 7, 2025), https://www.perplexity.ai/hub/blog/announcing-our-global-partnership-with-motorola#:~:text=Announcing%20Our%20Global%20Partnership%20with%20Motorola&text=We're%20excited%20to%20announce,our%20answer%20engine%20and%20assistant.

[119] *Perplexity and PayPal Partner to Provide Easy Payment Checkouts for Users*, REUTERS (May 14, 2025), https://www.reuters.com/business/media-telecom/perplexity-paypal-partner-provide-easy-payment-checkouts-users-2025-05-14/.

[120] Cade Metz and Mike Isaac, *Meta Debuts AI Lab to Pursue Superintelligence*, N.Y. Times (June 10, 2025), https://www.nytimes.com/2025/06/10/technology/meta-new-ai-lab-superintelligence.html.; Erin Woo, *Inside the Great AI Talent Auction: The Deals, the Free Agents—and the Egos*, The Information (June 27, 2025, 9:04 AM PDT), https://www.theinformation.com/articles/inside-great-ai-talent-auction-deals-free-agents-egos?utm_source=ti_app.

GenAI Partnerships / Investments / Agreements	• Amazon (Anthropic[121], Mistral AI[122], Cohere[123], Hugging Face[124]) • Google (Anthropic[125], Mistral AI[126], Cohere[127], Ai2[128], Hugging Face[129]) • Microsoft (OpenAI[130], Mistral AI[131], xAI,[132] Cohere[133])
Model Deployment Platforms	• Amazon (Bedrock) • Google (Vertex AI)

[121] Amazon, *Amazon completes $4B Anthropic investment to advance generative AI*, About Amazon (Mar. 27, 2024), https://www.aboutamazon.com/news/company-news/amazon-anthropic-ai-investment.

[122] *Amazon Bedrock adds Mistral AI models*, About Amazon (Mar. 1, 2024), https://www.aboutamazon.com/news/aws/mistral-ai-amazon-bedrock.

[123] Cohere, *Cohere Brings its Enterprise AI Offering to Amazon Bedrock*, Cohere (July 26, 2023), https://txt.cohere.com/amazon-bedrock/.

[124] Amazon, *AWS and Hugging Face collaborate to make generative AI more accessible and cost-efficient*, Aws Machine Learning Blog (Feb. 21, 2023), https://aws.amazon.com/blogs/machine-learning/aws-and-hugging-face-collaborate-to-make-generative-ai-more-accessible-and-cost-efficient/.

[125] Google Cloud, *Google Announces Expansion of AI Partnership with Anthropic*, Google Cloud Press Corner (Nov. 8, 2023), https://www.googlecloudpresscorner.com/2023-11-08-Google-Announces-Expansion-of-AI-Partnership-with-Anthropic.

[126] PYMNTS, Mistral AI Partners With Google Cloud to Distribute AI Solutions, Pymnts.com (Dec. 13, 2023), https://www.pymnts.com/news/artificial-intelligence/2023/mistral-ai-partners-with-google-cloud-distribute-solutions/

[127] Cohere, *Cohere is Available on the Google Cloud Marketplace*, TXT (last visited July 7, 2025), https://txt.cohere.com/cohere-is-available-on-the-google-cloud-marketplace/.

[128] Ai2, *Allen Institute for AI Announces Partnership with Google Cloud to Accelerate Open AI Innovation*, BusinessWire (Apr. 8, 2025), https://www.businesswire.com/news/home/20250408026138/en/Ai2-Allen-Institute-for-AI-Announces-Partnership-with-Google-Cloud-to-Accelerate-Open-AI-Innovation.

[129] Google Cloud & Hugging Face, *Google Cloud and Hugging Face Announce Strategic Partnership to Accelerate Generative AI and ML Development*, Pr Newswire (Jan. 25, 2024), https://www.prnewswire.com/news-releases/google-cloud-and-hugging-face-announce-strategic-partnership-to-accelerate-generative-ai-and-ml-development-302044380.html.

[130] Microsoft, *Microsoft and OpenAI Extend Partnership*, Microsoft On the Issues (Jan. 23, 2023), https://blogs.microsoft.com/blog/2023/01/23/microsoftandopenaiextendpartnership/.

[131] Microsoft, *Microsoft and Mistral AI announce new partnership to accelerate AI innovation and introduce Mistral Large first on Azure*, Azure Blog (Feb. 26, 2024), https://azure.microsoft.com/en-us/blog/microsoft-and-mistral-ai-announce-new-partnership-to-accelerate-ai-innovation-and-introduce-mistral-large-first-on-azure/.

[132] Erin Woo, *Microsoft Prepares to Host xAI's Grok Model on Azure*, The Information (May 1, 2025), https://www.theinformation.com/briefings/microsoft-prepares-host-xais-grok-model-azure.

[133] Jessica Toonkel & Aaron Holmes, *Microsoft to Sell AI From Cohere as Business Moves Beyond OpenAI*, The Information (Nov. 16, 2023), https://www.theinformation.com/briefings/microsoft-to-sell-ai-from-cohere-as-business-moves-beyond-openai

	• Microsoft (Azure ML Studio)
Self-Serving Market Access	• Google Gemini in Google Workspace[134] • Microsoft Copilot in Microsoft 365[135] and Windows 11[136]

Notably, research-focused organizations like Ai2, Stanford, and similar academic institutions lack sufficient quantities of all the key elements listed above to successfully compete with tech giants. The same limitation likely applies to virtually everyone who downloads the artifacts created and released by open-source entities. In short, radical openness is unlikely to have a meaningful impact on the existing power structure. The appealing rhetoric heard at high-level industry and thought leadership conferences and fireside chats cannot overcome the market forces that sustain the current technology ecosystem.

As noted in "Why Open AI Systems are Actually Closed and Why This Matters,"

But pinning our hopes on 'open' AI in isolation will not lead us to that world, and—in many respects—could make things worse, as policymakers and the public put their hope and momentum behind open AI, assuming that it will deliver benefits that it cannot offer in the context of concentrated corporate power.[137]

[134] Google Workspace, *Introducing Gemini for Google Workspace*, Google Workspace Blog (Feb. 21, 2024), https://workspace.google.com/blog/product-announcements/gemini-for-google-workspace.
[135] Microsoft, *Introducing Microsoft 365 Copilot – your copilot for work*, The Official Microsoft Blog (Mar. 16, 2023), https://blogs.microsoft.com/blog/2023/03/16/introducing-microsoft-365-copilot-your-copilot-for-work/.
[136] Microsoft, *Microsoft Copilot improvements for Windows 11*, Windows Experience Blog (Feb. 29, 2024), https://blogs.windows.com/windowsexperience/2024/02/29/microsoft-copilot-improvements-for-windows-11/.
[137] Jeffrey I. Katz et al., *Computing the Future: The need for sustainable and equitable access to large-scale AI infrastructure*, 628 Nature 238 (2024), https://www.nature.com/articles/s41586-024-08141-1.

B. Democratization and Open-Source GenAI

Numerous entities claim to be democratizing GenAI in some fashion, including Meta,[138] the National Artificial Intelligence Research Resource (NAIRR),[139] Amazon,[140] H2O.ai,[141] Microsoft,[142] Hugging Face,[143] Stability AI,[144] and Google.[145] Yet, these assertions often amount to rebranding select open-source initiatives rather than achieving genuine democratization.[146] While openness is a crucial component, it represents only a means to an end—a necessary but insufficient condition for genuine democratization.

Their claims raise a critical question: Which actions of these GenAI entities actually democratize GenAI? For example, releasing code may make it available to the masses, but it overlooks an important caveat. If the masses lack the necessary knowledge to use, modify, and examine the data, code, and weights, the increased accessibility does not equate to democratization. Instead, most acts of "democratizing AI" focus on democratizing AI for people who already possess relevant expertise or have the time and resources to acquire

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[138] Meta, *Democratizing Access to Large-Scale Language Models with OPT-175B*, Meta AI, https://ai.meta.com/blog/democratizing-access-to-large-scale-language-models-with-opt-175b/ (last visited July 7, 2025); Meta, *Democratizing Conversational AI Systems Through New Data Sets and Research*, Meta AI, https://ai.meta.com/blog/democratizing-conversational-ai-systems-through-new-data-sets-and-research/ (last visited July 7, 2025).

[139] CIO, Forbes Staff and Megan Poinski, *New Federal Program Aims To Democratize AI Research And Development*, Forbes (Jan. 25, 2024), https://www.forbes.com/sites/cio/2024/01/25/new-federal-program-aims-to-democratize-ai-research-and-development/; Will Henshall, *The U.S. Just Made a Crucial Step Toward Democratizing AI Access*, TIME (last visited July 7, 2025), https://time.com/6589134/nairr-ai-resource-access/.

[140] Amazon, *Siemens and AWS Join Forces to Democratize Generative AI in Software Development*, aboutamazon.com, (Mar. 2024), https://press.aboutamazon.com/aws/2024/3/siemens-and-aws-join-forces-to-democratize-generative-ai-in-software-development; Amazon, *Democratizing generative AI to inspire diverse innovation: Insights from AWS executive Dave Levy*, AWS Public Sector Blog, aws.amazon.com, https://aws.amazon.com/blogs/publicsector/democratizing-generative-ai-to-inspire-diverse-innovation-insights-from-aws-executive-dave-levy/

[141] H2O.ai, *Democratizing AI*, H2O.ai, https://h2o.ai/insights/democratizing-ai/ (last visited July 7, 2025).

[142] Microsoft, *Democratizing AI - Stories*, *Microsoft News* (last visited July 7, 2025), https://news.microsoft.com/features/democratizing-ai/; Microsoft, *Democratizing AI: Satya Nadella on AI Vision and Societal Impact at DLD*, *Microsoft News* (Jan. 17, 2017), https://news.microsoft.com/europe/2017/01/17/democratizing-ai-satya-nadella-shares-vision-at-dld/.

[143] Hugging Face, *Intel and Hugging Face Partner to Democratize Machine Learning Hardware Acceleration*, Hugging Face (Mar. 28, 2023), https://huggingface.co/blog/intel.

[144] Emad Mostaque, *Democratizing AI, Stable Diffusion & Generative Models*, Scale Events (2022), https://exchange.scale.com/public/videos/emad-mostaque-stability-ai-stable-diffusion-open-source.

[145] Google, *Democratizing Access to AI-Enabled Coding with Colab*, Google AI Blog (Mar. 23, 2023), https://blog.google/technology/ai/democratizing-access-to-ai-enabled-coding-with-colab/.

