Department of the Navy SBIR/STTR Transition Program

SSP: 13 Feb 2019

Topic # N11A-T021

Cognitive Ultra-Low Power Sensor System (CUPSS)

Intelligent Automation, Inc.

WHO

SYSCOM: SSP

Sponsoring Program: Not Specified

Transition Target: Base Protection

TPOC:
SSP.SBIR@ssp.navy.mil

Other transition opportunities:
ISR, Perimeter Security, Border Security, Airport and Other Critical Infrastructure Security

Notes:
ARGUS - The RF sensing modality of CUPSS
CUPSS - Cognitive Ultra-low Power Sensor System
PIR - Passive Infrared

WHAT

Operational Need and Improvement:
The Navy wants to increase the use of minimal infrastructure, rapidly deployable security solutions at its bases and facilities.

Specifications Required:
- To enable area and container situational awareness for extended periods of time
- Algorithm, firmware, and software improvements to detection performance and reduction in false and nuisance alarms
- Sensors should be able to function alone or in collaboration with other multimodal sensors and image analytics to produce actionable intelligence

Technology Developed:
Intelligent Automation Inc. (IAI) is developing an ISR sensing system called Cognitive Ultra-low Power Sensor System (CUPSS) that provides long-term unattended perimeter security and intrusion detection to protect sensitive areas and assets. CUPSS supports rapid deployment and can reliably interface with existing infrastructure or operate as standalone system. It can be used as a temporary stand-in fix for perimeter breaches. Once a trigger occurs, additional sensors (such as PIR, EO, and infrared) and analytic services (sensor fusion) are activated as required to develop situational understanding. Improvements will be made to the system which will reduce the number of false and nuisance alarms. We will investigate: higher transmit power, polarization diversity, sensor height, overlapping detection zones, and enhanced detection algorithms.

Warfighter Value:
- Power efficient – reduces maintenance and logistic support
- Scalable – several nodes can form a mesh network
- Variety of sensing modalities – including radio, thermal, and vision-based sensors
- Comprehensive physical security – provides early threat warning and continued surveillance for long periods of time

WHEN

Contract Number: N00030-17-C-0019 **Ending on:** December 4, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
System Characterization	Low	Data collection and analysis completed; Enhanced system design completed	3-4	December 2017
System Enhancements, Hardware Development and Lab Testing	Low	Prototype system fabricated	4	December 2018
System Enhancements, Hardware Development and Lab Testing (Option1)	Low	Production system fabricated and FCC certification completed	5	July 2019
Demonstration in Relevant Environment (Option 2)	Low	The enhanced CUPSS system will be assessed/demonstrated in one or more relevant environments	6	March 2020

HOW

Projected Business Model: This technology will be integrated into IAI's Argus product line which includes direct sales model to commercial and government entities as well as establishing subcontracting relationships with prime security equipment vendors to supply CUPSS equipment, and support system integration.

Company Objectives: Develop technologies to augment the Argus product line that will make IAI more competitive to both commercial and government customers.

Potential Commercial Applications: The technologies developed under this program will be integrated into IAI's Argus product line. The technology will be used to enhance the product line's detection ability and integrate sensor fusion into our Argus enterprise software that is currently being used by commercial customers for physical security and intrusion detection.

Contact: Devendra Tolani, Principal Investigator
dtolani@i-a-i.com 301-294-4630