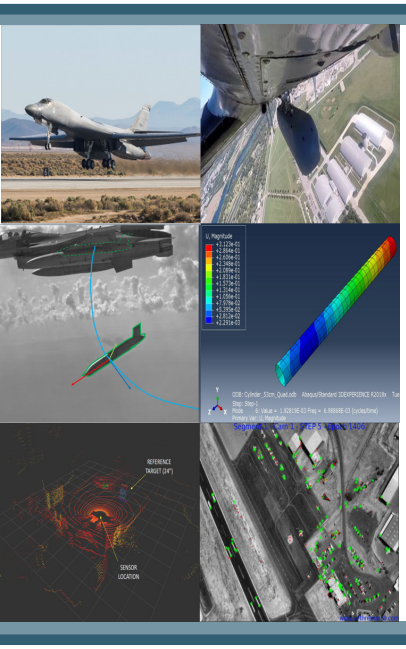
Veth Research Associates, LLC
Capabilities Statement



Veth Research Associates, LLC is a veteran-owned small business established in 2013 with employees in Niceville, FL and Dayton, OH. We specialize in R&D and flight test for GPS-denied navigation.

President	Michael J. Veth, PhD
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D-U-N-S	045812577
Cage	70KC8
NAICS	
541715	Research and Development in the Physical, Engineering, and Life Sciences
541330	Engineering Services
541380	Testing Laboratories
541512	Computer Systems Design Services
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing

We design, build, and test software and hardware solutions for navigation / PNT challenges. Areas of expertise include:

- Navigation in GNSS-denied environments
- Optical Targeting & Tracking
- Visual Navigation
- Structural Analysis
- Autonomous Vehicular Control
- Rapid Prototyping and T&E

Our Cessna Skymaster O-2A serves as a flexible airborne flight testbed operated by our team of engineers and military-trained pilots. Airborne test capabilities include:

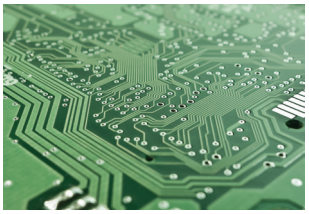
- Flight test planning and execution
- Airworthiness assessments
- UAV surrogate
- EO/IR sensor development
- Chase/target support
- GNSS-denied testing onboard truth data
- Radar development (360° mount options)

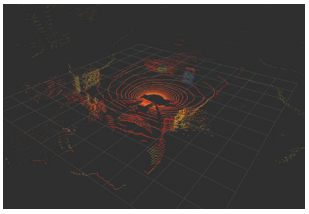
Differentiators:

- Expert team of engineers and pilots with military, industry, and academic backgrounds and Test & Evaluation expertise
- Diverse portfolio of past projects and contracts for clients in the DoD, NASA, and aerospace industry
- Committed to providing innovative software and hardware solutions and unparalleled support
- FAA Designated Engineering Representative (DER), CFI, CFII, Commercial, ATP
- FAA Airframe and Powerplant Mechanic with Inspection Authority (A&P/IA)
- 100% US Citizens

Veth Research Associates, LLC
Capabilities Statement (continued)

Core Competencies: We design, build, and test.





Navigation and targeting system design and prototyping
- Flight-proven GNSS-denied navigation and targeting systems for A2AD applications
- Reference-quality GNSS+INS solutions
- Optical target tracking for aircraft stores separation
- T&E sensor modeling, simulation, and integration
- Inertial sensors, EO/IR imagers, magnetometers, sonar, SAR radar, pressure sensors, ranging sensors, GPS, GLONASS, Galileo, BeiDou, sferics, laser scanners, software-defined radios, gravity gradiometers, RF signals of opportunity

Rapid hardware prototyping & flight testing
- Embedded software design (ARM, x86)
- Structural analysis (Abacus/OnShape)
- Circuit board design, Additive/Subtractive CAD/CAM
- Wiring/cabling, TiG/OA welding
- Airworthiness analysis + certification
- 6x USAF TPS graduates on staff
- Over 7500 hours flight time, 30+ MDS (fighter / bomber / transport / private)

Deep neural networks and machine learning
- Passive GNSS-denied navigation using optical and inertial sensors
- Robust Bayesian estimation using incremental factor graphs
- Structural analysis and monitoring using real-time nonlinear parameter estimation

Aircraft structural analysis and nonlinear controller design
- Custom system controller and autopilot design, prototyping, test and evaluation
- Nonlinear 6 DOF modeling of aero, elastic & rigid body states
- Linear & nonlinear control solutions (LQR, Dynamic Inversion, MPC)

Past and Present Contracts:

- US Air Force
- US Army
- US Navy
- US Marines
- NASA
- Honeywell
- AeroVironment
- John Deere
- Northrop Grumman
- KBR Wyle
- MacAulay Brown
- Dynetics

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