[146] Merriam-Webster defines democratization as "to make democratic." The version of "democratic" at issue here is "relating, appealing, or available to the broad masses of the people: designed for or liked by most people" and "especially: organized or operated so that all people involved have power, influence, etc."

the necessary skills. This population is probably fewer than 100,000 people globally, or a fraction of a percent of the world's population.[147]

In other words, GenAI is only democratized if a broad enough swath of people can effectively utilize it. Providing a laptop to a chicken does not democratize technology. Similarly, supplying GenAI artifacts to people unacquainted with the technology does not meaningfully democratize GenAI. Furthermore, if the model trains exclusively on English text (or some small number of languages), so that its outputs are primarily English, then the model serves only those people literate in English, which hardly seems democratic when considering a global audience.[148] For context, only approximately 17% of the world's population *speaks* English, and not all speakers can *read* it.[149]

Data from Cloudflare further illustrates this disparity: only one country accounted for more than 10% of internet traffic to GenAI websites in March 2025 — the United States, at 22.7%. The next closest country only represented 8.3%. Of countries representing at least 3% of the traffic, four were newly industrialized nations, and five were fully industrialized. The first African country doesn't appear on the list until number 32–Egypt–with a 0.7% share.[150]

GenAI is not democratized if it remains inscrutable to most people, and they lack a voice in what is being built or how data is used. True democratization of GenAI demands more than mere access or basic literacy. It requires comprehensive education about how GenAI works, its applications, and its societal impact. Democratization should empower people not only to interact with basic products like chatbots but to download, modify, and even fine-tune GenAI models. It must also enable non-technologists to understand what's happening, what data is employed, and the rationale behind methodological choices.[151] The mere fact that thousands of open-source models exist on platforms like Hugging Face means nothing to almost everyone globally. Similarly, a technical paper intended solely for experts contributes little to broader knowledge dissemination; rather, information must be communicated using accessible terminology, relatable examples, and clear analogies that resonate with a broader audience.[152]

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[147] Gradient Flow, *Where Do Machine Learning Engineers Work?*, https://gradientflow.com/where-do-machine-learning-engineers-work/#:~:text=There%20are%20over%2010%2C000%20people,their%20current%20or%20previous%20roles (last visited July 7, 2025).); the conservative 100,000 number used in this paper is 5x what Gradient Flow indicates

[148] *See, e.g.,* Luca Soldaini, Ai2 Dolma: 3 trillion token open corpus for language model pretraining, Allen Ai Blog (Aug. 18, 2023), https://allenai.org/blog/dolma-3-trillion-tokens-open-llm-corpus-9a0ff4b8da64.

[149] 2022 World Factbook Archive, Central Intelligence Agency, https://www.cia.gov/the-world-factbook/about/archives/2022/countries/world/ (last visited July 7, 2025).

[150] Zaid Zaid & Vincent Voci, *Global expansion in Generative AI: a year of growth, newcomers, and attacks*, The Cloudflare Blog (Mar. 10, 2025), https://blog.cloudflare.com/global-expansion-in-generative-ai-a-year-of-growth-newcomers-and-attacks/.

[151] Democratization probably also requires sharing "negative knowledge"—lessons learned from what didn't work—to guide future research and help others avoid similar pitfalls.

[152] For example, ask a college-educated layperson to read *2 OLMo 2 Furious* and explain what's going on. They almost certainly won't be able to explain even a third of the paper.

Unsurprisingly, relatively few people utilize even the most comprehensive free fine-tuning resources, such as Ai2's Tulu 3 collection, which includes training repositories, evaluation repositories, datasets, models, a demo, and an explanatory technical paper.[153] You can (attempt to) lead the public to GenAI democratization by open-sourcing an obscure model on a niche website, but you cannot make them discover it and understand how to use it.

Elements Necessary for Democratization of GenAI:

The most helpful framework for evaluating open-source GenAI consists of the fourteen elements discussed in Rethinking Open Source Generative AI[154]:

	Component	Description
1	Base Model Data	Are data sources for training the base model comprehensively documented and freely made available? If a distinction between base (foundation) and end (user) models is not applicable, this mirrors the end-user model data entries.
2	End User Model Data	Are data sources for training the model that the end user interacts with, including fine-tuning data, comprehensively documented and made available?
3	Base Model Weights	Are the weights of the base models made freely available? If a distinction between base (foundation) and end (user) models is not applicable, this mirrors the end-user model data entries.
4	End User Model Weights	Are the weights of the model that the end user interacts with made freely available?
5	Training Code	Is the source code of the dataset processing, model training, and tuning comprehensively made available?
6	Code Documentation	Is the source code for the data source processing, model training, and tuning comprehensively documented?
7	Hardware Architecture	Is the hardware architecture used for data source processing and model training comprehensively documented?

[153] Hugging Face, *Llama-3.1-Tulu-3-8B*, https://huggingface.co/allenai/Llama-3.1-Tulu-3-8B (last visited July 7, 2025).

[154] Andreas Liesenfeld & Mark Dingemanse, *Rethinking open source generative AI: open-washing and the EU AI Act*, FAccT 1774, 1774-1787 (2024), https://dl.acm.org/doi/10.1145/3630106.3659005.

8	Preprint	Are archived preprints(s) available that detail all major parts of the system, including data source processing, model training, and tuning steps?
9	Paper	Are peer-reviewed scientific publications available that detail all major parts of the system, including data source processing, model training, and tuning steps?
10	Model Card	Is a model card in a standardized format available that provides comprehensive insight into model architecture, training, fine-tuning, and evaluation?
11	Datasheet	Is a datasheet, as defined in "Datasheets for Datasets" (Gebru et al., 2021), available?
12	Package	Is a packaged release of the model available on a software repository (e.g., a Python Package Index, Homebrew)?
13	API and Meta Prompts	Is an API available that provides unrestricted access to the model (other than security and CDN restrictions)? If applicable, this entry also collects information on the use and availability of meta prompts.
14	Licenses	Is the project fully covered by Open Source Initiative-approved licenses, including all data sources and training pipeline code?

However, these fourteen elements address only the traditional artifacts that facilitate access; they do not encompass the additional enablers required for true democratization. Even if an entity releases data, code, weights, or related artifacts (or any combination thereof), they rarely provide the necessary GPUs, engineering infrastructure, and talent necessary to use them effectively. Without this complete package, leveraging the components above becomes prohibitively complex and expensive.

Each of the following components is also essential for effective utilization of the artifacts above.

Component	Description
Computational power	Training leading models requires immense, expensive computing resources.
Money	Substantial monetary resources are needed not only for computational power but also to sustain ongoing development and innovation.
A labor force	● Data annotation (and the data itself)

	• RLHF (and that fine-tuning data) • AI "tutors" (and their prompts) • Content moderation (trust and safety)
Expertise to know how to use all the above[155]	Technical proficiency and domain-specific knowledge are indispensable for effectively harnessing all the above. Without such expertise, even a full suite of tools and infrastructure remains underutilized. • Engineers • Software developers • Product developers • Maintenance • R&D
A voice in decision-making	It cannot be a democratized outcome if there is no democratic process for deciding what is created, by whom, and for what purposes.

As David Gray Widder, a postdoctoral fellow at Cornell Tech, observed, "Even maximally open A.I. systems do not allow open access to the resources necessary to 'democratize' access to A.I., or enable full scrutiny."[156]

Human Labor

The human workforce necessary to produce model outputs relies heavily on precarious workforces. Even if all the data created by these workforces were released alongside the models, it remains unclear how this approach aligns with the principles of democratization. Exploitative labor practices —such as paying minimal wages, providing limited job security, and exposing contractors to tedious and toxic content for extended periods— more closely resemble colonialism than democratic participation.[157]

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[155] Reuters, *OpenAI, Google, xAI Battle for Superstar AI Talent, Shelling Out Millions*, May 21, 2025, https://www.reuters.com/business/openai-google-xai-battle-superstar-ai-talent-shelling-out-millions-2025-05-21/.

[156] Kalley Huang, *What Is 'Openwashing' in AI?*, N.Y. Times (May 17, 2024), https://www.nytimes.com/2024/05/17/business/what-is-openwashing-ai.html.

[157] *See, e.g.*, Josh Dzieza, *The human cost of AI*, The Verge (June 21, 2023), https://www.theverge.com/features/23764584/ai-artificial-intelligence-data-notation-labor-scale-surge-remotasks-openai-chatbots; Billy Perrigo, *Inside Facebook's African Sweatshop*, Time (Feb. 17, 2022), https://time.com/6147458/facebook-africa-content-moderation-employee-treatment/.; Billy Perrigo, *OpenAI Used Kenyan Workers Earning Less Than $2 Per Hour to Make ChatGPT Less Toxic*, Time (Jan. 18, 2023), https://time.com/6247678/openai-chatgpt-kenya-workers/.; Karen Hao and Deepa Seetharaman, *ChatGPT, OpenAI Content Abusive, Sexually Explicit Harassment, Kenya Workers on Human Workers*, *Wall Street Journal* (last visited July 7, 2025), https://www.wsj.com/tech/chatgpt-openai-content-abusive-sexually-explicit-harassment-kenya-workers-on-human-workers-cf191483.; Christian Shepherd & Shibani Mahtani, *The Dark Side of AI: Exploiting the*

To satisfy the portion of democratization requiring that GenAI development is "organized or operated so that all people involved have power, influence, etc." would demand transparency about the entire operational process, including disclosures regarding how data was collected, how annotators provided feedback, where human laborers were located, and how these individuals were compensated. If the system is characterized by one-sided power dynamics, exploitation, and limited upward mobility, it is unlikely to be democratized.

Why Not Democratize GenAI?

Several factors might discourage companies from pursuing truly democratized AI systems. The reasons vary, but the primary concern typically involves protecting trade secrets and confidential information. Trade secrets are information that satisfies three criteria: (1) the information is not generally known (hence, secret), (2) the information provides economic value (hence why one might want to keep it secret), and (3) reasonable measures are taken to maintain the secret.

Consider reinforcement learning from human feedback (RLHF), which is what most human laborers in the preceding section contribute to. The process is extremely resource-intensive, often requiring the contributions of thousands of people worldwide, and costs many millions of dollars. Yet, despite its broad applicability across various models and enduring relevance, RLHF feedback typically remains proprietary, even when companies decide to open-source other portions of their AI systems. Most open-source GenAI entities use a handful of off-the-shelf datasets, which just further homogenize the field.

Decision-making processes within open-source organizations offer additional insight into the limitations of democratization. Unsurprisingly, leadership and decision-making roles are overwhelmingly occupied by homogenous groups—predominantly individuals from WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries—with minimal direct input from broader communities impacted by these decisions.[158] Their business partners, too, tend to represent exclusive, elite circles rather than local governments or public interest organizations.[159]

Despite these criticisms, and although open-source initiatives do not increase democratization to the extent advocates claim, this limitation does not negate *all* democratizing effects or render open-source inherently problematic. But the claims that open source will lead to an ideal world of democratized artificial intelligence simply by making data, code, weights, and evaluations available are, at best, overly optimistic.

Moreover, one might question whether complete democratization of such transformative technology is entirely desirable. As *Ars Technica* observes, "With [Google's] Veo 3's ability to generate convincing video with synchronized dialogue and sound effects, we're not witnessing the birth of media deception—we're

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Poor to Train Models, WASH. POST (Aug. 28, 2023), https://www.washingtonpost.com/world/2023/08/28/scale-ai-remotasks-philippines-artificial-intelligence/.

[158] *See, e.g.,* Allen Institute for AI*, About*, allenai.org, https://allenai.org/about (last visited July 7, 2025).

[159] *See*, *e.g.*, https://allenai.org/

seeing its mass democratization. What once cost millions of dollars in Hollywood special effects can now be created for pocket change."[160] Safety is discussed more thoroughly below.

C. Environmental Impact and Open-Source GenAI

Another assertion holds that open-source GenAI models are more environmentally friendly than their closed-source counterparts. The basic premise is that open-source models save people from having to train their own models, thereby avoiding the environmental costs associated with such training. However, this perspective often overlooks the practical realities of deployment and human behavior patterns that emerge at scale.

As with other policy topics in this section, the argument here is not that open-source is especially bad for the environment, but that open-source is not especially better for the environment than closed-source models, and therefore is no more deserving of regulatory leniency than closed-source providers. The analysis that follows contends that closed-source models, due to their centralized control, optimized infrastructure, and powerful economic incentives for efficiency at scale, may lead to a lower overall environmental footprint than the fragmented, often suboptimal, and widely proliferated nature of open-source deployments.

