

House Oversight Committee, Subcommittee on Information Technology hearing- “Game Changers: Artificial Intelligence Part III, Artificial Intelligence and Public Policy.”

Hearing Testimony

Testimony of Gary Shapiro, president and CEO, Consumer Technology Association (CTA)TM

Thank you Chairman Hurd, Ranking Member Kelly, and members of the subcommittee, for inviting me to testify today on the future of artificial intelligence technology. I am Gary Shapiro, president and CEO of the Consumer Technology Association.

The Consumer Technology Association is the trade association representing the \$351 billion U.S. consumer technology industry, which supports more than 15 million U.S. jobs. We own and produce CES[®] - the Global Stage for Innovation, held each January in Las Vegas. I am fortunate to have a front row seat each day as our members develop and introduce innovative and life-changing products and services, create jobs, and grow the economy. At CTA, we work to support public policy that fosters innovation, advances competitiveness and promotes jobs and business creation.

I'd like to thank the subcommittee for holding this three-part series of hearings on artificial intelligence (AI). AI technology is still in its early days, but it is making a significant impact on our world. Medical professionals are able to detect health problems earlier and more accurately with the help of AI. Our defense agencies are using AI to scan large amounts of data for serious threats. Millions of Americans experience AI every day in the form of voice assistants, credit card fraud detection warnings and personalized online shopping recommendations.

As AI becomes capable of doing more complex tasks, it will revolutionize even more aspects of our lives. It will also raise an increasing number of questions about jobs, bias, cybersecurity and other serious issues. CTA applauds Chairman Hurd and Ranking Member Kelly for their early recognition that AI can play a major role in improving society and making government more efficient. We also appreciate your thoughtful approach to tackling the big questions AI is already raising.

CTA and our member companies want to work with you to figure out how we can ensure the U.S. retains its position as the global leader in AI, while also proactively addressing the pressing challenges raised by this new technology. That is why we created CTA's Artificial Intelligence Working Group earlier this year. The working group includes the top companies in AI development and deployment, as well as innovative startups in the area. In the near future, our group will focus on developing AI policy principles for the industry. The group will also work on establishing uniform definitions for terms like artificial intelligence and machine learning.

Recognizing the potential of artificial intelligence, CTA worked with Nasdaq to develop the Nasdaq CTA Artificial Intelligence & Robotics (NQROBO) index. The index began on December 18, 2017. On February 21, 2018, First Trust launched the first exchange traded fund (trading under the ticker ROBT) containing the index's underlying funds.

In March of this year CTA released a report on the current and future prospects of artificial intelligence. Our report includes findings from 20 in-depth interviews with experts on AI development and applications within a broad range of industries including automotive manufacturing, health care, and retail. We explored how AI is poised to revolutionize these and other industries. We also delved in to the various challenges AI may face. I hope this report can lay the groundwork for working with members of this subcommittee on smart AI policies.

The United States has been the indisputable world leader in disruptive innovations in the internet age. Countries around the world have tried to replicate the economic success and global influence of the U.S. tech sector, but none has succeeded on a significant scale. Artificial intelligence is the next frontier in this global race. Nations recognize that whoever leads in AI will have a major advantage economically, militarily and societally. Global leadership depends on leadership in artificial intelligence.

Narrow AI, which is capable of a limited set of tasks, is already having a major impact. In CTA's recently released AI report, industry experts identified health care as one of the areas where AI could in the near future solve real world problems. Each patient generates millions of data points every day (over 21 million if they are connected to 10 devices in the operating room or ICU), and yet relatively little is typically done with that data. Less than 0.1 percent of it is recorded in a patient's electronic medical record. Even if doctors wanted to put more of that data to use, a human would not be able to analyze that volume of information in real time. AI, on the other hand, can quickly sift through and identify pertinent aspects of that data, applying predictive and prescriptive analytics to save lives.

When the Qualcomm AlertWatch AI system, which provides real-time analysis of patient data to anesthesiologists during surgery, was tested at Michigan Medicine, the University of Michigan's health system, heart attacks and kidney failure in surgery patients were significantly lowered. Average stays in the hospital were reduced by a full day.

AI's benefit to health care can be measured in the millions of lives it will potentially save and the billions of dollars of cost savings it could likely bring. Imagine the impact if doctors across the whole country were able to use AI to simultaneously improve health outcomes and reduce hospital stays by an average of one day.

