

**Written Testimony Before the  
Committee on Science, Space, and Technology  
U.S. House of Representatives**

**Hearing on  
Artificial Intelligence:  
Advancing Innovation Towards the National Interest**

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Chairman Lucas, Ranking Member Lofgren, and members of the committee, my name is Dr. Shahin Farshchi, General Partner at Lux Capital, a Venture Capital firm with \$5 billion of assets under management. Lux Capital specializes in building and funding tomorrow's generational companies that are leveraging breakthroughs in science and engineering, including in Artificial Intelligence (AI). Thank you for the opportunity to appear before this committee to discuss:

1. How American companies are solving problems and improving the way we live today;
2. Preserving competition in AI research and development; and
3. Driving federal resources to our most promising AI researchers and projects.

**How American Companies Are Solving Problems and Improving the Way We Live Today**

By way of background, my firm manages money on behalf of the country's largest foundations and endowments mandated to improve the human condition and our society at large. At Lux, we aim to finance visionary teams to rally the best technical talent to realize a grand vision through solving difficult technical problems. For example, I have led Lux's investments in chips, semiconductor manufacturing, rockets, satellites, driverless cars, virtual reality, automation, and tools for building AI applications. My partners have also founded and funded companies building surgical robotics, healthcare services, therapeutics, and cybersecurity.

Before addressing directly how America can benefit from future innovations in AI, it is important to appreciate where we are today. As the Members of this committee know well, AI is not new. The basic technology dates back to the previous century. The rapid collapse in the cost of compute, and the flood of data stemming from broad internet adoption, has created fertile ground to dust off the mathematical concepts off the shelf and turn them into tools that could do real work, starting with search. AI generates our Netflix recommendations, Amazon suggestions, news feeds, turn-by-turn directions, lane-departure warnings, partial self-driving, labels our photo albums, and is even used on remote oil platforms to increase output while avoiding catastrophic accidents.

As a sample of what Lux Capital is working on today, I want to share a few brief examples of our portfolio companies:

- Lux is invested in Anduril Industries, a company transforming and modernizing defense technology by providing state-of-the-art AI solutions to the U.S. national security community. Their AI system fuses real-time data from multiple sensors to create a single operating picture – a true game changer for the military.
- Lux is invested in Hugging Face, which is the most popular open platform for AI builders. Hugging Face’s community includes hundreds of thousands of developers from 15,000 startups, nonprofits, and other organizations that have built over 100,000 applications.
- Lux is invested in MosaicML, a member of the Hugging Face community where it hosts its AI models. Mosaic’s language models have exceeded the performance of OpenAI’s GPT3, which it makes available to individuals and enterprises to train, tune, and run. Unlike OpenAI, Mosaic’s models are made available to their customers entirely, as opposed to through an application programming interface, thereby allowing them to keep all of their data private. Mosaic has the most downloaded LLM in history, MPT-7B. This is a testament to the innovations coming into open source; their model has innovations like long context windows, that aren’t found even in the latest models from OpenAI.
- Lux is invested in Applied Intuition, a company equipping autonomous vehicle (AV) manufacturers with the software to test AVs faster and produce high quality testing results. Focusing on simulation and analytics, their AI is trusted by industry leading companies of all sizes to ensure safe and secure AV development and deployment.
- Lux is invested in Fiddler AI, which specializes in AI Explainability. With alignment and safety issues becoming critical for productizing AI, Fiddler helps establish guardrails for AI so businesses don't hurt themselves around bias amplification, algorithms going rogue, model drift, robustness, etc. Top AI teams world-wide partner with Fiddler today to monitor and audit their AI applications to ensure responsible deployment of their AI products.

These are just a sliver of the exciting innovation that is happening today, in large part because of the important work this committee has done to ensure America is developing diverse talent, providing the private sector with helpful guidance to manage risk, and democratizing access to computing resources that fuel AI research and the next generation of tools to advance the U.S. national interest.

While AI is not new, what *is* new at this moment is that the power of AI went from under the hood into consumers’ hands. Now, large and small companies are trying to bring it to every facet of life. What is also new is attention mechanisms, the basis of large language models that run at the heart of ChatGPT, which can be used to generate images, to forecast weather, and to remove accents from speech. These large language models are the focus of scientists and entrepreneurs alongside large and small corporations aiming to offer AI assistants. These assistants are aiming to do everything from edit videos to book travel to do correspondence to purchase holiday gifts for friends. The broader population, especially governments and investors, now appreciate AI’s potential. That new awareness is driving investment and merits additional attention from policymakers, including through today’s important hearing.