A key goal of open-source initiatives is to enable and encourage others to build their own models. While releasing these artifacts openly may help others understand model development and functionality, it can also produce unintended environmental consequences. This outcome directly contradicts the public statements of many open-source entities regarding environmental responsibility and their commitments to mitigating environmental harm.[161] As GenAI becomes easier and cheaper to develop, increasing numbers of individuals and organizations will inevitably experiment with and deploy these models. In aggregate, millions of instances running on diverse hardware—from older GPUs and consumer-grade CPUs to personal laptops—result in dramatically increased compute demands, substantially higher electricity usage, and significantly greater water consumption for cooling. While fine-tuning an open model (such as Mistral or Llama) requires fewer computational resources than full pre-training, the collective environmental impact can still be substantial. If open-source entities genuinely seek to benefit humanity through their work, it's unclear how they adequately account for this environmental impact in their cost-benefit calculations.

The scale of this environmental burden becomes apparent when examining concrete data. Currently, neither open-source nor closed-source GenAI approaches come close to offsetting their carbon emissions through efficiencies gained elsewhere; therefore, the discussion primarily revolves around which types of models emit more carbon.[162]

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[160] Benj Edwards, *AI Video Just Took a Startling Leap in Realism. Are We Doomed?*, ARS TECHNICA (May 29, 2025), https://arstechnica.com/ai/2025/05/ai-video-just-took-a-startling-leap-in-realism-are-we-doomed/.

[161] *See, e.g.,* Sasha Luccioni, Bruna Trevelin, & Margaret Mitchell*, The Environmental Impacts of AI -- Policy Primer,* Hugging Face Blog*,* https://huggingface.co/blog/sasha/ai-environment-primer; AI for the Environment, AllenAI, https://allenai.org/ai-for-the-environment.

[162] While models may improve in efficiency, *reducing* carbon emissions is not the same as achieving *zero* or *negative* carbon emissions—a critical distinction often overlooked in industry discourse.

In one of the few comprehensive analyses on the topic, researchers from Ai2 estimate that creating their OLMo 7B[163] model emitted seventy tons of carbon dioxide.[164] They also estimate that Meta's Llama 3.1 8B produced 420 tons of carbon emissions.[165]

Model	Total GPU Power (MWh)	Power Usage Effect.	Carbon Intensity	Carbon Emissions	Water Usage Effect.	Total Water Usage (kL)
Llama 2 7B	74	1.1	-	31	1.29 - 4.26	105 - 347
Llama 3.1 8B	1,022	1.1	-	420	1.29 - 4.26	1,450 - 4,823
OLMo 7B	104	1.1	0.610	70	4.26	487
OLMo 2 7B	131	1.2	0.332	52	1.29	202
OLMo 2 13B	257	1.12	0.351	101	3.10	892
Molmo 7B	1.4	1.2	0.332	0.5	1.29	2.1
Molmo 13B	2.0	1.2	0.332	0.8	1.29	3.2
Total (new models)	391	-	-	154	-	1,099

For perspective, Ai2 and Carnegie Mellon University researchers note that OLMo 7B's energy usage would have been enough to power an average U.S. home for 13 years and 6 months.[166] Llama 3.1 8B required enough energy to power a house for 83 years.[167]

It's important to note that these are relatively small models, and they reflect only models that were released (i.e., they exclude failed runs or underperforming models that companies chose not to release). For context, Meta also offers 70B and 405B models, which certainly required far more energy to train and emitted significantly more carbon dioxide. Currently, there is no evidence to suggest that large GenAI models are carbon-negative or that they will ever become so.

[163] The B stands for billion. OLMo 7B has seven billion parameters, which is how we compare model sizes. So, Llama 70B is ten times bigger than OLMo 7B.

[164] Pete Walsh et al., *2 OLMo 2 Furious* (Jan. 15, 2025), https://arxiv.org/pdf/2501.00656#page=27.77

[165] *Id.*

[166] Jacob Morrison et al., Holistically Evaluating the Environmental Impact of Creating Language Models (Mar. 3, 2025), https://arxiv.org/html/2503.05804v1

[167] The massive difference in energy requirements despite the small difference in model size was because Llama trained on many trillions more tokens and used an energy grid that burned more fossil fuels.

Table 1: We developed our models in five groups, based on parameter count and architecture: less than 1 billion, 1 billion, 7 billion, and 13 billion parameters, and our mixture-of-experts model with 1 billion active and 7 billion total parameters. We found that ~70% of our developmental environmental impact came from developing the 7B and 13B models, and the total impact was emissions equivalent to 2.1 tanker trucks' worth of gasoline, and equal to about 7 and a half years of water used by the average person in the United States.

	GPU Hours	Total MWh	# Runs	Carbon Emissions (tCO_2eq)	Equivalent to... (energy usage, 1 home, U.S.)	Water Consumption (kL)	Equivalent to... (water usage, 1 person)
<1B	29k	19	20	6	1 yr, 4 mo	24	3 mo
7B	269k	196	375	65	13 yrs, 6 mo	252	2 yrs, 7 mo
13B	191k	116	156	46	9 yrs, 7 mo	402	3 yrs, 7 mo
MoE	27k	19	35	6	1 yr, 4 mo	24	3 mo
Total	680k	459	813	159	33 yrs, 1 mo	843	7 yrs, 5 mo

Table 2: We list the estimated power usage, carbon emissions, and water consumption from training our dense transformers, ranging from 20 million to 13 billion parameters, trained on 1.7 to 5.6 trillion tokens, and a mixture-of-experts model with 1 billion active and 7 billion total parameters, trained to 5 trillion tokens. We find that the environmental impact is quite high, even for our relatively small models. Training our series of models emitted equivalent carbon to over 65 years of electricity use by the average household in the U.S., and consumed equivalent water to the average person in the U.S. for about 17 years.
* One of the original OLMo 7B models was trained on LUMI, which runs entirely on hydroelectric power. See Groeneveld et al. (2024) for more information.
† denotes unreleased models that were trained for various internal experiments.

	Power Usage (MWh)	Carbon Emissions (tCO_2eq)	Equiv. to... (energy usage, 1 home, U.S.)	Water Consumption (kL)	Equiv. to... (water usage, 1 person, U.S.)
Gemma 2B & 9B	-	131	25 yrs, 11 mo	-	-
Llama 2 7B	81	31	6 yrs, 1 mo	-	-
Llama 2 13B	162	62	12 yrs, 2 mo	-	-
Llama 3.1 8B	-	420	83 years	-	-
Llama 3.2 1B	-	107	14 years	-	-
OLMo 20M†	0.8	0.3	3 weeks	1	3 days
OLMo 60M†	1.2	0.4	1 month	1.6	5 days
OLMo 150M†	2.4	1	2 mo, 1 wk	3.6	12 days
OLMo 300M†	5	2	5 months	5.9	19 days
OLMo 700M†	8	3	7 months	10	33 days
OLMo 7B†	67	22	4 yrs, 4 mo	87	9 months
OLMo 1B (3T)	30	10	2 years	39	4 months
OLMo 7B	149	0*	-	0*	-
OLMo 7B (Twin)	114	70	13 yrs, 10 mo	487	4 yrs, 4 mo
OLMo (04|07)24 7B	95	32	6 yrs, 4 mo	122	1 yr, 1 mo
OLMo 2 7B	157	52	10 yrs, 4 mo	202	1 yr, 9 mo
OLMo 2 13B	230	101	21 years	892	7 yrs, 10 mo
OLMoE 0924	54	18	3 yrs, 7 mo	70	7 months
Total (Ours)	913	312	65 years	1,921	17 yrs, 1 mo

One of the primary weaknesses of the open-source argument lies in its potential for uncontrolled proliferation and redundant inference. While open-source models might reduce the need for multiple companies to redundantly train foundational models, they dramatically increase the potential for redundant inference and suboptimal deployment. A closed-source model provider typically invests enormous resources in developing highly optimized, centralized infrastructure designed for maximum efficiency per inference. This includes

leveraging massive economies of scale in large data centers, which feature highly efficient power delivery, advanced cooling systems (such as liquid cooling), and specialized hardware (like custom ASICs or the latest GPUs) that are economically prohibitive or impractical for individual open-source users and small organizations to acquire.

Furthermore, these providers continuously fine-tune their entire inference pipeline, from network latency to model serving architecture, to minimize energy consumption per query. They utilize sophisticated load balancing and resource sharing to ensure that compute resources operate at near-peak efficiency, thereby avoiding costly idle power draw. In stark contrast, the free availability of open-source models leads to their widespread and fragmented deployment, where millions[168] of individual instances inevitably run on diverse, often inefficient hardware, usually connected to less efficient residential electricity grids. Each of these instances experiences significant idle power consumption when not actively in use or may be running on a machine that is not primarily dedicated to AI tasks but nevertheless consumes power. This phenomenon means users frequently run models unnecessarily, experiment without clear objectives, or host redundant instances across different personal devices. Critically, no central entity is incentivized to optimize the collective energy consumption of all these disparate open-source deployments; each user acts independently, often prioritizing ease of access or individual cost over global environmental efficiency. The cumulative impact of this "long tail" of millions of small, inefficient deployments can easily outweigh the concentrated efficiency of a few large, highly optimized closed-source operations.

Additionally, open-source models inherently obscure and diffuse environmental responsibility. While the initial entity that trains and releases a foundational model might report its training costs, the vast majority of ongoing inference energy consumption is spread across countless users, rendering it largely untraceable and unreported. In practice, no mechanism exists to aggregate the energy consumption of millions of disparate open-source deployments; an individual running a model on their laptop typically does not track their specific carbon footprint from that activity. This distributed nature also makes it exceedingly difficult to regulate or implement green practices across an uncoordinated global network of individual users. Consequently, the "out of sight, out of mind" effect means that the collective environmental impact of open-source AI becomes virtually invisible and irrelevant to any single actor, almost certainly leading to a higher overall, yet unacknowledged, ecological burden per user.

While some might argue that market forces will eventually optimize these inefficiencies, it's unclear whether this outcome is even theoretically preventable. We can only hope that the open-source entities are correct in their assertion that GenAI is worth the carbon emissions, water usage, electricity rate increases, environmental destruction from clear-cutting forests to build data centers, and the opportunity cost of focusing capital on such construction rather than on other pressing societal issues. However, the evidence suggests otherwise: the benefits have not offset the costs, and the trendline does not indicate they ever will.

[168] As noted above, Hugging Face hosts over a million open AI models. Additionally, Meta claims its Llama models have been downloaded over a billion times. Haje Jan Kamps, *Meta says its Llama AI models have been downloaded 1.2B times*, TECHCRUNCH (Apr. 29, 2025), https://techcrunch.com/2025/04/29/meta-says-its-llama-ai-models-have-been-downloaded-1-2b-times/.

A more responsible approach would require open-source entities to either develop a compelling justification for researching state-of-the-art general-purpose GenAI specifically, rather than focusing on other forms of AI that offer demonstrable benefits not already provided by tech giants,[169] or to switch to more focused models with clearly foreseeable benefits. GenAI not only likely commands the bulk of technical and financial resources from its developers but also probably represents the primary source of legal and reputational risks.

In summary, the theoretical energy savings from open-source models may appear viable only under highly disciplined and specialized conditions, while broader, unmanaged proliferation will almost certainly result in a larger net negative impact on the planet relative to open-source GenAI.

D. Innovation and Open-Source GenAI

Open-source GenAI is no closer to solving meaningful problems, such as disease, poverty, or global warming, than its closed-source counterparts. Moreover, most major breakthroughs in GenAI technology development, as well as building applications on top of GenAI models developed by others, have originated from the proprietary sector rather than open-source initiatives. This isn't to say that open-source does not lead to *any* innovation, just that it is far from clear that it leads to *more* innovation than the proprietary sector, thereby justifying looser oversight of open-source GenAI.

