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Subject/Description: **BACKGROUND TOPLINES POINTS AND Q&A THEME: AI**

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BACKGROUND TOPLINES POINTS AND Q&A

Theme: AI

With the emergence of AI -- from science fiction to disruptive reality -- WIRED plans to focus this conversation to focus specifically on the potential, risks, implications, and policy ramifications of deep learning/neural nets.

At WIRED, they've been eagerly following the latest developments in AI. They consider it the most exciting thing they've seen in 10 years. At the same time, there's a lot of worry about what this will portend for the American workforce—or for humanity itself.

The moderator will likely start the conversation by talking about AlphaGo, the Go-playing AI developed by Google's DeepMind, which became the first Computer Go program to beat a professional human. This was a breakthrough moment for AI. He will take the opportunity to start by asking you what the moment was when you personally realized that AI is real and something that requires consideration? What research would you like to see happen in the future?

TOPLINES ON ARTIFICIAL INTELLIGENCE

- AI is one of the most important technology trends of our time and it is imperative that we realize its full potential, and tackle the risks inherent in new technologies to ensure AI is used for good.
- AI will drive big improvements in productivity, along with transformative technologies like self-driving cars and commercial drones that could be used for everything from fighting fires to delivering lifesaving medicine.
- Specialized AI is already all around us, in applications like voice recognition and fraud detection; "General AI", meaning computers with a versatile intelligence approaching or exceeding that of human beings, may still be decades away, but the recent pace of progress in that direction has been impressive.
- The Administration has done extensive outreach on AI, including five public workshops, many meetings, and a public comment process.
- The results will be summarized in a public report, to be released this Fall (*note: current plan is for the release to coincide with the release of this WIRED issue and the corresponding "Frontiers" Conference WIRED will help support*).

ARTIFICIAL INTELLIGENCE Q&A

Q. Government Research vs. Private Research vs Academic research. The issue of self-regulation vs government regulation. How do we encourage research? What are the risks? What is the role of government here? What is the potential of AI to improve government?

- Right now we don't see the need for broad across-the-board regulation of AI.
- But many existing regulations will touch AI-enhanced products: car safety regulation for self-driving cars; aviation safety for drones; securities regulation for automated trading; and so on.
- We want to make sure that those regulations are updated and flexible so they don't needlessly impede innovation, but remain well-targeted to their purpose of protecting the public.
- Government has several roles to play in AI as a funder of research and driver of education and training to ensure our diverse workforce can lead the world in development and application of these technologies. Government is also a user of AI across agency missions and a regulator in specific sectors like vehicles, to ensure public safety.
- Many of the missions of government can be done better, cheaper, and faster if we make wise use of AI.

Q. What is the potential of AI to improve healthcare and law enforcement? How can/should the government help private AI efforts (standards, etc)?

- Machine learning is already improving health outcomes for patients.
- The promise of tailored treatments based on your genome and other factors to improve healthcare is immense.
- For example, the Precision Medicine Initiative is building the largest health data-set ever using data from at least one million volunteers. The insights drawn from it by the top data scientists and medical researchers engaged in PMI will ultimately enable a new level of personalized care. Machine learning and other AI technologies will be critical to realizing these benefits.
- Similarly, the promise of AI for policing is a great example of how giving people AI tools can help them achieve their goals. For example, using AI and data science a group of researchers at the University of Chicago, working with the Charlotte-Mecklenburg Police Department were able to identify key indicators that a police interaction might escalate to the use of excessive force. Many of those times involved when a police officer responded to a domestic violence incident or a suicide. As a result, the police department is now modifying its practices to provide better support for the officers (more officers for domestic violence and time off to decompress after a suicide call).

Q. Fear and AI. How do we get people on board with AI? Where does AI belong—Government, Academia, or with a handful of multinational corporations?

- People will get on board when they see the benefits of the technology, which are many, and when they are confident that companies and government have taken care to address issues of safety, fairness, and control.
- Some of the fear of AI is driven by more extreme science fiction scenarios that, while entertaining, are not likely to happen any time soon.
- But there are also basic questions about accountability, safety and fairness in AI, which need to be answered.
- The best way to do this is to consider fairness, opportunity, and equity as goals from the very beginning, and take affirmative steps to avoid perpetuating existing bias from the start.
 - Technology can help, if we use it well---because most of the methods for finding and diagnosing bias rely on collecting and analyzing data.
 - Maximizing diversity on the teams designing systems also tends to help avoid bias.
- A key question is how we can have AI that deserves our trust.
- If a company or a government agency is asking you to trust their AI, they ought to be able to explain to you why you should trust the AI.
 - What kind of testing did they do?
 - What kind of guardrails are built in?
 - What will happen if something does go wrong?
- In government we strive to be accountable in that way. We have heard from many companies that do the same.

