



CCIA Comments in Response to the U.S. Department of Justice’s Request for Information on Competition in Artificial Intelligence

The Computer & Communications Industry Association (CCIA)¹ welcomes the opportunity to submit comments in response to the U.S. Department of Justice’s (DOJ) Request for Information (RFI) on Competition in Artificial Intelligence (AI),² following the recent “Promoting Competition in AI”³ workshop DOJ co-hosted with Stanford University. CCIA’s comments consist of this cover letter, which provides some general considerations on generative AI, data, and pricing algorithms, as well as the [attached report](#) prepared by Copenhagen Economics, and commissioned by CCIA, on Artificial Intelligence and Competition.⁴

I. General Considerations on AI

The unprecedented global growth and transformative potential of AI enables it to offer significant benefits to businesses and consumers alike, such as reducing human error and enhancing efficiency and innovation. AI is not a single technology but rather a family of related, but distinct, technologies, each of which may be applied in significantly different contexts. Applying rules designed for one type of AI or one context to another situation can hinder the development of new forms of AI and create, rather than reduce, harm.⁵

AI as a whole encompasses a range of different and varied data-based tools ranging from algorithms to large language models (LLMs).⁶ Some forms of AI can also generate new content while being able to learn and refine their output over time.⁷ AI has already become an integral

¹ CCIA is an international, not-for-profit trade association representing a broad cross-section of technology and communications firms. For over fifty years, CCIA has promoted open markets, open systems, and open networks. The Association advocates for sound competition policy and antitrust enforcement. CCIA members employ more than 1.6 million workers, invest more than \$100 billion in research and development, and contribute trillions of dollars in productivity to the global economy. For more, visit www.ccianet.org.

² U.S. Department of Justice, “Workshop on Promoting Competition in Artificial Intelligence” (May 30, 2024), <https://www.justice.gov/atr/event/workshop-promoting-competition-artificial-intelligence>.

³ U.S. Department of Justice and the Stanford Institute for Economic Policy Research, “Promoting Competition in AI” (May 30, 2024), <https://www.gsb.stanford.edu/events/promoting-competition-ai>.

⁴ Paulo Rocha Abecasis, Federico De Michiel, Bruno Basalisco, Tuomas Haanperä, and Julie Iskandar, Copenhagen Economics, “Generative Artificial Intelligence: The Competitive Landscape” (Feb. 2024), <https://copenhageneconomics.com/publication/generative-artificial-intelligence-competition/>.

⁵ CCIA, “Understanding AI: A Guide To Sensible Governance” (Jun. 26, 2023), at 2, <https://ccianet.org/library/understanding-ai-guide-to-sensible-governance/>.

⁶ Aymeric de Moncuit, Daniel Vowden, Kathryn Lloyd, Nadia Dhorat, Ora Nwabueze and Sarah Wilks, PLC Magazine, “AI Challenges In Competition Law – How Are Regulators Responding?” (Apr. 2024), at 1, https://www.mayerbrown.com/-/media/files/perspectives-events/publications/2024/04/ai-challenges-in-competition-law_mar24.pdf?3Frev=55168f8e10a64e458c3fc1ac7af179df.

⁷ *Id.*

part of consumers' lives in a wide range of digital products and services. Its usage in biometrics⁸ offers several advantages in everyday security systems benefiting consumers, such as facial and fingerprint recognition on their smartphones, or allowing users to control access in secure areas such as airports or banks. Automated Decision-Making (ADM) algorithms are used in various contexts such as content moderation tools on social media platforms and lending to increase consumer access to financial credit by autonomously making decisions based on predefined rules. The combination of Machine Perception and Natural Language Processing (NLP) further allows for applications ranging from online translators to natural language search engines and voice assistants. Translation AI tools allow people to access documents that were created in languages they do not speak. AI image recognition has been used to detect dangerous road conditions and to improve weather forecasting, and automated decision-making techniques have helped to modernize occupational license processing and to make water management decisions more quickly and with better outcomes.⁹ These non-generative applications, although less publicized than generative AI tools, have been able to solve real problems for consumers.¹⁰

II. Generative AI

Generative artificial intelligence (generative AI) is at the forefront of technological innovation. Diverging from conventional AI focused on data analysis or task performance, generative AI showcases a remarkable capacity for autonomous content creation. Generative AI has the potential to transform existing businesses and industries and already pioneers solutions across various sectors, contributing to more diverse choices for consumers, and more innovation.

