SOCOM224-D001: Track Correlation/Data Deduplication for SOF Mission Command

ADDITIONAL INFORMATION

N/A

TECHNOLOGY AREAS:

Information Systems

MODERNIZATION PRIORITIES:

Artificial Intelligence/ Machine Learning | Control and Communications | General Warfighting Requirements (GWR)

KEYWORDS:

Data, Deduplication, Correlation, Geospatial, Circular Error Probable, Spherical Error Probable, Elliptical Error Probable, Ellipsoid Error Probable, Mission Command, Kalman

OBJECTIVE:

The goal of this effort is to correlate and de-duplicate large sets of data automatically and in in real time from various sources using identifiers, supporting metadata, and location to merge data sets into a single object to reduce ambiguity and screen clutter. This reduces user overload in terms of data visualized in a user interface, as well as reduces time in trying to deconflict identical data displayed more than a single time.

ITAR:

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with section 3.5 of the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

DESCRIPTION:

Real-world objects such as aircraft, ships, vehicles, personnel, etc. affect mission goals within the operations area. Whether they are potential military targets or possible collateral damage, it is critical for Special Operations Force (SOF) operators and their Command and Control (C2) elements to have continuous Situational Awareness (SA) of their location (i.e., tracks). A combination of various data feeds containing positional data may result in duplicate tracks (i.e., two different sensor or systems reporting the same real-world object). Even objects without positional data may need to be correlated, deduplicated, and their metadata merged. These tracks may have a host of metadata associated with them captured by various sources or systems: military, civilian, and open sources. These objects may have assigned unique identifiers (UID), sensor IDs, and supporting metadata. Often multiple sensors (using various technologies) obtain track data, which varies in accuracy, precision, and completeness. Track location (when sources have different capabilities) may vary for the same object. Latency, staleness, and other factors present a significant challenge to correlate these objects in real-time. The goal is to merge duplicate tracks and other data into a single object to reduce ambiguity and screen clutter.

PHASE I:

Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraphs entitled "Objective" and "Description."

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study ("Technology Readiness Level 3") to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary.

Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

NOTE: This topic is accepting Direct to Phase II (DP2) proposals only. Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility described above has been met.

PHASE II:

Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a Track Correlator for Mission Command.

PHASE III DUAL USE APPLICATIONS:

This system could be used in a broad range of military applications where multiple disparate data sources and feeds need to be correlated against one another to ensure data accuracy. This is also widely applicable to commercial sectors where large amounts of repetitive data take time and computational power to understand and deduplicate.

REFERENCES:

1. Performance metrics for correlation and tracking algorithms: https://calhoun.nps.edu/handle/10945/2473

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