Here, innovation includes novel developments that add meaningful value to society through widespread adoption and application. While the narrative of open-source GenAI as the ultimate engine of innovation and societal progress is superficially compelling, it has critical limitations and potential drawbacks that warrant serious examination. Logic suggests that closed-source models, precisely due to their centralized control, concentrated resources, and inherent accountability mechanisms, are demonstrably more effective at driving responsible and impactful innovation for broader societal benefit. The very democratization lauded in open-source discourse can inadvertently lead to the proliferation of unsafe or suboptimal applications, a diffusion of critical resources, and a fragmentation of effort that ultimately hinders, rather than accelerates, genuine progress.

First, true cutting-edge innovation in GenAI consistently demands immense, concentrated resources and long-term strategic vision that are almost exclusively held by large, well-funded organizations operating with a closed-source model. Ai2's CEO, Ali Farhadi, has stated his position on open-source and innovation unequivocally: "The biggest threat to AI innovation is the closed nature of the practice."[170] However, this assertion appears to be contradicted by empirical evidence. Without open-source, he seems to suggest, the companies developing closed-source models that have consistently outpaced open-source models will, for

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[169] *See, e.g., See also* Allen Institute for AI, EarthRanger, *available at* https://allenai.org/earthranger (last visited July 7, 2025); Allen Institute for AI, Skylight, *available at* https://allenai.org/skylight (last visited July 7, 2025); Allen Institute for AI, Wildlands, *available at* https://allenai.org/wildlands (last visited July 7, 2025); Allen Institute for AI, Climate Modeling, *available at* https://allenai.org/climate-modeling (last visited July 7, 2025).

[170] Mark Sullivan, *Why Ai2's Ali Farhadi advocates for open-source AI models*, FAST COMPANY (Feb. 24, 2025), https://www.fastcompany.com/91283517/ai2s-ali-farhadi-advocates-for-open-source-ai-models-heres-why.

unexplained reasons, stop innovating. Yet developing foundation models requires staggering computational power, vast proprietary datasets, and access to the world's top AI talent – resources that are simply unattainable for individual developers or small open-source communities. Building on top of open-source models comes with its own challenges, including the costs of computation, typically a reliance on public datasets, limited access to markets, limited time horizons to achieve a breakthrough (mostly due to financial constraints), and the upkeep and quality control necessary to maintain systems (usually reliant on volunteers). These concentrated investments enable unprecedented breakthroughs, leaps in model capabilities, and the kind of foundational research that genuinely pushes the boundaries of AI. While open-source projects can fine-tune and iterate on existing models, the most significant, expensive, and often transformative leaps consistently originate from environments where resources can be aggregated and directed with a singular focus on grand challenges. The open-source community undeniably benefits from these developments but rarely initiates them.

Second, the quality, reliability, and long-term sustainability of innovation are more consistently achieved through closed-source development. Proprietary models undergo rigorous internal testing, extensive quality assurance, and are designed for robust and reliable performance in critical applications. Commercial imperatives and user expectations for stability and support drive this meticulous engineering. Open-source projects, while potentially vibrant, frequently suffer from fragmentation, inconsistent maintenance, varying documentation quality, and a lack of clear support channels. For meaningful societal progress, particularly in sensitive sectors such as healthcare, infrastructure, or finance, reliability and trust are non-negotiable. Deploying a potentially unstable or poorly maintained open-source model, regardless of its purported innovation, can lead to catastrophic failures, systematically eroding public trust in AI, and significantly hindering its responsible integration into society. The long-term economic incentive for closed-source developers to maintain and continually evolve their products leads to more sustained and dependable innovation cycles.

Third, while open-source GenAI theoretically promotes wide accessibility, it also introduces substantial "noise" that obscures the "signal" and potentially disincentivizes foundational investment. The overwhelming volume of redundant or low-quality open-source projects makes it extremely challenging to identify genuinely transformative innovations, paradoxically slowing collective progress by overwhelming users and researchers with options that may be neither robust nor well-maintained. Furthermore, the lack of robust intellectual property protection inherent in open-source models actively disincentivizes the colossal investments required for pioneering research and development by the very entities most capable of making profound breakthroughs. The economic logic is straightforward: why invest billions in creating a revolutionary model if competitors can immediately commoditize their core intellectual value? This dynamic leads to a focus on incremental improvements rather than bold, high-risk, high-reward foundational research that typically defines genuine societal progress. From this perspective, controlled innovation, guided by significant investment and clear accountability, will ultimately yield more stable, impactful, and trustworthy AI advancements that benefit society.

Finally, the paramount concern with open-source GenAI's unrestricted access is the heightened risk of misuse and the proliferation of potentially harmful applications, which directly undermines any claims of societal progress. While closed-source developers must grapple with the ethical deployment of their models, their centralized control enables stricter guardrails, content filtering, and robust safety protocols to prevent

malicious use (e.g., creating deepfakes, generating harmful misinformation, assisting in illicit activities). The substantial legal and reputational risks associated with large corporations deploying unsafe AI create powerful incentives for exercising higher degrees of caution and making significant investments in responsible AI development compared to open-source projects. In contrast, open-sourcing powerful, dual-use models inevitably leads to their adoption by actors with malicious intent, who systematically bypass safety measures and proliferate capabilities that actively sow societal discord, erode trust, or even threaten national security. This unmitigated availability means that the "innovation" occurring at the fringes is often demonstrably detrimental, requiring significant societal resources to counteract, thereby substantially hindering net progress.

Innovation is Different from Societal Progress

We should also exercise caution when equating innovation with societal progress. These concepts are fundamentally distinct. Asbestos, lead paint, slavery, CFCs, and PFAS (forever chemicals) were all innovations, but their existence didn't mean they helped society progress or that their benefits outweighed the harms. As noted above, innovations in GenAI appear to cause far more damage to the environment than they prevent while also undermining creative workforces, consolidating market power, and facilitating the rapid spread of misinformation. Currently, there is no compelling reason to believe that the world is a better place today because of general-purpose GenAI than it was before late 2022, when ChatGPT debuted with its much-publicized innovative technology.

Solutionism

The response to criticisms of GenAI deployment often reveals a troubling pattern of technological solutionism.[171] Evan Selinger helpfully describes it:

A term coined by the technology critic Evgeny Morozov, technological solutionism is the mistaken belief that we can make great progress on alleviating complex dilemmas, if not remedy them entirely, by reducing their core issues to simpler engineering problems. It is seductive for three reasons. First, it's psychologically reassuring. It feels good to believe that in a complicated world, tough challenges can be met easily and straightforwardly. Second, technological solutionism is financially enticing. It promises an affordable, if not cheap, silver bullet in a world with limited resources for tackling many pressing problems. Third, technological solutionism reinforces optimism about innovation—particularly the technocratic idea that engineering approaches to problem-solving are more effective than alternatives that have social and political dimensions.[172]

The solution to problems with GenAI is supposedly simple (and exceedingly convenient for researchers who want to open-source everything): just conduct more research. According to this view, the solution to technology problems is invariably more technology, without humanity needing to complicate things with its social interactions, politics, emotions, or culture. With sufficient funding, the argument invariably goes, we

[171] It's similar to arguments that MOOCs would magically erase systemic inequalities in education or predictive policing would prevent crime.

[172] Kevin Driscoll, *ChatGPT Is Just Another Example of Dangerous AI Hype*, SLATE (Mar. 29, 2023), https://slate.com/technology/2023/03/chatgpt-artificial-intelligence-solutionism-hype.html.

can "solve" the issues of bias and inequity, just as the technology industry's light touch and tens of billions of dollars have resolved the problems associated with social media, such as addiction, manipulation, decreased self-esteem, and the proliferation of surveillance capitalism.

However, this argument is overly simplistic. It overlooks the complexities of reality, treating a single approach as the best and most effective solution to problems that cannot possibly be solved by any breakthrough AI. Even the most theoretically perfect GenAI would not solve housing, for example. Housing policy must navigate NIMBY concerns, zoning requirements, manufacturing and distribution logistics, as well as financing, among countless other factors. Similarly, technology alone can't fix education, housing, domestic violence, food shortages, transportation, drug dependencies, healthcare, mental health, underfunded libraries, racism, or homophobia, among other pressing societal challenges.

E. Safety and Open-Source GenAI

Open-source models pose unprecedented safety risks. While closed-source platforms like ChatGPT, Claude, and Gemini can rapidly roll out patches and filters to curb misuse, open-source safeguards can be removed trivially, leaving the models extremely vulnerable to abuse. Unlike proprietary systems, which can immediately cut off access to those who abuse the platforms, open-source entities lose all control over their technology as soon as any user downloads it. As a result, the potential for misuse—ranging from generating convincing misinformation to executing sophisticated cyberattacks—increases exponentially. This lack of gatekeeping exposes society to unprecedented risks when powerful tools fall into the hands of malicious individuals.

A common refrain among open-source GenAI advocates is that technological progress will ultimately resolve these safety issues. Open-source developers are characteristically fond of acknowledging potential harms but ultimately disclaim all responsibility for them. Hugging Face exemplifies this pattern with regard to the environment, misinformation, and numerous other concerns.[173] Ai2 employs similar rhetoric, stating that although serious outcomes may result from the deployment of open-source AI, these problems will somehow resolve themselves if the community pursues more open-source research. This approach resembles firefighters selling flamethrowers.

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[173] Margaret Mitchell, *A Weaponized AI Chatbot Is Flooding City Activity*, LinkedIn (Aug. 24, 2020), https://www.linkedin.com/posts/margaret-mitchell-9b13429_a-weaponized-ai-chatbot-is-flooding-city-activity-7333917467246792705-qutI?utm_source=share&utm_medium=member_desktop&rcm=ACoAABW04k4BX6b55vEcea6IlS9dOJXgjjeUCfQ . 2025, ("Things we foresaw and warned about #43920: Weaponized AI chatbot for en masse misinformation, aimed to influence policy in a way that hurts people. Let's nip this in the bud before it has more serious lasting effects!"); Sasha Luccioni, *How Much Energy Does a State-of-the-Art Video . . .*, LinkedIn (Oct. 18, 2023), https://www.linkedin.com/posts/sashaluccioniphd_how-much-energy-does-a-state-of-the-art-video-activity-7346196411362779136-Y19G?utm_source=share&utm_medium=member_desktop&rcm=ACoAABW04k4BX6b55vEcea6IlS9dOJXgjjeUCfQ. ("How much energy does a state-of-the-art video generation AI model use? 📺
A 14B parameter model like WAN2.1 uses ~109 Wh, or the equivalent of 7 full smartphone charges, for a single video! 😳")

A quote from TechCrunch illustrates this perspective:

> There has been some debate recently over the safety of open models, with Llama models reportedly being used by Chinese researchers to develop defense tools. When I asked Ai2 engineer Dirk Groeneveld in February whether he was concerned about OLMo being abused, he said that he believes the benefits ultimately outweigh the harms.
>
> "Yes, it's possible open models may be used inappropriately or for unintended purposes," he said. "[However, this] approach also promotes technical advancements that lead to more ethical models; is a prerequisite for verification and reproducibility, as these can only be achieved with access to the full stack; and reduces a growing concentration of power, creating more equitable access."[174]

The optimistic view among certain open-source advocates is that technological progress will continuously yield positive outcomes, enabling researchers to continuously refine model safety. However, this optimism applies only to the initially released models. Once a model is in the public domain, anyone can modify it, including in ways that systematically undermine its ethical safeguards. The insights gained from open-source work can equally be harnessed to create harmful GenAI. This reality is decidedly not a one-way ratchet; it is far from certain that the benefits will consistently eclipse the potential harms.