The U.S. will spend \$3.5 trillion on health care this year. That number is expected to hit \$5.7 trillion by 2026 – a 63 percent increase. The federal government shoulders over 28 percent of that cost, and state and local governments are responsible for nearly 17 percent of it. Last year, the Congressional Budget Office said, “By 2047, under current law, federal spending for people age 65 and older who receive benefits from Social Security, Medicare, and Medicaid would account for about half of all federal non interest spending, compared with about two-fifths today.” Getting our country on sound financial footing, particularly with regard to health care spending, is a matter of national security and stability. AI can be a key part of the solution.

Artificial intelligence also is providing solutions to many of our transportation and mobility challenges, and it is poised to power the smart cities of the future. Municipal entities, from Pima County, AZ, to the Massachusetts Department of Technology, are actively pursuing AI systems to optimize traffic flow and ease congestion. Self-driving vehicles, which rest on a foundation of AI software, may eliminate more than 90 percent of accidents caused by human error. Personal mobility solutions such as Honda's UNI-CUB, which assists people who are not able to walk long distances, use AI to detect subtle movements of their users to adjust speed and direction. Ridesharing apps including Uber and Lyft use AI algorithms to ensure drivers get to neighborhoods where and when riders need them.

Our world-leading agricultural industry is relying more and more on artificial intelligence. By analyzing soil, environmental and weather data, AI is providing farmers with powerful new tools to increase agricultural yields. On today's farms, dairy cows now can wear so-called "cow Fitbits" that monitor their movements, health and diet.

Cybersecurity is identified in CTA's AI report as another area where AI can make a big impact. AI technologies can interpret vast quantities of data to better prepare for, and protect against cybersecurity threats. Last year, when the WannaCry ransomware attacked computers across the world, AI-based solutions were able to fight back. Software that relied on Nvidia GPU-powered deep learning had extraordinary success in preventing execution of the ransomware on customers' systems.

Organizations and companies around the world are using AI to address pressing humanitarian and environmental challenges. Intel has partnered with the Center for Missing and Exploited Children to use AI to analyze the over eight million reports that the center receives every year. Human analysts could not efficiently process all this data, but with the help of AI they are able to connect relevant law enforcement agencies with the appropriate cases. The UN World Food Program is actively investigating how it can use AI to interpret data from drones and other equipment on the scene immediately after a disaster, and put that data to work in real time to inform its response. Google is using AI technology to analyze publicly available data on the location of ships to identify fisherman that may be flouting regulations.

The U.S. government is also placing a stronger emphasis on AI. As the subcommittee heard in your previous hearing on artificial intelligence, "AI part II, Artificial Intelligence and the Federal Government," numerous federal agencies are deploying AI technology to make government more effective and efficient. The Department of Homeland Security is using AI to help defend our infrastructure from the constant threat of cyberattacks. Our defense agencies are prioritizing AI development, as they recognize the significant strategic advantages it will provide. The National Science Foundation invests over \$100 million annually in foundational research related to advancements in AI. Both the Obama and Trump administrations have recognized the importance of prioritizing AI. In particular, that sentiment has been reflected strongly by the work of the Office of Science and Technology Policy under both presidents.

Artificial intelligence is expected to contribute over \$15 trillion to the global economy by 2030, according to a report by PwC. That economic figure, combined with the military and national security advantage that AI could bring, is driving significant interest in artificial intelligence

among governments around the world. Last year, China laid out its “New Generation Artificial Intelligence Plan” with a goal of creating a \$150 billion world-leading AI industry by 2030. Earlier this year, a government-funded \$2.12 billion AI research park was announced in Beijing. The Chinese plan has spawned a narrative that the U.S. is falling behind in AI.

In truth, the United States is the world leader in AI, both in terms of research and commercialization. But China’s plan to capture global leadership in the area must serve as a reminder that our position is not guaranteed. In fact, China’s plan for AI leadership in many ways mirrors the recommendations of a series of 2016 AI reports issued by the Obama administration. We need to stay several steps ahead.

China and the United States are far from the only countries that are making a big play on artificial intelligence. The French government recently unveiled a high-profile plan to foster AI development in France and the EU. In an interview with *WIRED* about the announcement, French President Emmanuel Macron highlighted innovations that he saw when he visited CES in 2016 as inspiration for France’s emphasis on developing AI in the health care space. Referring to AI, Macron was also quoted as saying, “I want to frame the discussion at a global scale. The key driver should not only be technological progress, but human progress.” Nations are not just competing to lead in the creation of cutting-edge AI technology, they are also competing to lead the conversation around how the technology will be used and how it will be regulated.

