

NOTE: Under the Cooperative Agreement, Technical Directorates have three options for topics. First, a topic can strictly be considered in the pool for the state allocation of funding. DAGSI will work across the TDs for this allocation. Second, the TD can be prepared to be a funding partner with the State of Ohio. This would include: providing additional funds to support additional recipients of a topic, or expand the proposers team to include additional members on a topic. Third, the TD may elect to fully fund a topic not selected for State of Ohio funding or to pursue University teams outside the State of Ohio. Contact lindsay.kotouch.2@us.af.mil for questions.

- 1. Research Title:** Improved Geolocation using DOA/TDOA Fusion
- 2. Individual Sponsor:**

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3. Academic Area/Field and Education Level

Electrical Engineering (MS or PhD level)
Computer Engineering (MS or PhD level)

- 4. Objectives:** Develop an efficient method for fusing the information from multiple direction of arrival (DOA) and time difference of arrival (TDOA) estimates to improve geolocation performance.
- 5. Description:** Geolocation in the single-platform scenario (DOA estimation) and multi-platform scenario (TDOA estimation) both have their well-established benefits and drawbacks. Single platform geolocation requires no time synchronization but suffers poor geolocation accuracy. Multi-platform geolocation provides better geolocation accuracy than conventional single-platform geolocation but suffers from increased computational complexity and strict time synchronization requirements. Sensor Fusion provides a process to combine data from different sources and improve overall performance. The goal of this project is to develop a novel method of fusing DOA and TDOA estimates to improve geolocation. Rather than focusing on the development of new algorithms, this project should utilize existing DOA and TDOA algorithms and originate a novel approach for the fusion of DOA and TDOA data that outperforms current state of the art approaches in terms of geolocation accuracy and/or computational efficiency.
- 6. Research Classification/Restrictions:** unclassified
- 7. Eligible Research Institutions:** DAGSI-SOCHE members

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