The most significant safety concern with open-source GenAI is the completely unmitigated risk of malicious use and the potential for widespread proliferation of dangerous capabilities. By indiscriminately distributing sophisticated AI models, open-source initiatives inadvertently empower both legitimate developers and those with harmful intentions. While legitimate researchers and developers may benefit, malicious actors can simultaneously generate highly convincing misinformation, execute sophisticated cyberattacks, create hyper-realistic deepfakes for fraud or harassment, or even potentially aid in the development of harmful biological or chemical agents. Unlike closed-source providers, who can implement strict access controls, user vetting, and robust content moderation to prevent such abuses, open-source models inherently lack these crucial gatekeeping mechanisms, making it orders of magnitude easier for dangerous applications to be developed and deployed with minimal oversight or consequence. From this perspective, radical accessibility constitutes a profound safety liability for society.

Furthermore, closed-source models consistently benefit from centralized guardrails, rigorous pre-release safety testing, and a chain of accountability that is largely absent in the open-source ecosystem. Major closed-source developers invest enormous resources in red-teaming and continuous monitoring, driven by substantial legal and reputational liability. They have a powerful economic interest in ensuring their models are safe and reliable before and after deployment. Often, they implement proprietary safety layers and adversarial training techniques that are deliberately kept secret from potential attackers, making them significantly more challenging to circumvent. In contrast, while open-source projects can identify certain bugs, no mechanism exists to ensure that fixes are universally or consistently implemented across all users' deployments. Users routinely run outdated, unpatched, or poorly secured versions, and the fragmented nature

[174] Kyle Wiggers, *AI2 Releases New Language Models Competitive with Meta's LLaMA*, TechCrunch (Nov. 26, 2024), https://techcrunch.com/2024/11/26/ai2-releases-new-language-models-competitive-with-metas-llama/.

of the ecosystem makes it nearly impossible to enforce safety standards or quickly mandate widespread updates when new vulnerabilities are discovered. The responsibility for safe deployment falls entirely on individual users, who frequently lack the expertise, resources, or even the inclination to prioritize safety, resulting in a highly fragmented and inconsistent safety posture across the broader open-source landscape.

Some proponents, including Ai2's CEO, argue that open-source initiatives can provide a remedy to the harms that GenAI can cause. “People will do bad things with this technology,” Mr. Farhadi said, “as they have with all powerful technologies.” The task for society, he added, is to better understand and manage the risks. Openness, he contends, is the best bet for finding safety and sharing economic opportunity. ‘Regulation won’t solve this by itself,’ Mr. Farhadi said.”[175] Yet it remains entirely unclear how increased awareness alone can prevent misuse, since the very same knowledge will inevitably be leveraged to amplify harmful applications.

While transparency is often cited as a safety benefit, it can also function as a double-edged sword, particularly in terms of security. Openly revealing a model's architecture, weights, and significant portions of its training methodology can inadvertently provide detailed blueprints for attackers to identify and exploit vulnerabilities, or to bypass safety features more effectively than if those internal workings remained proprietary. While closed-source models are often criticized as "black boxes," their safety mechanisms can beneficially be "black boxes" as well, benefiting from security through obscurity. Moreover, the massive resources dedicated by leading closed-source labs to cutting-edge AI safety research, alignment techniques, and robust system hardening often far surpass what fragmented open-source efforts can achieve. This concentrated expertise and financial backing enable the incorporation of more advanced, preventative safety measures into the fundamental architecture of the models, arguably leading to fundamentally more secure and responsibly managed AI systems that substantially minimize broad societal risks stemming from the proliferation of powerful yet unconstrained technology.

When confronted with these safety concerns, open-source advocates tend to resort to whataboutism, deflecting criticism by pointing to other technologies and saying, "Well, what about [Google search]?" or referencing some other alternative technology; thus, releasing these models does not add any new risk. But this rhetorical strategy is either misguided or disingenuous. It is akin to justifying the release of a GenAI that can quickly produce hyper-realistic video and photographic content with minimal technical skill by arguing that harmful visual content has always been accessible. Such justification amounts to willful ignorance, much like a chemical company that excuses its environmental damage by claiming that other companies have already polluted our waters. Bad actors have an asymmetrical benefit when it comes to GenAI harm: they need to succeed only rarely in order to be successful. A steady but occasional triumph when intending to undermine trust, destroy self-esteem, spur violence, and perpetrate fraud is sufficient.

What makes GenAI unique is that it can generate novel, useful outputs efficiently, at scale, and at remarkably low cost. This includes outputs useful for malicious purposes. Without these capabilities, GenAI would not be the transformative technology worth spending hundreds of millions of dollars (for open-source entities) or hundreds of billions of dollars (for proprietary systems) developing.

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[175] Cade Metz, *An Industry Insider Drives an Open Alternative to Big Tech’s A.I.*, N.Y. TIMES (Oct. 19, 2023), https://www.nytimes.com/2023/10/19/technology/allen-institute-open-source-ai.html.

As David Widder and Dawn Nafus observed in their paper on accountability in the AI supply chain:
"We were struck by the deeply dislocated sense of accountability, where acknowledgement of harms was consistent, but nevertheless another person's job to address, always elsewhere."[176]

This observation highlights a fundamental issue in the open-source AI community: a systematic diffusion of responsibility that enables the continued deployment of harmful models while avoiding accountability.

A final critical point is that many open-source entities lack the robust security systems of their better-funded proprietary rivals. When deploying models, the absence of stringent security protocols can allow malicious actors to access sensitive user data or compromise the GenAI system itself. Platforms such as ChatGPT and services by Anthropic follow established cybersecurity frameworks, often attaining certifications like SOC 2 Type 2, and invest dedicated budgets and personnel in security measures. In contrast, open-source projects often operate without access to a dedicated information security team or a comprehensive security budget, despite their risks being essentially identical to those of companies like OpenAI. Crucially, information privacy cannot exist without robust information security.

F. Public Policy Conclusion

The review of public policy arguments has highlighted both the strengths and limitations of open-source GenAI, showing that its purported benefits are often overstated or unproven. Yet, even when policy goals are well-intentioned, open-source initiatives encounter unique complications that threaten legal compliance and the integrity of the movement itself.

VII. Complications from Open-Source GenAI

Beyond traditional legal and policy criticisms regarding special exemptions for open-source GenAI projects, these initiatives face distinctive challenges that threaten both legal compliance and the integrity of the open-source movement itself. Some entities falsely claim open-source status, apply licenses to models that are fundamentally incompatible with AI architectures, exploit open-source data for commercial gain, or fail to honor opt-out requests for the use of copyrighted and personal information. These practices not only undermine legitimate open-source efforts but also create a legal and ethical minefield.

A. Openwashing and the Erosion of Open-Source Integrity

A prevalent issue in open GenAI is the practice of openwashing, whereby some entities claim leadership in open source while failing to truly embrace openness. The media often uncritically repeats these claims, amplifying the misconception. This trend is evident not only in general outlets such as the Wall Street

[176] David Gray Widder & Dawn Nafus, *Dislocated accountabilities in the "AI supply chain": Modularity and developers' notions of responsibility*, Big Data & Society, 1–12 (June 15, 2023), https://doi.org/10.1177/20539517231177620.

Journal, Axios, Fortune, Forbes, and CNBC but also in tech-focused publications like VentureBeat and Wired.[177]

The paradigmatic example of this phenomenon involves Meta, which claims to follow open-source principles by releasing its model weights; however, it withholds critical elements such as training data and alignment methodologies (e.g., RLHF). This selective sharing has drawn accusations of "openwashing," a term that criticizes superficial claims of transparency without corresponding action.[178] Much like the greenwashing companies that espouse pro-environmental values while acting otherwise, organizations like Meta leverage the "open-source" label to boost their public image and dodge scientific, legal, and regulatory scrutiny, all without committing to genuine openness. Elon Musk has made a similar openwashing claim about OpenAI, arguing that OpenAI no longer adheres to its original mission of making its work open, and therefore, Musk was bamboozled by giving OpenAI tens of millions of dollars for that purpose.[179] Despite its name, OpenAI is far less open than Meta.

The empirical analysis by Andreas Liesenfeld and Mark Dingemanse reveals the depth of this transparency deficit. According to a comprehensive analysis that evaluated 14 criteria (each classified as fully open, partially open, or closed) across more than 40 large language models and ten text-to-image models, Meta's Llama 4 meets only three criteria fully, is partially open on four, and remains closed on seven. These criteria encompass access to base model data, model weights, training code, documentation, hardware details, architectural information, preprints, model cards, datasheets, packaging, API and meta prompts, and licensing, as more fully described in the Democratization section of this paper. For comparison, OpenAI's ChatGPT, which never claimed to be open source, is partially open only in terms of its preprint and closed

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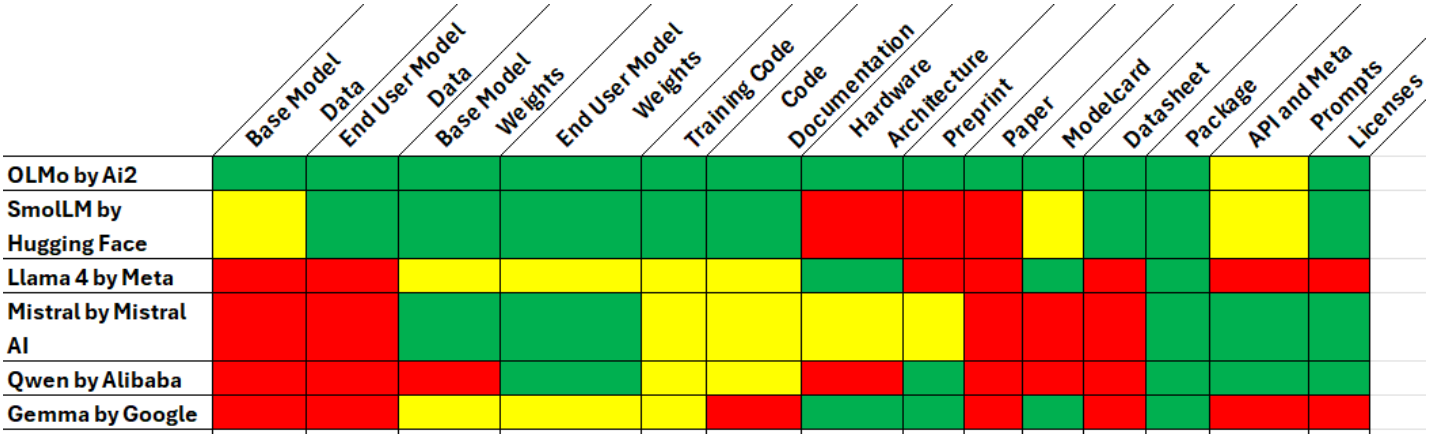
[177] *Mistral AI Drops New Open Source Model That Outperforms GPT-4o Mini with Fraction of Parameters*, VentureBeat (June 28, 2024), https://venturebeat.com/ai/mistral-ai-drops-new-open-source-model-that-outperforms-gpt-4o-mini-with-fraction-of-parameters/.;
Mauro Orru, *Mistral AI Bets on Open-Source Development to Overtake DeepSeek, CEO Says*, Wall St. J. (Mar. 7, 2025), https://www.wsj.com/tech/ai/mistral-ai-bets-on-open-source-development-to-overtake-deepseek-ceo-says-de031411?gaa_at=eafs&gaa_n=ASWzDAipDxzs2P-rOoS5tcRS4V8r2Robcv-0iic7OoNOhMYGLFrcVZBRmPGOjf_5xo%3D&gaa_ts=68530424&gaa_sig=x9p20CdbhXVe06Hkrx9E5rNNfsBJywkY-5D6iR58-gUVQ2qjx5pHTyt-fxtk1uIkdqtMRDG4DjWYL7nvVGO8bQ%3D%3D.;Axios, *How Open Source AI Is Leveling the Playing Field*, https://www.axios.com/sponsored/how-open-source-ai-is-leveling-the-playing-field; Jeremy Kahn, *Deepseek Just Flipped the AI Script in Favor of Open Source—And the Irony for OpenAI and Anthropic Is Brutal*, Fortune (Jan. 27, 2025), https://fortune.com/2025/01/27/deepseek-just-flipped-the-ai-script-in-favor-of-open-source-and-the-irony-for-openai-and-anthropic-is-brutal/; Will Knight, *Meta's Open Source Llama 3 Is Nipping at OpenAI's Heels*, Wired (Apr. 18, 2025), https://www.wired.com/story/metas-open-source-llama-3-nipping-at-openais-heels/; Ryan Browne, *Deepseek Breakthrough Emboldens Open-Source AI Models Like Meta's Llama*, CNBC (Feb. 4, 2025), https://www.cnbc.com/2025/02/04/deepseek-breakthrough-emboldens-open-source-ai-models-like-meta-llama.html; Luis Romero, *ChatGPT, Deepseek, or Llama? Meta's LeCun Says Open Source Is the Key*, Forbes (Jan. 27, 2025), https://www.forbes.com/sites/luisromero/2025/01/27/chatgpt-deepseek-or-llama-metas-lecun-says-open-source-is-the-key/.

