



Wolf River Engineering, LLC

Capabilities Statement

About

WRE is a certified small business providing research, development, test, and evaluation services for autonomous systems, from single platforms and payloads to distributed, decentralized multi-platform packages. We also provide these services at the component and subsystem level, yielding flexible options for both small and large customers to fill gaps or experimental needs. Our engineers have supported both public and private organizations, including the National Geospatial-Intelligence Agency (NGA), NASA, Air Force, Navy, Marine Corps, Lockheed Martin, Booz Allen Hamilton, and more, as well as large and small projects from TRL 1 investigations and requirements definition to avionics and software test engineering and integration for NASA's Artemis I and II missions.

Core Competencies

- Autonomous systems hardware
 - Avionics, electronics, mission computers
 - Mechatronics, hydraulics, actuators
 - Power, propulsion, locomotion
- Autonomous systems planning and control
- Embedded systems
 - Bare metal, RTOS, embedded Linux
 - FPGA
- RF systems
 - Antennas and phased arrays
 - RF frontends
 - Digital signal processing, mission-specific
- Sensing
 - Radar
 - Computer vision, lidar
 - Inertial
 - Air data
 - Sonar
- Dynamic modeling and simulation
 - Electromagnetic
 - Fluid and thermal, aerodynamic and hypersonic
 - Hardware in the loop (HITL), planning, control
- Test Systems
 - Instrumentation and data acquisition
 - Test planning, operations (lab and field), and results analysis

Differentiators

- Autonomous systems hardware and software development across all domains: land, sea, air, and space
- Real-time replanning and payload-directed autonomy
- Dynamically realizable state estimation, planning, and control for nonlinear systems, including optimization-based methods
- Distributed state estimation, planning, and control for multi-platform, multi-agent systems
- Classical and modern artificial intelligence and machine learning as applied to physical systems
- Autonomous multi-target tracking and classification
- Autonomous system and payload red-teaming
- Mixed-signal (incl. RF) PCB design, test, and integration
- Ultrawideband, ultralightweight, and phased array antennas
- Electronic Warfare, Electronic Support, LPI/LPD communication
- Instrumentation, search, track, and synthetic aperture radar
- Classical and machine learning computer vision for object recognition and 3D imaging
- Multi-fidelity simulation and test stackups for iterative RDT&E, both custom and COTS
- High speed imagery, shadowgraphy, particle image velocimetry
- Thousands of hours of engineer expertise in lab and field experimentation, from benchtop to billion-dollar HITL environments, from parking lot tests to multi-branch exercises
- Access to multiple field test sites

Point of Contact

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Corporate Data

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CAGE: 17GM8

NAICS:

541715 (Primary) - Research and Development in the Physical, Engineering, and Life Sciences

541330 - Engineering Services

541511 - Custom Computer Programming Services

541512 - Computer Systems Design Services