The generative AI market is nascent and developing rapidly. With the increasing availability of high-quality data, computing power, and the growth of machine learning, competition within the generative AI landscape is highly dynamic at all levels of the AI value chain. The diversity of business models and strategies is striking, with a wide range of open-source and proprietary models being developed by large and small companies alike, whether for general or more specific use. This dynamic competition further demonstrates that there is space and growth potential for new entrants. In addition, we see a global competition for AI investment and innovation, in which China appears to be leading the race, in particular regarding

⁸ CCIA, Understanding Artificial Intelligence, "Biometrics & AI - Explained" (Sep. 2023), https://ccianet.org/wp-content/uploads/2023/09/Biometrics_AI_Explained.pdf.

⁹ *Id.*

¹⁰ CCIA, "Understanding AI: A Guide To Sensible Governance" (Jun. 26, 2023), at 4, <https://ccianet.org/library/understanding-ai-guide-to-sensible-governance/>.

generative AI adoption¹¹ and implementation,¹² which also raises the question how the U.S. and other jurisdictions want to position themselves in this international race for AI investment and innovation.

Generative AI is raising new questions about competition, market concentration, and innovation. These changes can seem complicated, but emerging AI innovations are contributing to a notably competitive ecosystem in AI.¹³ Moreover, as competition heats up in online search, consumer marketplaces, and cloud computing, AI continues to upend markets, with new features being launched seemingly every day.¹⁴ As an example, new AI chatbots are making the AI marketplace competitive through the utilization and deployment of unique LLMs.¹⁵

The rapid succession of new technological developments is constantly changing the market dynamics in generative AI as it tends to evolve as rapidly as the underlying technology itself. Innovations in graphic processing units (GPUs) are likely to decrease the cost of computing resources. The model size, number of parameters, and amount of data required to reach state-of-the-art capabilities are constantly changing. Due to their distinct characteristics and unlimited potential, foundational models will continue to evolve further in the future, catering to specific business or personal needs of users.

The Copenhagen Economics' report also shows the dynamic competition present in the generative AI sector.¹⁶ New unicorn startups have been emerging in the sector, with 13 startups

¹¹ Reuters, TechTrends, "China leads world in generative AI adoption, underscoring country's progress" (Jul. 10, 2024), <https://www.scmp.com/tech/tech-trends/article/3269866/china-leads-world-generative-ai-adoption-underscoring-countrys-progress>.

¹² Reuters, "Chinese AI firms showcase resilience, innovations at AI event despite US sanctions" (Jul. 5, 2024), <https://www.reuters.com/technology/artificial-intelligence/chinese-ai-firms-showcase-resilience-innovations-ai-event-despite-us-sanctions-2024-07-05/>.

¹³ Sequoia, "Generative AI's Act Two" (2024), <https://www.sequoiacap.com/article/generative-ai-act-two/>; Duke Fuqua School of Business, "Explaining the T in Chat GPT" (Aug. 2023), <https://www.fuqua.duke.edu/duke-fuqua-insights/explaining-%E2%80%98%E2%80%99-chatgpt>; Benedict Evans, "AI and Everything Else" (Dec. 2023), <https://www.ben-evans.com/presentations/>.

¹⁴ NewsWire, "iAsk AI Search Engine Reaches 1 Million Searches Daily Just Months After Launch" (Dec. 2023), <https://www.newswire.com/news/iask-ai-search-engine-reaches-1-million-searches-daily-just-months-22194925>; SearchEngine, "Microsoft Bing adds new Deep Search generative AI feature" (Dec. 2023), <https://searchengineland.com/microsoft-bing-deep-search-435446>; The Verge, "Forbes now has its own AI search engine" (Oct. 2023), <https://www.theverge.com/2023/10/26/23933799/forbes-generative-ai-search-adelaide>.

¹⁵ Anissa Gardizy, The Information, "AI Laggard Intel Expands Effort to Help Companies Build ChatGPT-like Apps" (Oct. 2023), https://www.theinformation.com/articles/ai-laggard-intel-expands-effort-to-help-companies-build-chatgpt-like-apps?offer=rtssu-engagement-sept-23&utm_campaign=RTSU+-+Intel+ChatGPT&utm_content=2071&utm_medium=email&utm_source=cio&utm_term=1500; CNBC, "Claude AI can summarize text from PDFs for free. Here's how to use it" (Oct. 20, 2023), <https://www.cnbc.com/2023/10/20/claude-ai-can-summarize-text-from-pdfs-for-free-heres-how-to-use-it.html>; TechCrunch, "Samsung unveils ChatGPT alternative Samsung Gauss that can generate text, code and images" (Nov. 2023), <https://techcrunch.com/2023/11/08/samsung-unveils-chatgpt-alternative-samsung-gauss-that-can-generate-text-code-and-images/>.