[178] The origin of the term openwashing appears to be from Michelle Thornet in 2009: Michelle Thorne, *Openwashing*, michellethorne.cc (Mar. 9, 2009), https://michellethorne.cc/2009/03/openwashing/.

[179] [CITE LAWSUIT]; From X: "OpenAI was created as an open source (which is why I named it "Open" AI), a non-profit company to serve as a counterweight to Google, but now it has become a closed source, maximum-profit company effectively controlled by Microsoft. Not what I intended at all."

on thirteen other measures, while the OLMo model by Ai2 is fully open on thirteen criteria and partially open on one.



[180]

A key concern, as articulated by the Linux Foundation, is that "this 'openwashing' trend threatens to undermine the very premise of openness — the free sharing of knowledge to enable inspection, replication and collective advancement."[181] Put simply, if we keep lowering the bar for what qualifies as open source, the term will become meaningless.

Openwashing also diminishes the utility of evaluating model capabilities. By withholding components necessary to replicate benchmark performances and by forgoing peer review, GenAI companies can selectively disclose benchmark numbers without enabling others to verify their capabilities. In reality, these metrics can be artificially enhanced through tailored fine-tuning—where improved scores may reflect training for a specific task rather than genuine, generalizable intelligence—as well as by training on testing data and cherry-picking optimal results from methodologies like zero-shot, few-shot, 25-shot, or chain-of-thought evaluations. In essence, the benchmark numbers shared in non-peer-reviewed documents by companies that do not reveal the training or fine-tuning data are hardly more informative than pure speculation. Despite this fundamental lack of scientific rigor, they author these documents in a manner that appears to convey serious scientific thought, formatting them in styles common in academia and employing the jargon of academics to resemble robust scientific findings.

Perhaps the most pernicious effect of openwashing is that the appropriation of the term "open source" allows companies to reap the reputational benefits of the open-source label without contributing back to the community in a manner that sustains and advances the open-source ethos. This practice creates a parasitic

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[180] The Open Source AI Index, https://open-sourceai-index.eu/the-index?type=text&view=grid https://osai-index.eu/the-index?type=text&view=grid.

[181] Vincent Caldeira, Vincent Ng, Michael W. Stewart & Dr. Ibrahim Haddad, Introducing the Model Openness Framework: Promoting Completeness and Openness for Reproducibility, Transparency, and Usability in AI, LF AI & DATA Blog (Apr. 17, 2024), https://lfaidata.foundation/blog/2024/04/17/introducing-the-model-openness-framework-promoting-completeness-and-openness-for-reproducibility-transparency-and-usability-in-ai/.

relationship: it dilutes the value of "open source," transforming it into an extractive, hollow shell of its original promise.

B. GenAI Open-Source Licensing Challenges

Open source is not only about being able to access the code, data, weights, and so forth; it is equally a matter of the terms under which these resources are shared. This further complicates matters for Meta because, though it claims to be open-source, it does not release its models under an OSI-approved license. Instead, it uses a proprietary one that Meta's lawyers developed. While the license is not restrictive for most uses, it nonetheless imposes constraints that many in the open-source community chafe at. For example, the Llama license explicitly says that "You agree you will not use, or allow others to use, Llama 4 to: …Engage in any action, or facilitate any action, to intentionally circumvent or remove usage restrictions or other safety measures, or to enable functionality disabled by Meta."[182] In other words, users who download the model are contractually prohibited from jailbreaking it for any reason, including scientific research.

The licensing landscape becomes even more complex when we consider that there is currently no widely accepted open-source license tailored specifically for GenAI. Instead, most open-source initiatives tend to release models under conventional software licenses, such as the Apache 2.0 license. However, licenses like Apache 2.0 and MIT are designed for source code, while AI models are often distributed as binary files and training weights (which are essentially configuration files). The focus on source code in these licenses does not directly address the critical aspects of sharing and modifying AI models.

Traditional software licenses present several specific challenges when applied to AI models. Apache licenses often require attribution and disclosure of changes; however, these requirements can be challenging to apply to AI models. AI model modifications frequently involve fine-tuning the model's parameters, which might not be as straightforward as "modified code" in traditional software. Moreover, AI models heavily rely on training data. Such licenses may fall short in addressing the complex issues surrounding the sharing and licensing of this data, particularly with respect to privacy and copyright considerations.

In addition, existing open-source licenses may not fully capture the specific nuances of AI models, including their potential for harm or misuse. Most traditional software serves a single purpose for which the software was specifically designed. This is a far cry from GenAI, where the key differentiator of use is that GenAI models are general-purpose. For instance, text-based models can write thank-you notes just as easily as they can compose poetry. Traditional software could write one or the other, but not both, and definitely not also explain the intricacies and plot holes of something like the show *Game of Thrones*. This fundamental difference in capability and scope demands a corresponding evolution in licensing frameworks.

There is perhaps an even bigger issue with licensing models: it is not clear that the models are copyrightable. If they are not copyrightable, then licenses do not apply, because licenses are just a means of saying what can and cannot be done with copyrighted material. Instead, the best any entity can do is control what people can do at the time of download. The licenses cannot bind downstream uses. While licenses have always been

[182] Llama, Llama 4 Use Policy, https://www.llama.com/llama4/use-policy/ (last visited July 7, 2025).

a relatively weak form of enforcement for open-source technology, enforcing them for open-source GenAI models may be virtually impossible.

C. Data Laundering

Data laundering, also called data washing, mirrors the criminal process of money laundering. According to the U.S. Treasury's Financial Crimes Enforcement Network (FinCen), "Money laundering involves disguising financial assets so they can be used without detection of the illegal activity that produced them. Through money laundering, the criminal transforms the monetary proceeds derived from criminal activity into funds with an apparently legal source."[183] Data laundering operates on the same principles: taking data from one source and repackaging it to make it appear perfectly legal for unrestricted use.[184]

Data repackaging raises several legal issues, including the potential for breach of contract and copyright infringement. GenAI entities take these legal risks for various reasons, often arguing a combination of (i) complying with the law is alleged to be too cumbersome, (ii) complying with the law is alleged to be too inconvenient, and (iii) the use of the data by the entity is more important than the rights of the data's owner. These flimsy justifications lead to several prominent and legally problematic outcomes.

First, there is the release of datasets under the ODC-BY license, which proponents claim makes the data freely available. In reality, ODC-BY merely aggregates various licenses under a single label, effectively issuing an implied "caveat emptor" warning.[185] Users must still comply with the specific license terms attached to each piece of content, meaning that—despite its marketing—ODC-BY does not confer the

[183] FinCEN, *What is Money Laundering?*, https://www.fincen.gov/what-money-laundering (last visited July 7, 2025).

[184] Of course, the primary intent of money laundering is to conceal illicit activities, which is a crime. In contrast, data laundering may only obfuscate the data source incidentally. Still, the underlying concept is similar from a civil standpoint.

[185] The Preamble states that "Databases can contain a wide variety of types of content (images, audiovisual material, and sounds all in the same database, for example), and so this license only governs the rights over the Database, and not the contents of the Database individually. Licensors may therefore wish to use this license together with another license for the contents. Sometimes the contents of a database, or the database itself, can be covered by other rights not addressed here (such as private contracts, trademark over the name, or privacy rights / data protection rights over information in the contents), and so you are advised that you may have to consult other documents or clear other rights before doing activities not covered by this License."

Section 2.4 of the ODC-BY license further states that "The individual items of the Contents contained in this Database may be covered by other rights, including copyright, patent, data protection, privacy, or personality rights, and this License does not cover any rights (other than Database Rights or in contract) in individual Contents contained in the Database. For example, if used on a Database of images (the Contents), this License would not apply to copyright over individual images, which could have their own separate licenses, or one single license covering all of the rights over the images." Open Data Commons Attribution License, v. 1.0, opendatacommons.org/licenses/by/1-0/.

unrestricted freedoms of true open-source data. Typically, the content within ODC-BY datasets remains copyrighted, and the original owners have not consented to allow their content to be reproduced, distributed, or modified into derivative works, which are three of the exclusive rights granted to copyright owners by the Copyright Act.[186] Nevertheless, companies that describe themselves as "truly open" or in similar terms often apply the ODC-BY license to their datasets, creating a misleading impression that the data can be freely used without restrictions. The marketing language obscures the fact that ODC-BY does *not* make the data openly available.

Second, some entities unilaterally change the licensing of the underlying content rather than leaving it unchanged and adding an ODC-BY layer on top. For instance, a group of researchers well-versed in software licensing took content scraped from the web and declared it open source by relicensing it under CC-BY-4.0, disregarding any existing contractual or copyright restrictions.[187] The dataset is part of DataComp-LM and consists of 240 *trillion* tokens.[188] The researchers extracted content from datasets created by Common Crawl, a nonprofit that makes "wholesale extraction, transformation and analysis of open web data accessible to researchers [and everyone else, for free and for commercial use]"[189] by scraping the internet and compiling the datasets. Rather than use ODC-BY, the researchers chose to claim that all of the content is now—through their unilateral declaration—transformed into CC-BY-4.0, which is an *actual* open-source license. In effect, they asserted that the original content creators had forfeited their exclusive copyrights—a fundamentally flawed legal claim. Unsurprisingly, many, if not all, of the institutions with which these researchers are affiliated have subsequently used this dataset to train and release models.

Unfortunately, these occurrences are not outliers. The Data Provenance Initiative, which is a cohort of researchers from schools like MIT and Harvard, notes that "We [] observe frequent miscategorization of licenses on widely used dataset hosting sites, with license omission of 70%+ and error rates of 50%+. This points to a crisis in misattribution and informed use of the most popular datasets driving many recent breakthroughs."[190]

Third, some entities simply ignore the underlying license terms entirely. This is allegedly the case in *Doe 1 v. Github*, where programmers who shared code under open-source licenses like Apache 2.0 and MIT found

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[186] 17 U.S.C. § 106.

[187] The group included computer scientists from the University of Washington, Apple, Toyota Research Institute, UT-Austin, Tel Aviv University, Columbia University, Stanford, UC-Los Angeles, JSC, LAION, Ai2, Technical University of Munich, Carnegie Mellon University, Hebrew University, SambaNova, Cornell, University of Southern California, Harvard, UC-Santa Barabara, SynthLabs, Bespokelabs.AI, Contextual AI, and DatologyAI.

