AI (Artificial Intelligence) Assistant for Military Training

Harnessing AI and LLM (Large Language Models) for Exercise Development
Technology for Military Training

Military training customers are always looking for ways to use technology to deliver a more realistic training experience, or to improve the process of developing training. Military training is intended to prepare units for the challenges they will face on operations. For high-readiness formations, this means preparing for a specific operation or deployment.

To sustain readiness, realism is essential. This is especially relevant since the 2022 invasion of Ukraine. The war in Ukraine has refocused training from counterinsurgency and smaller-scale military operations to large-scale conventional conflict. New lessons are being learned regularly, meaning that part of the exercise challenge today is developing exercise concepts that reflect the contemporary operating environment.

The Challenge

The biggest challenge for military exercise planners and developers is the time and effort required to build the content for a military exercise. For a ten-day exercise, months and months of preparation are required. Defining training objectives and scenarios sets the frame for the overall concept of the exercise. Then the most time-consuming and resource-intensive work begins: scripting events and injects that will deliver a valuable exercise that meets the training objectives. This is an enduring challenge for military customers: how to fit in the time and devote the resources necessary to turn the vision for an exercise into reality.

This process is the hardest part of any large exercise. Hundreds of individual injects need to be developed, organized into events, and aligned to training objectives. Injects are developed simultaneously by exercise scripters to develop the exercise.

The challenge is the time and effort required. Injects and event development are time and labour-intensive for exercise writers to draft. The exercise developers are there to provide their professional expertise to enhance the overall training and they don’t tend to be efficient typists, so actual production takes time. In other words, warriors—not keyboard warriors—are who you want developing your exercises.

The Innovation Project

MaestroEDE™ is an exercise management tool that Calian training experts developed working side-by-side with military customers to meet their training needs. MaestroEDE provides a single platform for designing, developing and delivering constructive simulation for military customers. MaestroEDE provides an end-to-end platform where exercise designers link training objectives to events, build exercise concepts and scenarios, and where developers build exercise events and injects to deliver the exercise.

Development is time- and effort-intensive. The innovation project began as an exploration of how artificial intelligence (AI) and large language models (LLM) could be used to accelerate exercise content development. Over decades of delivering exercises for military customers, Calian has libraries of data on exercise concepts, scenarios, events, injects and other exercise content. These libraries of data served as the data baseline for AI and LLM.
The Results

Content Development

The most significant result from the innovation project was creation of an AI chatbot assistant able to successfully create a training event and injects with a single input: that is, a single request to create an event on a subject through the interface. Our chatbot prototype delivered a title, an overview, a description of the event, a desired end-state and five sample injects to deliver the event in a simulated environment.

The summary on the right is provided by the chatbot as a draft for review. With a single additional click, a draft event was created in MaestroEDE including five supporting injects with no additional human input other than the initial input request. The human user can then review the output to ensure that it meets the needs of the exercise event and aligns with the overall scenario and training objectives.

This result was exactly as intended. The AI chatbot assistant creates the draft content and populates it into MaestroEDE with a single click. From there, the user can request that the chatbot provide more details and content to the draft injects it just created. It will use the original event as context to produce all the fields needed for the inject. The output is slower than a typical search that leverages the expansive data available on the open internet. However, each time this was attempted, the chatbot provided the additional details.

This version of the chatbot for MaestroEDE is currently in our production service as a beta version. Our testers have been generating events and injects across a spectrum of military, national security and public safety applications to validate that the chatbot performs for other scenarios and concepts as it did for our initial testing.
Content Quality Assurance

We extended the testing parameters during a hackathon to build on the initial success. Our team developed a prompt that evaluates the quality of human-developed injects. Our subject matter experts develop content for exercises, and this feature provides a rapid quality assessment of the content, along with suggestions for how to improve it. Using a red/yellow/green approach, our chatbot evaluates the quality of the content and comments for how to improve it. This is in addition to the standard spelling, grammar and punctuation verification. It will even offer suggestions for fields that are blank based on the existing data and automatically populate the field from the evaluation screen.
What’s Next?

The first iteration of the MaestroEDE AI virtual assistant was a success. Exercise development can be partially automated, saving time and effort on manual development. And we are just getting started.

Improving the ability to create events and creating more detailed injects are the next objectives. We have proven the original intent and will now seek to improve the functions and the variety of tasks that can be performed, as well as expand the capabilities of our AI virtual assistant.

These innovations can reduce exercise development time and increase the number of overall injects to fully cover multi-domain operations and enrich the entire exercise.

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About Calian

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