¹⁶ *Supra* n. 4.



receiving a \$1 billion valuation as of May 2023.¹⁷ Likewise, more than 250 foundational models have been developed since 2018 by 94 different companies,¹⁸ with 57 percent of these models being available with an open license,¹⁹ which further promotes competition as it reduces the barriers to entry for new companies.

Further competition in the development of AI models has likewise yielded promising results for Small Language Models (SLMs) to compete with LLMs, which require fewer resources and data inputs, and offer more advanced querying techniques, resulting in overall steeply reduced costs for competitors to foundational LLM developers and downstream businesses alike.²⁰ In a way, the best solution might not end up being the biggest LLM, but rather a smaller and more efficient model that requires fewer data inputs. These results, coupled with reduced costs for the development of AI models, strongly suggest that market factors such as input scarcity from hardware limitations are not creating significant barriers to entry for new entrants. Moreover, there is a high variety of different foundational models, and no model will meet every customer's need, allowing for higher competition to break into untapped markets.

Generative AI's disruptive nature brings forth the potential for competition in this market to flourish even more in the future. Progress in technology is driving down the cost and time required for building, training, and deploying foundational LLMs.²¹ In addition, the capacity to conveniently adapt a pre-existing model via fine-tuning is hastening the arrival of competitive models. AI vendors, including startups, are also gaining greater access to third-party models and tools, which offer tailored strategies for market entry, optimization of machine learning frameworks, and other resources.

Competition in generative AI is dynamic and rapidly evolving. It is generally working well to deliver value, service, and choice to all types of customers. With that in mind, CCIA emphasizes that at this stage, any legislative or regulatory intervention to address any future competition concerns in the generative AI market would be premature and could potentially stifle innovation in the generative AI sector and limit consumer choice. Moreover, overly burdensome regulation may make it difficult for future competition and innovation to flourish.

¹⁷ *Id.* at 15.

¹⁸ *Id.*

¹⁹ Stanford University, "Stanford CRFM Ecosystem Graphs for FMs" (Apr. 29, 2024), <https://crfm.stanford.edu/ecosystem-graphs/index.html?mode=table>.

²⁰ *Id.*, at 24.

²¹ ARK Investment Management LLC, "Big Ideas 2023" (Jan. 31, 2023), at 20, https://research.ark-invest.com/hubfs/1_Download_Files_ARK-Invest/Big_Ideas/ARK%20Invest_013123_Presentation_Big%20Ideas%202023_Final.pdf.

As noted by Assistant Attorney General Jonathan Kanter, antitrust laws already adapt to new and changing market realities, as competition enforcement principles “apply whether an innovation is powered by steam, by transistors or by reorganizing human thought through machine learning.”²²

III. Generative AI and Data

While further competition in the development of AI models has yielded promising results for SLMs to compete with LLMs, AI models still rely heavily on large datasets from public sources. Many of these are naturally high-quality, and there are a large and growing number of open-source data sets curated and processed specifically for AI model training. Many notable AI models are trained using entirely public or open-source data (*e.g.*, large textual datasets), including GPT-3²³ and the open models LLaMA²⁴ and Vicuna 13-B.²⁵ Innovation in AI fundamentally depends on the ability of LLMs to learn in the computational sense from the widest possible variety of publicly available material. Fair use and text and data mining exceptions around the world support innovation by ensuring that developers can assemble the building blocks needed for the development of AI. These provisions further the purpose of copyright law by purposefully and carefully balancing the protections for creators with the need for innovation and cumulative creativity.