[188] Jeffrey Li et al., *DataComp-LM: In search of the next generation of training sets for language models*, https://arxiv.org/html/2406.11794v4

[189] CommonCrawl, https://commoncrawl.org/. Notably, Common Crawl has a proprietary license that echo pen-source ODC-BY, stating that "BY USING THE CRAWLED CONTENT, YOU AGREE TO RESPECT THE COPYRIGHTS AND OTHER APPLICABLE RIGHTS OF THIRD PARTIES IN AND TO THE MATERIAL CONTAINED THEREIN." https://commoncrawl.org/terms-of-use

[190] Shayne Longpre et al., *The Data Provenance Initiative: A Large Scale Audit of Dataset Licensing & Attribution in AI* (Nov. 4, 2023) https://arxiv.org/pdf/2310.16787

that their code was scraped and used to train GenAI models without regard for the specified license conditions.[191] GenAI entities, including open-source entities, typically rely on datasets such as The Stack or StarCoder, which are comprised of code files with the same types of licenses at issue in the GitHub litigation, to train models for code generation. Put simply, without these datasets and without scraping GitHub, the models would not be proficient at coding.

Importantly, some business models are deeply dependent on this data washing. A prime example is Hugging Face—a well-funded for-profit company that not only hosts a vast array of open-source artifacts (including datasets) but also creates its own. As a sophisticated player in the open-source ecosystem, Hugging Face is almost certainly aware of how artifacts on its platform can facilitate the laundering of copyrighted and contract-protected works, particularly in datasets that achieve widespread downloads numbering in the hundreds of thousands or even millions. Yet, the company makes no efforts to require users to re-license or remove misclassified works (as seen with DCLM and its CC-BY license). This willful blindness likely stems from economic incentives: Hugging Face requires users to visit its site to download those artifacts, presenting an opportunity for Hugging Face to upsell users on products and services.

Another prime example is Common Crawl. Though the website claims that "We make wholesale extraction, transformation, and analysis of open web data accessible to researchers,"[192] it does not limit access to researchers. Indeed, anyone can use the data, and many people do. Common Crawl is a common source of training data for large language models, including those developed by for-profit companies. Yet, websites that block OpenAI's and other prominent model developer bots from scraping their webpages often do not block Common Crawl. This is likely because Common Crawl is not well known outside of a relatively small group of researchers and developers, but it might also be because Common Crawl is a 501(c)(3) nonprofit that plays up its alleged focus on research. This means that companies may claim they technically follow robots.txt or other requests not to scrape website data, but they can easily acquire that data by simply and freely downloading the billions of webpages that Common Crawl scrapes each month.

A further paradox emerges among staunch open-source advocates. While they may be quick to call out entities like Meta for openwashing, they are willing to ignore data washing. This selective criticism raises questions about intellectual consistency and suggests that the behavior may be hypocritical or at least questionable. For example, Ai2's CEO has remarked on Llama models, "'We love them, we celebrate them, we cherish them. They are taking the right steps. But they are just not open source.'"[193] Meanwhile, Ai2 has trained its most prized models on datasets licensed under CC-BY despite knowing that the content is not actually CC-BY, and Ai2 releases its datasets under ODC-BY, fully aware that the owners of the underlying copyrighted works have not consented to reproduction, distribution, or the creation of derivative works, and knowing that when others download ODC-BY datasets, they are almost certainly not checking the copyright status of all underlying content.

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[191] DOE 1 v. GitHub, Inc., No. 4:22-cv-06823 (N.D. Cal. Feb. 11, 2025) https://www.courtlistener.com/docket/65669506/doe-1-v-github-inc/

[192] https://commoncrawl.org/

[193] *Meta is accused of bullying the open-source community*, THE ECONOMIST (Aug. 28, 2024), https://www.economist.com/business/2024/08/28/meta-is-accused-of-bullying-the-open-source-community.

D. Open Source and Opt-Out Mechanisms

Some people object to GenAI models training on their content, often signaling their preference through website terms of use or similar mechanisms. They rightly believe that they should not have to complete a form or jump through bureaucratic hoops to protect their privacy or copyright rights. Nevertheless, GenAI companies try to use the option to opt out as a shield, implying that if a user fails to submit the proper form, they have effectively waived their contractual, copyright, and privacy rights.

The practical reality, however, often falls short of these promises. Even when opt-out options are announced, companies often do not follow through. For instance, in May 2024, OpenAI promised that users could specify how, or even whether, their work would be used for training. But by January 2025, that feature had yet to materialize.[194] The delay is not due to the impossibility of excluding data from datasets, but instead to the lack of incentive to do so until a court has weighed in on the matter.

Even when a person chooses to opt out (notably, this is not an action required by law), such an action would, at most, apply to future model training by that single company. Such a choice would not extend across other GenAI companies, nor would it retroactively cleanse existing or previously trained models. Deleting data from datasets is only truly effective if it happens before any model training begins. Once training has commenced, the model developers have already benefited from that data, and its removal afterward won't negate that advantage. Furthermore, there's a lack of clarity regarding precisely what gets deleted. The original PDFs or JPEGs? Is it the plain text extracted from those files? Or does deletion extend to the tokens generated from that text or even the token IDs assigned to each token? Finally, the responsibility for identifying data to be deleted typically falls on the content creators, and only exact matches are likely to be removed. There's also usually no confirmation of what, if anything, was deleted, making verification impossible.

The open-source nature of the artifacts further complicates the problem. While OpenAI, Google, Anthropic, and other closed-model providers can control and modify their datasets, open-source providers cannot. Once an entity like Ai2 releases a dataset and others download it, the entity cannot claw it back. It's forever out in the open. Thus, a person may ask Ai2 to delete their information from Ai2's dataset[195], but that does not mean the dataset with the information helpfully collected and cleaned by Ai2 won't be used by other GenAI developers. In this regard, open source operates as a one-way ratchet: it can only add to the possible training resources for others; it can't reduce them.

Moreover, open-source providers cannot control what their models do once they are released. Meta, Hugging Face, and Ai2, for example, cannot retroactively impose new filters on models that users have already

[194] Kyle Wiggers, *OpenAI failed to deliver the opt-out tool it promised by 2025*, TECHCRUNCH (Jan. 1, 2025), https://techcrunch.com/2025/01/01/openai-failed-to-deliver-the-opt-out-tool-it-promised-by-2025/.

[195] It's not clear how they'd do so. There does not appear to be an opt-out form on their dataset webpage and search for the form via Google does not surface anything.

downloaded. Even if they add a safeguard to the model before releasing it, these safeguards are notoriously easy to remove.[196]

These technical limitations will likely become legal shields as open-source providers argue that it's too complicated or even impossible to comply with any regulations that allow for opt-out or address violations of copyright, contract, or privacy. However, difficulty is not an affirmative defense for breaking the law. If Meta releases a model that contains a memorized copy of *Harry Potter* (which it did[197]), every single download of that model was likely a distribution of *Harry Potter* by Meta. Meta cannot now argue that it may have been a whoopsie, but because it's unable to correct it, the problem should be ignored. The same principle applies to all other open-source releases of datasets or models that contain information gathered unlawfully.

E. Complications Conclusion

The preceding analysis has exposed a range of complications that undermine the credibility and effectiveness of open-source GenAI, from misrepresentation of openness to problematic licensing and data practices. These issues become even more pronounced during the deployment and release of models, where ethical and practical dilemmas arise. The following section explores these deployment challenges, focusing on the risks associated with mass adoption and the tension between openness and responsibility.

VIII. Problems with Deployment and Release

There is some mission creep for open-source GenAI. Arguments that may have passed the giggle test for a purely open-source approach to conventional software do not work when GenAI entities insist that releasing open-source models is not enough – they must also deploy them. The difference between releasing and deploying is critical: releasing means the files are hosted somewhere (e.g., Hugging Face), and anyone can download them, while deployment means the entity maintains control over the service (e.g., ChatGPT).

A. Deployment

The logic that open-source entities that deploy models seem to rely on to justify deploying models is that they need mass adoption (i.e., use) of their model(s) to collect and analyze enough user data to improve their models. For advocates of "truly open AI," such as Ai2, this also means they will make their user data public because otherwise they'd fail to be truly open; they'd be no different from OpenAI, which also collects and analyzes user data to improve its models. Moreover, sharing the data purportedly underpins scientific reproducibility; however, this raises serious privacy concerns, as few users may not fully appreciate that their interactions could eventually be publicly disclosed, revealing sensitive or embarrassing information.

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[196] Pedro Cisneros-Velarde, *Bypassing Safety Guardrails in LLMs Using Humor* (Apr. 9, 2025), https://arxiv.org/html/2504.06577v1; Dmitrii Volkov, *Badllama: removing safety finetuning from Llama 3 in minutes* (July 1, 2024) (https://arxiv.org/html/2407.01376v1

A. [197]Feder Cooper et al., *Extracting memorized pieces of (copyrighted) books from open-weight language model*s (May 18, 2025)https://arxiv.org/abs/2505.12546

Beyond the need for data, the argument extends to commercial use. Open-source advocates suggest that allowing commercial applications based on their models via API is the only viable path to mass adoption. This strategy not only broadens the user base but also purportedly provides developers with insights into diverse interactions—information that can supposedly be used to create more sophisticated products for personal and consumer markets. However, critics might reasonably question whether leveraging openness for commercial viability aligns with the core principles of scientific research and public benefit.

The underlying logic implies that building merely capable models for scientific research is insufficient. Instead, it demands that developers push toward state-of-the-art systems—models that are not only highly capable but continually evolve in response to real-world use. This shift represents a fundamental change: the technology is no longer an end in itself for basic research but rather a tool to unlock better products and services. When this rationale for massive data collection is extended to bolster AI safety, it paves the way for a surveillance model built on endless data harvesting. In this scenario, each new use case or challenge becomes a pretext that further justifies additional data collection, potentially leading to perpetual mission creep.

Eventually, this line of reasoning begins to mirror the strategies employed by tech giants such as Google and OpenAI, departing sharply from the research-first ethos traditionally cherished by universities and independent research institutes. It is difficult to envision how the reasoning would reach a point where the open-source entity would say, "Ok, we've collected enough data; now we can shift to studying it and using it for research, and we don't need to try to collect more."

The asymmetric nature of AI risks further undermines any justification based on limited data collection. Malicious actors require only a tiny fraction of the nearly limitless, low-cost outputs from large language models—such as phishing emails, misinformation, deepfakes, voice clones, and malware—to cause significant harm. In contrast, responsible developers must always prevent potential misuse. Given that it's impossible to prevent all harms from LLMs, suggesting that an open-source entity must collect ever more data to avoid harm seems not only misleading but potentially counterproductive. In the absence of regulatory intervention, these models may already be as effective as they will ever be when measured by the ratio of harmful outputs to overall uses.

B. Release

The push for mass adoption also leads to open-source entities insisting that they can only release their models under permissive licenses, such as the Apache 2.0 and MIT licenses. However, if the focus of open-source is truly centered on innovation and research, it’s not clear why an open-source license is necessarily better than a RAIL or ImpACT license, or other licenses that impose only minimal restrictions regarding AI usage, rather than the broad freedoms that traditional open-source licenses offer. How many researchers will be deterred from using a high-quality open-source GenAI system because they are disallowed from using it for military or commercial purposes? Releasing it under a purely permissive open-source license seems to indicate a complete indifference to how the technology is used or by whom. The ImpACT license, created by Ai2, was designed to address this shortcoming. One element of it was for users to submit risk reports when using the license, so Ai2 would know who was using it and for what, a provision that required a rough

estimate of environmental impact, and it allowed Ai2 to name and shame users who misused the AI artifacts by posting their names on a webpage and encouraging community policing.

