



Autonomy Technology Research Center

Air Force Research Laboratory Sensors Directorate
and Wright State University

JR Jamora

Sensors Directorate

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ATR Center

AFRL Sensors Directorate

Mission

Lead the discovery and development of future capabilities providing integrated Intelligence, Surveillance, and Reconnaissance (ISR), combat identification, and spectrum warfare effects

Vision

Enable ubiquitous Situation Awareness and Spectrum Dominance for Global Vigilance, Reach, and Power

Primary Research Directions

**Radio Frequency
(RF) Sensing**



**Electro-Optical
(EO) Sensing**



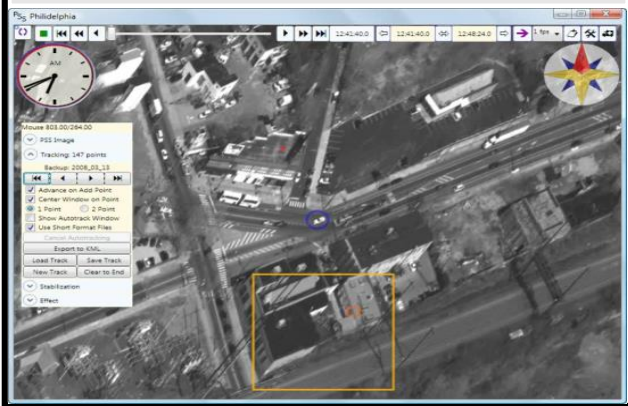
**Spectrum
Warfare**



**Trusted and Resilient
Mission Systems**



**Multi-Domain
Sensing Autonomy**

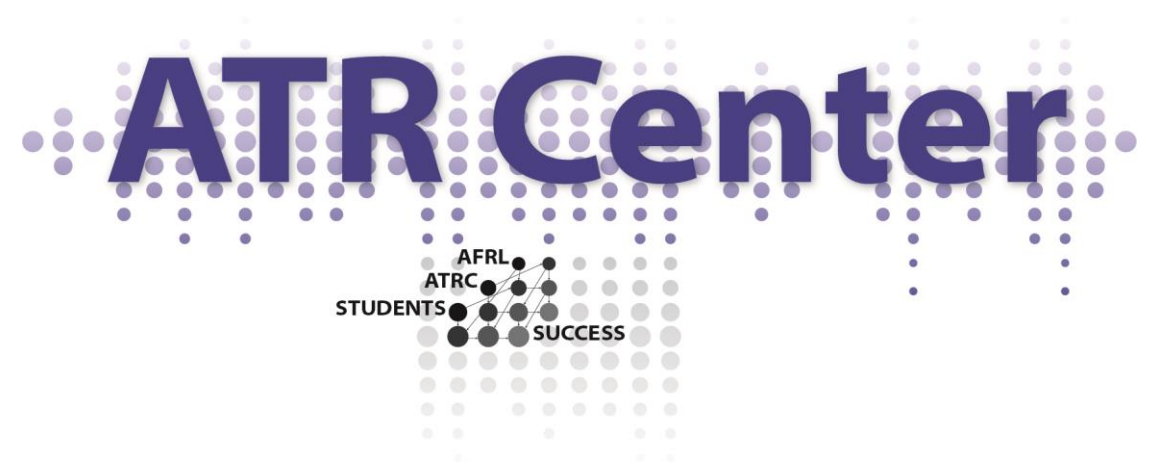


**Enabling Sensor
Devices and Components**



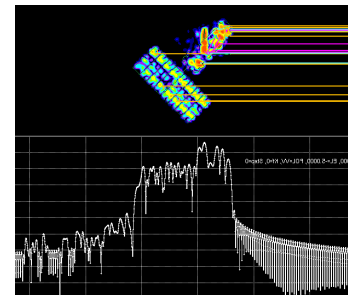
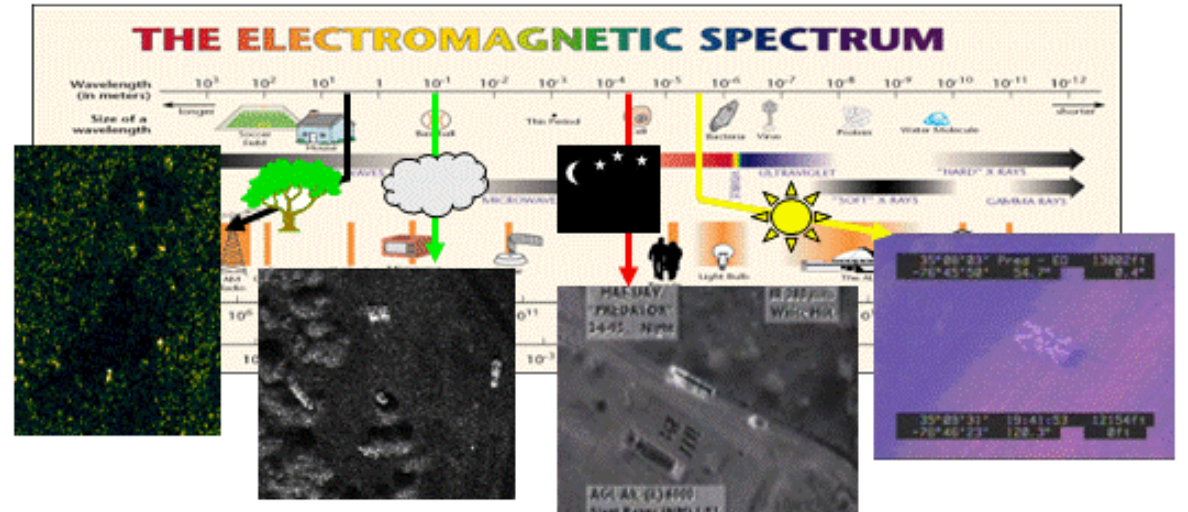
Autonomy Technology Research Center

- Air Force relevant topics in autonomous sensing, including machine learning and adaptive sensing
- 14 week summer intern program
- Mentor-driven student research
- Predominately graduate students but suitably prepared undergraduate and high school students are also included
- Engineering (predominately electrical), physics, mathematics, computer science, and statistics
- Competitive pay, free housing, travel to and from Dayton OH, and use of WSU facilities
- Work on-site at Wright State University and Wright-Patterson Air Force Base (WPAFB) depending on facility requirements