Leadership from the private sector, supported by government research and light-touch regulation, has historically served as a winning formula for innovation in America. That formula brought us the internet and America’s dominant global position in the tech industry. That same formula can be used to cement our position as the global leader in AI well into the future. We do not need a high-profile, top-down initiative from the federal government in order to lead in AI. We do, however, need the government to think strategically about creating a regulatory environment that will both encourage innovation and address the potential disruptions AI could cause. Industry experts interviewed for CTA’s AI report emphasized the fact that any government policies around AI need to be flexible and adaptive.

In addition to working together to create a pro-innovation regulatory approach, industry and government need to collaborate in tackling the serious questions raised by the increasing adoption of AI. There is understandable anxiety about the effect artificial intelligence will have on our workforce. A recent report from the Organization for Economic Cooperation and Development (OECD) found that 14 percent of jobs in OECD countries, including the U.S., are “highly automatable.” In the United States, the report estimates that 13 million jobs are at risk from automation. These numbers are lower than some other studies have suggested, but they are by no means insignificant. We need to ensure that our workforce is prepared for the jobs of the future. And we need to have plans in place to provide people whose jobs are displaced by AI and automation with the skills they need to succeed in new roles.

While some jobs will be lost due to technological advancements, many more new jobs will be created. The nature of some existing jobs will change, requiring workers to switch to new occupations, or upgrade their skills and perform new tasks. Jobs will be improved by technology – creating safer environments and requiring more social engagement and cognitive skills such as

logical reasoning and creative thinking. The recent OECD report estimated that 32 percent of jobs would be different than they are today due to technology. AI is predicted to create millions of new jobs unheard of today. People entering the workforce in nearly all sectors of our economy will need to have skill sets necessary to work alongside technology and adapt to the new job opportunities that it will bring. Many people in the workforce today will need to acquire these skills in the coming years to remain employed.

To address these workforce challenges head-on, CTA recently hired our first Vice President of US Jobs, who is staffing CTA's 21st Century Workforce Council. The council will serve as a leadership forum to address the nation's skills gap, ensure the U.S. tech sector has the high-skilled workers it needs, and devise strategies to upskill U.S. workers to succeed in the 21st century. It includes companies like Toyota, Sprint, HP, Panasonic, Sony Electronics, Bosch and others. On Monday, April 16, we briefed the White House on the council – CTA's newest member group – and on how the tech sector helps Americans prepare for the future of work.

Beyond closing the skills gap, CTA is committed to significantly improving the diversity of the tech industry workforce. This is a strategic necessity – we cannot afford to leave a significant portion of the U.S. workforce untapped. It is also a technological necessity – full representation in our workforce will go a long way toward driving innovation and ensuring tech products represent the unique needs and viewpoints of all of users. It will be much less likely for an algorithm to contain inadvertent bias if a truly diverse team is building that algorithm. As artificial intelligence emerges in high stakes environments, like criminal justice, creating diverse and inclusive work environments takes on an even greater urgency. CTA considers a diverse workforce to be a key measure of innovation, and for that reason it is one of the categories that we measure in our International Innovation Scorecard.

Another critical factor for winning public confidence in artificial intelligence is data security. AI needs a large amount of data in order to be trained for any given task. Without data, AI does not work. Because users will not embrace AI unless they know their personal data is protected, our industry needs to make sure data used in AI is secure. CTA has been a leader in creating private sector voluntary guidelines for privacy, most recently with regard to personal wellness data, and we would welcome the opportunity to continue that work in other areas. Government can help by using and promoting strong cryptography and other security protocols.

We look forward to collaborating with members of this subcommittee, and other leaders throughout Congress, to create an AI innovation agenda. This agenda should focus on AI-specific issues such as educating the future workforce for AI-related jobs, reskilling existing workers, diversity in AI development, collaboration between industry and government on critical research, and making sure AI isn't singled out for unnecessary over-regulation. It should also look at broader policy areas that could hamper or encourage American leadership in AI. Protectionist trade policies could put a damper on the global supply network for critical components and unnecessarily drive up the cost for AI-powered consumer goods. Immigration policies that allow the world's best and brightest to work and build companies in the U.S., particularly when they are educated at American universities, will help provide access to the talent we need to lead in AI. Reforming patent laws to discourage frivolous litigation would help companies funnel more money to R&D budgets and help innovative startups get off the ground.

There is no single policy decision or government action that will guarantee America's leadership in artificial intelligence. But we are confident that we can work together on a broad range of policies that will put us in the best possible position to lead well into the future and deliver the innovative technologies that will continue to change our lives for the better.