A licensing requirement would be essentially impossible given the large amount of data needed to train AI models, the lack of comprehensive data about copyright ownership, and the simple fact that content is copyrighted as of its initial fixation without further formalities. As a result, a licensing requirement would effectively block the development and use of large language models and other types of cutting-edge AI. And if innovators are unable to leverage these building blocks needed for the development of AI, the many opportunities that come with this technology will be at risk. We will not be able to use AI to help unlock scientific discoveries and tackle humanity’s greatest challenges and opportunities — from improving cancer screening to developing solutions to tackle climate change. In addition, any limitation on the ability to

²² Assistant Attorney General Jonathan Kanter, U.S. Department of Justice, Office of Public Affairs, Speech: “Assistant Attorney General Jonathan Kanter Delivers Remarks at the Promoting Competition in Artificial Intelligence Workshop” (May 30, 2024), <https://www.justice.gov/opa/speech/assistant-attorney-general-jonathan-kanter-delivers-remarks-promoting-competition>.

²³ Dario Amodei, Alec Radford, Tom Brown, Sam McCandlish, Nick Ryder, Jared Kaplan, Sandhini Agarwal, Amanda Askell, Girish Sastry, and Jack Clark, OpenAI, “Language Models are Few-Shot Learners,” <https://arxiv.org/pdf/2005.14165>.

²⁴ Meta, Meta LLaMa, <https://llama.meta.com/>.

²⁵ LMSYS, Vicuna, “Vicuna: An Open-Source Chatbot Impressing GPT-4 with 90%* ChatGPT Quality” (Mar. 30, 2023), <https://lmsys.org/blog/2023-03-30-vicuna/>.

train on publicly available material increases the risk that models will be trained on non-representative data — potentially excluding marginalized or alternative voices from the training data. For example, restrictions or impediments to the training of models might lead some model developers to favor older data sets (such as out-of-copyright books from more than 100 years ago that are in the public domain), which could result in model outputs being skewed based on inaccurate assumptions or implicit biases about race, nationality, gender roles, and gender identity, for example.

IV. Pricing Algorithms

Pricing algorithms are designed to automate the pricing process and leverage data for better decision-making. Such algorithms are widely used across a variety of businesses in various industries allowing for the optimization of prices by analyzing factors such as cost, demand, and competitor pricing. These algorithms adjust pricing in real-time in response to market conditions. This automation results in businesses saving money, as manually managing pricing and inventory can be extremely costly and time-consuming.

In many cases, this dynamic pricing also results in consumers receiving lower and more competitive prices for various goods and services. For example, price comparison tools and dynamic pricing can help consumers find the best deals at any given time, saving them time and effort in searching for bargains. In addition, personalized pricing can lead to targeted discounts for consumers, allowing them to access better deals.

Although there have been some legislative attempts to address the competitive concerns of pricing algorithms,²⁶ mainly regarding collusion, it is worth noting that collusion is already addressed and prohibited by current federal antitrust laws.²⁷ There are several concerns with these proposals as they would impact a wide range of businesses and industries beyond the AI sector. Pricing algorithms carry many potential benefits for consumers and also allow businesses to more economically set prices in response to changes in supply and demand by avoiding manual pricing mechanisms. Although there are some theoretical risks of algorithms being used

²⁶ See, e.g., Congress, S.3686 “Preventing Algorithmic Collusion Act of 2024”, 118th Congress (2023-2024), <https://www.congress.gov/bill/118th-congress/senate-bill/3686/all-actions>; California Senate, SB 1154: “California Preventing Algorithmic Collusion Act of 2024” (2023-2024), https://digitaldemocracy.calmatters.org/bills/ca_202320240sb1154. See also CCIA, CCIA Comments on CA SB 1154 (Oppose) (2024), <https://ccianet.org/library/ccia-comments-on-ca-sb-1154-oppose/>.

²⁷ Section 1 of the Sherman Act establishes that “Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal.”; Sherman Antitrust Act, 15 U.S. Code § 1, <https://www.law.cornell.edu/uscode/text/15/1>.



by competitors to collude, there are no specific examples of this occurring in real life. Hence, an *ex-ante* regulatory approach could potentially harm the U.S. AI market and strip American consumers of the real-world benefits that AI brings to different markets.

V. Conclusion

The generative AI market is diverse and vibrant, with no immediate signs of competitive issues resulting from a lack of access to inputs, particularly data. There are several new entrants present with diversified business models and products, with more entering the market every week, showing how there are no evident signs of competitive problems. If the DOJ has competition concerns in the future that are not in the scope of existing U.S. antitrust laws, it would then be appropriate to consider new laws or regulations that focus on addressing real problems that the current framework cannot reach.

CCIA is pleased to provide these comments and the attached report, and looks forward to continuing to engage on these important issues with the DOJ.