- Seminars, tours, extra-curricular activities (e.g., amusement parks, canoeing, tubing, and hiking, local events such as Celtic Fest and Dayton Air Show)



ATR Center Project Scope

- Radio Frequency (RF) Sensing
 - Passive, bistatic, and multistatic RF sensing for imaging, moving target detection, localization, direction finding and over-the-horizon sensing
 - Adaptive aperture and waveform technology
- Electro-Optical (EO) Sensing
 - High resolution passive imaging and hyperspectral imaging
 - 3-D and synthetic aperture ladar imaging and laser vibrometry sensing
- Multi-domain Sensing Autonomy
 - Deep learning, general AI, and fusion for detection, tracking, identification, and pattern of life analysis
 - Simulation and modeling for algorithm development and evaluation
- Spectrum Warfare
 - Cognitive algorithms for wideband spectrum awareness
 - Advanced algorithms for position, navigation, and timing
- Enabling Devices and Components
 - Modeling/simulation/design of advanced RF and EO/IR device technology, electronics/optoelectronics integration methods and RF/EO/IR sensor subsystems
 - Performs application demos including embedded sensor signal processing.
- Trusted and Resilient Mission Systems
 - Trusted, open system technology resistant to physical tampering and cyber attack



Autonomy Technology Research Center

- Cutting edge research with Air Force Research Laboratory mentors addressing defense challenges for the Nation
- Competitive pay; free housing, and travel to Dayton, Ohio
- Not just work – tours, seminars, short courses, and extra-curricular activities



www.wright.edu/autonomy-technology-research-center

Questions?