This willful and perhaps intentional abrogation of responsibility incurs what can be termed “ethical debt,” referring to the consequences of prioritizing speed, efficiency, or other business goals over careful consideration of ethical implications and potential societal harms. It is a "debt" incurred for failing to address ethical issues proactively, leading to negative consequences that often impact individuals or groups who have no direct connection to the product or service. Ethical debt is like technical debt in that it represents the long-term cost of short-term gains. While technical debt involves shortcuts in code that may lead to future technical difficulties, ethical debt arises from neglecting ethical considerations during the development, deployment, or use of a system. Unlike technical debt, which can sometimes be addressed by fixing the code, the consequences of ethical debt are often far more challenging to repair, especially when harm has already been done. In many cases, it’s a debt that cannot be repaid.

This tension is exemplified by Ai2’s motto change, where the focus shifted from “AI for the Common Good” to “Truly Open AI.” The original motto emphasized tangible outcomes and societal benefits, whereas the new mantra treats open-source practices as an end in themselves, divorced from practical consequences. While it would be overreaching to label open source as inherently malevolent, the detachment of developers from the real-world impacts of their work evokes Hannah Arendt’s concept of the “banality of evil.” The concept describes how ordinary individuals can perpetrate harm, not necessarily because they are inherently evil, but due to thoughtlessness and blind adherence to orders or conforming to societal norms. In the realm of open-source GenAI, the prevailing norms that prioritize minimal restrictions on dataset and model use, as well as rapid release cycles aimed at competing with industry giants like Google, Meta, OpenAI, Microsoft, and Anthropic, raise serious ethical concerns that demand careful scrutiny.

The discussion of deployment and release has underscored the ethical debt and societal risks incurred when open-source GenAI is prioritized over responsible development. Given these concerns, it is essential to consider how exemptions might be structured to support legitimate scientific research without undermining legal and ethical standards.

IX. Exemption

Nothing in this paper should be taken to mean that activities ordinarily prohibited by law should never receive exemptions. Instead, an exemption should apply to open-source initiatives that are genuinely dedicated to scientific research. To be sure, no safe harbor for data is without weaknesses. Implementation and enforcement can be particularly challenging. However, the alternative to good policy in a space that has the potential to destroy or significantly alter markets, industries, and expectations of privacy cannot be no policy at all.

To qualify for this safe harbor, an institution must fulfill four conditions: (i) it must be a nonprofit organization; (ii) its primary purpose must be scientific research rather than product development; (iii) all artifacts released must be for non-commercial use and distributed under share-alike licenses; and (iv) access to these artifacts must be restricted to verified and legitimate researchers. Alternatively, groups that do not

meet these conditions could seek an exemption from an appropriate democratic body by justifying their need for the exemption. Such safeguards would not unduly constrain fundamental research; rather, they would reinforce legal frameworks designed to encourage intellectual property rights, facilitate robust intellectual exchange, and stimulate genuine economic growth. Of course, an exemption is unnecessary when GenAI artifacts do not present legal issues. For instance, if a dataset consists exclusively of licensed or public domain materials, the artifacts can be released under any conditions that the institution prefers without invoking special exemptions.

Moreover, responsibility should not rest solely on the entity that develops or releases the artifacts. Platforms that host these materials must also be accountable. Services like Hugging Face should mandate comprehensive model cards and datasheets for every GenAI model hosted on their platforms. In addition, they should require that any uploaded content with improper licensing be re-licensed to comply with established guidelines. Should an uploader fail to meet these requirements, and after the platform has provided the uploader with an opportunity to address the issue, the platform must have procedures to remove the content. It is imperative that companies not be allowed to profit from hosting content if they know, or reasonably should know, that such content facilitates breaches of contract, copyright infringement, invasions of privacy, or other legal violations.

Policymakers must be vigilant about a close cousin of openwashing when considering legal exemptions: responsible AI-washing, or RAI-washing. Perhaps the clearest example comes from Microsoft, which has the open-source Phi series of models. Because there is no democratically designated set of principles for what constitutes RAI, Microsoft is able to establish its own favorable definition of RAI. It includes six principles: fairness, reliability and safety, privacy and security, inclusiveness, transparency, and accountability.[198]

Interestingly, the transparency principle does not apply to training data, model architecture, and similar aspects. Rather, it focuses on how understandable a model is. Also of note, the accountability principle applies to "people"-ostensibly the users of AI systems — not Microsoft, the developer and deployer of such systems.

But Microsoft's principles are also notable for what they leave out. There is no mention of respecting copyright law, contract law, or any other laws. They also remain silent on their environmental impact or any intention to be transparent about their impact. Perhaps the least surprising aspect is the silence regarding the violent use of Microsoft's systems: they have no prohibitions, limitations, or commitments to reporting on the use of Microsoft's AI for immigration enforcement, law enforcement, or military purposes. Their "2025 Transparency Report" is no more enlightening.[199] Some might be inclined to categorize such oversights as irresponsible.

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[198] Microsoft, *Responsible AI Principles and Approach*, https://www.microsoft.com/en-us/ai/principles-and-approach (last visited July 30, 2025)

[199] Microsoft, *Our 2025 Responsible AI Transparency Report*, Microsoft On the Issues (June 20, 2025), https://blogs.microsoft.com/on-the-issues/2025/06/20/our-2025-responsible-ai-transparency-report/.

Google also has a Responsible AI page[200], and it is similarly selective about its commitment to "principles." Earlier this year, it removed a commitment not to pursue:

- "technologies that cause or are likely to cause overall harm"
- "weapons or other technologies whose principal purpose or implementation is to cause or directly facilitate injury to people"
- "technologies that gather or use information for surveillance violating internationally accepted norms"
- "technologies whose purpose contravenes widely accepted principles of international law and human rights"[201]

The recent attempt by Big Tech and other AI companies to have Congress implement a ten-year moratorium on state AI laws,[202] which had little support from the general population,[203] is yet another example of how RAI, as implemented by AI companies, and democracy are not necessarily aligned.

By proposing a framework for exemptions, this paper aims to balance the need for scientific progress with the imperative for legal and ethical accountability. However, implementing such exemptions carries significant consequences for the future of open-source GenAI. The following section examines these potential outcomes, considering the broader impact on innovation, competition, and societal trust.

X. Consequences

If this argument holds, open-source GenAI development could become prohibitively expensive and complex. Yet, the purported benefits of open-source GenAI have not been convincingly shown to outweigh the attendant risks. Cybersecurity vulnerabilities, disinformation, misinformation, deepfakes, and similar hazards remain pressing concerns. Until proponents can robustly demonstrate GenAI's advantages through concrete evidence of tangible societal gains that outweigh the harms, this imbalance casts serious doubts on the technology's merit as an excuse for legal leniency.

Moreover, claims that GenAI is indispensable for national security or victory in the "AI race" are unfounded.[204] The argument for open-source platforms—often touted as a means for the United States to

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[200] Google, *Google Responsible AI*, https://research.google/teams/responsible-ai/ (last visited July 7, 2025).
[201] Paresh Dave & Caroline Haskins, *Google Lifts a Ban on Using Its AI for Weapons and Surveillance*, WIRED (Feb. 4, 2025), https://www.wired.com/story/google-responsible-ai-principles/.
[202] Cecilia Kang, *Defeat of a 10-Year Ban on State A.I. Laws Is a Blow to Tech Industry*, N.Y. TIMES (July 1, 2025), https://www.nytimes.com/2025/07/01/us/politics/state-ai-laws.html.
[203] Colleen McClain et al., *Views of Risks, Opportunities, and Regulation of AI*, PEW RESEARCH CTR. (Apr. 3, 2025), https://www.pewresearch.org/internet/2025/04/03/views-of-risks-opportunities-and-regulation-of-ai/.
[204] https://www.linkedin.com/posts/scaleai_our-ad-in-the-the-washington-post-january-activity-7287456169084796928-zhD0/ ("America Must Win the AI War"); Emma Roth, *OpenAI and Google ask the government to let them train AI on content they don't own*, The Verge (Mar. 14, 2025), https://www.theverge.com/news/630079/openai-google-copyright-fair-use-exception ("We propose a copyright

maintain its competitive edge—is equally problematic. For example, Ai2's CEO, Ali Farhadi, claimed that "'If the U.S. wants to maintain its edge … we have only one way, and that is to promote open approaches, promote open-source solutions,' Farhadi added. 'Because no matter how many dollars you're investing in an ecosystem, without communal, global efforts, you're not going to be as fast.'" However, this rationale overlooks a fundamental flaw: open-source access invariably extends to all players, including strategic competitors such as China. With equal footing comes an erosion of any claimed competitive advantage, thereby rendering the open-source argument less convincing.[205]

Even if the benefits of open-source GenAI are exceptional, we must ask whether these gains truly justify compromising the rights and creative incentives of content creators. We must not, in essence, privilege the interests of technology companies over the legitimate rights of individual contributors.

The analysis of consequences has made clear that open-source GenAI, while promising in some respects, is not a panacea and may introduce new risks and complexities. Ultimately, the case for special legal treatment remains unconvincing unless open-source initiatives can demonstrate clear, tangible benefits that outweigh the harms.

XI. Conclusion

No legal presumption should favor a nonprofit over a for-profit entity merely because of its organizational structure. An organization's nonprofit label does not automatically legitimize its activities any more than a for-profit label delegitimizes them. Too often, claims about the intrinsic superiority of "true" open-source practices serve to distract us from a deeper inquiry: whether entities are choosing open-source GenAI approaches to circumvent legal risks rather than to pursue critical research questions.

Legal exemptions for open-source endeavors should be limited to projects whose artifacts are developed for scientific research purposes. While I support responsible open-source innovation, granting companies carte blanche simply because their artifacts are designed as open is both legally unsound and ethically questionable.

The principles for responsible open-source GenAI development are straightforward. First, entities must avoid unlawful conduct—this means avoiding copyright infringement, breaching terms of service, or violating privacy norms. Second, developers should commit to producing datasets and models that are unbiased, safe, and beneficial, actively working to eliminate toxicity or harm, and be conscious of environmental impact. Third, they must satisfy at least most of the fourteen criteria for being fully open. Put

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strategy that would extend the system's role into the Intelligence Age by protecting the rights and interests of content creators while also protecting America's AI leadership and national security. The federal government can both secure Americans' freedom to learn from AI, and avoid forfeiting our AI lead to the PRC by preserving American AI models' ability to learn from copyrighted material.")

[205] Ali Farhadi, *Open Source Will Win: Allen Institute for AI CEO Ali Farhadi on the New Era of Artificial Intelligence*, GeekWire (Jan. 22, 2025), https://www.geekwire.com/2025/open-source-will-win-allen-institute-for-ai-ceo-ali-farhadi-on-the-new-era-of-artificial-intelligence/.

simply, if ethical GenAI excellence cannot be achieved, then its pursuit is not justified; the benefits must clearly outweigh the costs.

Moreover, merely increasing access to GenAI components via open-source releases is insufficient to democratize the technology's benefits. The more enduring solution is to empower society through an improved education system. Only an educated populace can fully harness the potential of open GenAI.

In sum, while open-source GenAI is not inherently detrimental, it is far from a panacea. It may offer no better outcomes than proprietary systems for the tasks its proponents prize most. Granting undue legal deference to open-source initiatives simply because they are "open" is unwarranted. A balanced approach—anchored in ethical development, responsible oversight, and a commitment to broader societal interests—is essential if GenAI is ever to fulfill its promise.