<u>OPENING STATEMENT</u>
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of the Subcommittee on Research and Technology

House Committee on Science, Space, and Technology
Subcommittee on Energy
Subcommittee on Research and Technology
"Big Data Challenges and Advanced Computing Solutions"
July 12, 2018

Thank you, Chairman Weber and Chairwoman Comstock, for holding this hearing to explore the impact of machine learning-based approaches to big data science challenges at the Department of Energy, in academia, and in industry.

During a hearing last month, this committee heard from expert witnesses about the state of artificial intelligence and machine learning technology. That hearing was an opportunity to understand the history of AI and machine learning and their current and future impact on society, including jobs, the economy, and workforce needs. Today's witnesses will expand on machine learning solutions for challenges faced by the energy industry.

The energy industry is turning to applications of machine learning to help improve power generation, transmission and distribution, exploration of oil and gas resources, and materials characterization. Companies such as GE are already using data-driven predictive analytics to reduce their fuel consumption and lower their carbon footprint. The data produced by sensors and analyzed by sophisticated software allow for better matching of supply and demand, more efficient operation of the grid, and better integration of new technologies such as renewable energy generation and electric vehicles. In addition to the private sector, the federal government has made longstanding investments in artificial intelligence and data science research to grow our national machine learning capabilities, many of which can be applied to energy grid resiliency efforts. Experts have warned of the disastrous consequences of a natural or man-made attack on the grid. Through its Grid Modernization Initiative, the Department of Energy is working with public and private sector partners to develop technologies, including big data and machine learning, needed to meet current and future demands on the energy grid. And through the National Labs, represented today by Dr. Kasthuri from Argonne National Lab in my district, the Department of Energy has developed some of the world's foremost high-performance computing infrastructure to support advancing the frontiers of data science.

As the energy industry increases its use of big data and machine learning, we must consider the appropriate balance and scale of federal support. Advanced computing solutions increase the usability of the large amounts of data produced by the energy sector which can help achieve more efficient production, providing broad societal benefit. However, there are still technical

areas to be addressed including labeling and sharing of data, bias, confidence in output, and other issues.

I stated during last month's hearing that the Science Committee and our other colleagues here in Congress have a responsibility to inquire about the technical issues as well as the societal and economic impacts of AI and machine learning. Ensuring a skilled workforce for the machine learning and AI-based jobs of tomorrow is a high priority because there is a global race to assert leadership in AI. The U.S. must leverage its role as an incubator of ingenuity and innovation to be at the forefront of this technology.

I thank all of the witnesses for being here today and look forward to learning how Congress can help improve the use of machine learning and AI technologies to address big data science challenges in the energy sector.

I yield back.