Q. Self driving cars. What is the potential? Regulation – Can they be regulated? How to encourage their development through policy? Dangers/risks? What happens when the cars even own themselves? Who is responsible?

- Self-driving cars are the future of ground transportation.
- Self-driving cars can be dramatically safer than human drivers and can give mobility to people who aren't able to drive.
- Regarding regulation, it wouldn't be appropriate to comment on specific regulatory work in progress. *(note: two key pieces of this work – a proposed rule on vehicle-to-vehicle communications, and guidance from DOT on autonomous vehicles, are currently with OIRA for review and expected to be published in the coming months)*
- But what I can say is that, big picture, the Federal government will continue to pursue two goals when it comes to automated transportation: to enable new and innovative

technologies, and to use regulatory and other tools to keep Americans safe on the roadways.

- Right now we don't see the need for broad across-the-board regulation of AI.
- Many existing regulations will touch AI-enhanced products (see above for additional regulatory details).

Q. International Challenges. Global dangers of AI: What are they and how might we address them? How can we enforce any limits on AI internationally and should we? How do you prevent AI from becoming a new arms race, particularly with China?

- There is no doubt that AI and related technologies will be global.
- The important question is how we get a global understanding of the appropriate safeguards.
- AI is not different in this way from the challenges with other advanced technologies that cross international boundaries and require both national and international coordination.
- I believe these technologies have tremendous potential for global good and that we, as a global society, can and will find the right way to minimize their potential for harm.

Q. AI Systems. How might we trust other systems with AI? (Banking for instance. What happens when you combine AI and the blockchain?) Could AI inform legislation or international relations? Can we trust it with those kinds of decisions? If we trust it to train our doctors and police, can we trust it to train our leaders? How do you regulate systems, or provide accountability, when they are a black box? The workforce and AI: Already a certain portion of the workforce feel left behind by the information economy. How does AI exacerbate this and what is there to be done?

- AI's impact on jobs and the economy is the next chapter in a long story of American innovation driving changes in the economy.
- As with past tech-driven transitions, the economy will grow and new jobs will be created but some existing jobs will be displaced.
- My Council of Economic Advisors (CEA) projects changes in the nature of work, but we don't expect an overall loss of jobs.
- Instead, what we can expect is for AI to create some pressures on the labor market that may perpetuate inequality if technology displaces certain types of workers but not others.
- The policy challenges will be how to give a hand up to workers who are displaced, and how to educate our kids and train our workforce for the jobs of the future.

- Policy-makers, regulators, and government technical experts in the United States and around the world are monitoring developments in financial technology, including blockchain technologies, closely.
- Our main focus for financial services, old and new, is to ensure that financial products and services are transparent, fairly-priced, safe, and affordable for consumers, markets, and investors.
 - As with any disruptive technology, the key for policymakers and regulators is ensure transparency and safety without stifling innovation.

Q. What do you see as the most exciting potential for AI? (Even if it's not something that is currently very far along, or even something that is not being worked on yet.)

- [POTUS to answer]
- AI has the potential to improve quality of life for the citizens who need the most help while freeing up the most valuable asset of all Americans, time.

What projects in AI inspire you?

- [POTUS to answer]

Additional

We plan to focus the conversation on AI, but should the conversation get too abstract, lull, or run out of steam, we will need to shift directions. Here are the avenues we will pursue.

Q. 45 years ago, the US government put a man on the moon. That's still the go-to symbol of technological innovation, of our ability to use science and the spirit of exploration to move humanity forward. Everyone refers to what they're working on as a moon shot, What's the moon shot you're most excited about these days?

- We're at an incredible point when it comes to the future of medicine. We've taken some important steps that hold the potential to transform and improve people's lives.
 - Precision Medicine
 - One of the projects that I'm incredibly excited about is my Precision Medicine Initiative. We've seen incredible advances in the ability to decode the human genome. In fact, the price of getting a full sequence of your genome has gone from \$3 billion in 2000 to just over \$1000 today. However, we have yet to create tailored treatments based on your genome. The Precision Medicine Initiative is committing to building the largest health dataset ever using the data from at least one million volunteers. The insights drawn from it by the top data scientists and medical researchers engaged in the PMI will ultimately enable a whole new level of personalized care.
 - BRAIN
 - I'm excited about the BRAIN initiative that we launched a few years ago. The goal is to develop the technologies that will allow scientists to study the brain in action. It will increase our understanding of how the brain