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AI Advancements Hinge on Data and Responsibility

Automation can have incredible impacts as long as the algorithms are built with key ethical practices in mind.

What are the challenges you are seeing around artificial intelligence at DOD?

Steege Within DOD, the opportunities around AI, machine learning and deep learning are limitless. AI can play a part in cybersecurity, drone operations, tabletop exercises simulating deployment and enemy tactics, predictive maintenance, as well as many other basic needs like physical health, wireless coverage and even writing and maintaining contracts.

However, the same teams that are realizing these opportunities are faced with critical challenges. These include:

- **Data availability and quality:** The algorithms rely heavily on large amounts of quality data for training and making accurate predictions. DOD must be able to

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>
> **— Caden Bradbury, Technical Solution Specialist, NetApp**

efficiently acquire, clean, organize and share relevant data for AI applications.

- **Adversarial attacks and cybersecurity:** AI systems can be vulnerable to adversarial attacks where malicious actors intentionally manipulate input data to deceive or disrupt AI models.
- **Ethical and responsible use:** Data must come from a variety of sources to address concerns such as AI bias, transparency, accountability and the potential for autonomous systems to make life-or-death decisions.
- **Talent and expertise:** Recruiting and retaining AI experts, data scientists and engineers with relevant security clearances will be especially challenging.
- **Acquisition and procurement:** The rapid pace of development and complexity of AI systems both internally and in the cloud leads to challenges in acquisition, procurement and implementation.

What are some of the successes or use cases you've seen helping teams overcome some of these challenges?

Bradbury NetApp and NVIDIA implemented AI within the Navy by creating a joint solution for a project called Trident Warrior, which included the following components:

- NetApp Storage array
- NVIDIA Tesla V 100 GPUs
- 5G-connected cradle point
- Protopia AI's machine-learning model
- NetApp's Cloud Volumes ONTAP in Microsoft Azure
- Cameras to capture data

The goal of this project was to be able to detect bad actors on a Naval base. Cameras collected data of people's faces and stored them in a small edge

device containing NetApp storage and NVIDIA compute. This data would then be used on Protopia AI's unique model to differentiate bad actors from those who are expected to be at the base. The key to this model is that the data is officiated, so the identity of those on camera is not understandable to people for security measures. This model and data could then be moved via a secure 5G network to Microsoft Azure, allowing for broader access and continued improvement to model and data quality.

✺ Over the next year, what do you look forward to with regard to AI use within the government?

Bradbury DOD is looking at best practices from the private sector to design and scale AI operations. Building a fully optimized AI pipeline requires expertise in many areas, including data engineering, data science, enterprise applications, data center architecture, data visualization and domain knowledge. DOD will be looking to build a "dream team" of industry experts to help guide its AI journey. This wrangling will be a tall task, but we recognize DOD is focused on getting organized and ready to scale this year.

The process of sharing data across the department will also be top of mind. The agency is taking the correct approach of planning out a data platform first to allow AI systems to run optimally. Creating data lakes where multiple agencies can share data and findings will help to de-silo AI environments and significantly increase collaboration, leading to higher productivity.

AI applications perform best when data is as close to the AI operation as possible. Being able to move and replicate data across any platform (edge-near edge-core-cloud) is a game changer for the agency. Being able to utilize increasingly complex models across any environment is also a priority. ✺

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