

Attachment 1 – DAGSI Research Topic Template

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:** Tracking and Managing for AI-Driven, Low-SWaP Autonomous Systems
2. **Individual Sponsor:** List the AFRL research topic sponsor's contact information

Example:

Dr. Trevor Bilh, AFRL/RYPAR
AFRL/RYPAR Bldg 620
2241 Avionics Circle
WPAFB, OH 45433-7333
Trevor.Bilh.2@us.af.mil

3. **Academic Area/Field and Education Level**

Electrical Engineering and Computer Science (MS or PhD level)

4. **Objectives:** Current autonomous systems leverage legacy AI/ML algorithms which are often computationally complex and require significant energy for operations. Reliance on such algorithms reduce the time an autonomous system can remain in mission. This effort will develop algorithms for edge autonomy decision making which leverage low-SWaP processing for efficient computation.
5. **Description:** New computing platforms use much less power than widely used graphical processing units (GPUs) to execute complex AI tasks. These platforms enable a new generation of AI-driven autonomous systems that can be deployed for long periods without power infrastructure in resource-limited environments. This project focuses on efficient software components in AI-driven workflows of autonomous systems and guides resource management. A key aspect of the project is integrating low-SWaP software and hardware, e.g. spiking neural networks (SNNs) and neuromorphic computing.
6. **Research Classification/Restrictions:** Unclassified
7. **Eligible Research Institutions:** Ohio State University, Ohio University, University of Cincinnati

NOTE: Topics submitted to DAGSI must be approved for public release. Need PA Approval #AFRL-2024-4582