A25D-007: Context-Aware Decision Support

ADDITIONAL INFORMATION
N/A

TECHNOLOGY AREAS:
Information Systems

MODERNIZATION PRIORITIES:
Trusted AI and Autonomy

KEYWORDS:
Real-Time Data Synthesis, Context-Aware Summaries, Actionable Insights, Generative AI (GenAI), Military Planning and Decision-Making, Interoperable Capabilities, Soldier Readiness, Soldier Performance and Prioritization, Soldier-Centered Interface

OBJECTIVE:
Develop innovative capabilities that provide commanders with real-time, context-aware summaries and actionable insights by integrating dynamic data, enabling informed, unbiased decision-making that enhances training effectiveness and mission success.

DESCRIPTION:
In today's training and operational environments, commanders are confronted with vast amounts of data from diverse sources, including training schedules, Soldier readiness metrics, intelligence reports, and real-time battlefield information. While critical for decision-making, this influx of information creates a high cognitive load, which can result in delays or biased interpretations, especially in time-sensitive situations. Current decision-support tools utilize advanced algorithms to turn data into actionable insights. However, these tools often add to the information burden, leaving commanders to manually integrate and interpret data, often outside their core expertise. This topic aims to develop innovative solutions that leverage the latest advancements in generative AI (GenAI) to create interoperable, AI-driven capabilities. These capabilities will consolidate, synthesize, and prioritize real-time data to support military planning and tactical decision-making. The proposed solution will offer commanders, and potentially other AI systems, contextual summaries and actionable insights that enhance human decision-making and Soldier performance. It seeks secure, advanced solutions that can access, aggregate, and contextualize data from varied sources, delivering concise, actionable summaries. These summaries will enable commanders—and potentially AI partners—to anticipate threats, adjust plans, and make confident, real-time recommendations. This topic seeks to align with existing Army efforts exploring the latest breakthroughs and capabilities enabled by GenAI, namely, Large Language Models (e.g., COA-GPT, SmartBook).

PHASE I:
This topic is only accepting Phase I proposals for a cost up to $250,000 for a 6-month period of performance. The primary goal of Phase I is to establish the technical and commercial feasibility by delivering a proof-of-concept model that demonstrates real-time integration and summarization of mission-relevant data. Phase I deliverables include:

- Demonstrate ability to consolidate data from key Army data sources, with contextual summaries, and actionable insights meeting or exceeding human commanders.
- Develop a prototype interface capable of displaying synthesized information to commanders

PHASE II:
Develop a fully operational prototype, with a focus on enhancing the system's interoperability, AI-driven data processing, and Soldier-centered interface. Phase II deliverables include:

- Real-Time Data Processing: Refine algorithms to access and integrate real-time feeds from wearable sensors, training data, performance analytics, and environmental factors.
- Concise Summarization and Actions: Ensure that the system's summaries and actionable insights directly support commanders at the company level and above.
- Advanced, Scalable Interface: A fully developed user interface and ability to integrate or communicate with external or 3rd-party systems (e.g., COA-GPT, SmartBook).

PHASE III DUAL USE APPLICATIONS:

Develop a scalable, AI-driven system that delivers contextual summaries and actionable insights to support commanders across diverse training environments.
Phase III capabilities include:

- Real-Time Data Aggregation and Contextual Summarization
- Ability to dynamically and securely access and integrate additional data sources
- Interoperability Across Systems and Platforms
- Actionable insights must be based in Amry doctrine.
- A primary focus on enhancing Soldier performance in training and operational contexts
- Automated Data Prioritization Based on Mission Relevance
- User-Friendly Interface with Customizable Views
- Offline Functionality

REFERENCES:

1. Reddy, R. G., Lee, D., Fung, Y. R., Nguyen, K. D., Zeng, Q., Li, M., Wang, Z., Voss, C., & Ji, H. (2024). SmartBook: AI-Assisted Situation Report Generation for Intelligence Analysts. arXiv. https://arxiv.org/abs/2303.14337.
2. Goecks, V. G., & Waytowich, N. (2024). COA-GPT: Generative Pre-trained Transformers for Accelerated Course of Action Development in Military Operations. arXiv. https://arxiv.org/abs/2402.01786v1.

TOPIC POINT OF CONTACT (TPOC):

None