### **Preserving Competition in AI Research and Development**

To maintain U.S. superiority in this strategic and critical field, we must create and maintain a competitive market. Healthy, competitive markets give entrepreneurs the opportunity to challenge

even the largest, dominant players. By fostering innovation from smaller startups, we will get the very best from all participants, big and small alike.

Unfortunately, there are steep barriers to entry for AI researchers and founders. It costs companies like OpenAI, Anthropic, Cohere, and others over \$100M to train their largest language models. Training models to do natural language video analysis, numerical solvers, and other use cases outside language also roughly costs the same, and requires compute resources from a small group of companies: Microsoft, Google, and Amazon. This represents a huge concentration of resources in a time of rapid change which is reminiscent of Standard Oil during the industrial revolution.

I am thankful to Members of this Committee who recognized these concerns years ago and worked to enact the National AI Initiative Act of 2020. The recent generative AI boom has only proven Congress correct in its assessment that we need a federal strategy to provide access to the tools of AI development that supports a diverse community of promising researchers. The law established the National AI Research Resource (NAIRR) Task Force, co-led by the National Science Foundation and White House Office of Science and Technology Policy, which produced its final report “Strengthening and Democratizing the U.S. Artificial Intelligence Innovation Ecosystem” in January this year. The NAIRR Task Force views its report as “a roadmap and implementation plan for a national cyberinfrastructure aimed at overcoming the access divide, reaping the benefits of greater brainpower and more diverse perspectives and experiences applied to developing the future of AI technology and its role in our society.” Today, I urge Congress to follow through by authorizing and funding NAIRR.

In addition to spurring innovation, increasing diversity, and improving capacity for AI research, advancement of trustworthy AI is the fourth objective of NAIRR. One essential element of healthy and competitive markets for AI innovation is trust. I have some concern that some of today’s leading AI companies will be tempted to limit transparency to retain a competitive edge. As the NIST AI Risk Management Framework [notes](#), “Trustworthy AI depends on accountability. Accountability presupposes transparency.” Congress should question attempts to justify a lack of transparency with concerns about competition and safety.

Microsoft and Google, in particular, already own a vast amount of our data which they use to train their models. Meanwhile, OpenAI is partially owned by Microsoft, who has raised billions to train its models on Microsoft Azure infrastructure. The billions of dollars raised by other private sector companies to train new models are being poured into the very same companies that have amassed giant amounts of data which they can use to train their own models, further entrenching their and OpenAI’s dominance.

While America’s allies are working toward the development of trustworthy AI to better educate and empower their workforces, our adversaries are using this technology to spy on and control their populations. For the US to maintain its superiority against countries like China, it must make meaningful investments in building compute and making data it has captured available to its broader population of researchers and companies aiming to build and deploy large models. As the NAIRR Task Force final report [notes](#), researchers based in China now publish more AI scholarship and file more patent applications than authors and inventors in the U.S. NIST, the Department of Energy, Department of Defense (DoD), and many other federal agencies have a rich history of building America’s capacity for high-performance compute. The federal government has previously supported the private sector in building out compute capability, to be made available to researchers and private sector companies who aim to compete with AI models of their

own. If rivals to the likes of Microsoft, Google, and Amazon seek to compete, then they ought to be empowered by the federal government through incentives to help them become more competitive.

### **Driving Federal Resources to Our Most Promising AI Researchers and Projects**

The DoD has taken an approach that is unique relative to other funding agencies: it allocates funding to top investigators in the field, as opposed to the National Science Foundation, which tends to spread funding across a larger number of investigators. If there is a lesson to be learned from OpenAI, it is that concentrating resources leads to lopsided results, putting it in a dominant position in large language models relative to its rivals who traditionally experimented with many technologies related to AI. This example is in tension with the need for democratizing the tools and resources necessary for AI research. Congress must balance that tension by both increasing access and providing the funds necessary to conduct research at the frontier of AI. For example, DARPA's concentration of resources on top investigators has led to John Schulman, who invented TRPO and PPO, to go on to co-found OpenAI and architect ChatGPT. DARPA also funded Jonathan Ho who wrote the key paper for text-to-image models and set out a deep understanding of Diffusion Models leading to its displacement of legacy adversarial networks.

I applaud the Members of this committee for their leadership on the CHIPS and Science Act of 2022, including by directing NSF and NIST to help guide our efforts to create a more diverse and robust pipeline of talent through STEM education.

Thank you again for the invitation today to share how Lux Capital is working with founders to advance AI to serve the U.S. national interest, bolster our nation's defense and security, strengthen our economic competitiveness, and foster innovation right here in America. Lux is honored to play a role in this exciting technology at this pivotal moment. I look forward to your questions.