

A254-019: Generative AI Enabled Tactical Network

ADDITIONAL INFORMATION

N/A

TECHNOLOGY AREAS:

Information Systems

MODERNIZATION PRIORITIES:

Advanced Computing and Software | Trusted AI and Autonomy

KEYWORDS:

Generative AI; Modeling and Simulation Data; Training Data; Artificial Intelligence

OBJECTIVE:

The objective of this topic is to create a realistic modeling and simulation environment using Generative AI for NGC2, the Army's new approach to a data-centric C2 architecture.

DESCRIPTION:

GenAI would be used to create realistic tactical data streams to create a diverse set of scenarios representing current threat, blue force, and logistics Command and Control and maneuver operations. The environment should reflect a realistic tactical network (DDIL environment) with multiple data access and delivery demands in real time. The generated data would be at scale and based on realistic models (e.g. tracks should be following likely routes/roads based on local terrain at a realistic pace and elevation vs randomly placed on a map at a random time and space).

Another objective is the use AI (or some other technique) to simulate limited bandwidth as data is 'exchanged' from producer to consumer to model a DDIL environment that logically aligns to the scenario fed by the GenAI data.

The Army's Next Gen Command and Control program is a large part of the effort to modernize the Army's network. It will provide commanders with the adaptive C2 architecture needed to make rapid decisions in a contested environment. NGC2 is the Army's joint effort with industry to build a "data-centric" command and control system enabled through network transport. The goal is to recreate the service's enterprise data architecture and renew its operational software framework.

IMPORTANT: A prize competition, xTechIgnite, will be used to identify small business concerns that meet the criteria for award for this topic. Winners selected from the xTechIgnite prize competition will be the only firms eligible to submit a SBIR proposal under this topic. All other proposals will not be evaluated. See the full xTechIgnite competition details here: <https://www.xtech.army.mil/competition/xttechignite/>.

PHASE I:

This topic is only accepting Phase I proposals for a cost up to \$250,000 for a 6-month period of performance.

Firms should expect to deliver a feasibility study around producing software that when run, creates and exposes an API that delivers tactically relevant data at scale following a logical scenario given near peer threat behavior today. Ideally, users should be able to toggle features to affect the volume and or velocity of the data generated and the ability to artificially interrupt the data or lose packets to simulate a DDIL environment or the loss of network transport. The study should address deployment options and impacts of the software being used in both a LAN and cloud environments.

PHASE II:

Firms will produce and deliver software that when run, creates and exposes an API that delivers tactically relevant

data at scale following a logical scenario given near peer threat behavior today. The application should allow users to toggle features to affect the volume and or velocity of the data being generated and the ability to artificially interrupt the data flow or lose packets to simulate a DDIL environment or the loss of network transport. Users should be able to define the data types, data fields, size, and other data attributes as desired or simply allow the software to 'decide' the generated data ontologies.

PHASE III DUAL USE APPLICATIONS:

GenAI has many commercial use cases. It applies in all big data industries like healthcare, social media, advertising, and investing.

- Financial Services: Leverage GenAI synthetic data for modeling of stocks, market movement, and risk assessments.
- Healthcare & Life Sciences: Synthetic data for research/drug development as well as patient simulations.
- Autonomous Vehicles: Synthetic data can be used to model real-world situations for autonomous driving, flight, and more in a 3D environment.

REFERENCES:

1. <https://federalnewsnetwork.com/army/2024/09/armys-demand-for-genai-surging-with-focus-on-integration/>
2. <https://www.defenseadvancement.com/news/british-army-training-simulations-to-be-enhanced-by-generative-ai/>

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