# Dossier: RESEARCH IN FLIGHT LLC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,248,744.00

**Award Date:** 2023-02-10

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

RESEARCH IN FLIGHT LLC (RIF) is a small business specializing in the development and provision of advanced flight control systems, navigation solutions, and embedded software for unmanned aerial vehicles (UAVs) and other aerospace applications. The company's primary business centers on enabling autonomous flight capabilities in challenging environments, particularly where GPS is denied or unreliable. RIF's mission is to provide cutting-edge technology solutions that enhance the performance, reliability, and autonomy of unmanned systems. They aim to solve the problem of limited autonomy in GPS-denied or contested environments by offering robust sensor fusion and estimation algorithms, coupled with fail-safe flight control software. Their unique value proposition lies in their expertise in nonlinear estimation, control theory, and real-time embedded systems, allowing them to offer highly customized and efficient solutions tailored to specific platform needs.

**Technology Focus:**

* Development and integration of visual inertial odometry (VIO) systems for autonomous navigation in GPS-denied environments, leveraging camera and inertial measurement unit (IMU) data fusion. Their solutions are designed for robust performance in dynamic and visually degraded conditions.
* Advanced flight control algorithms and autopilot systems for UAVs, incorporating sensor fault detection and isolation (SFDI) and adaptive control strategies to enhance system robustness and reliability.
* Customized embedded software development for real-time control and navigation applications, including implementation of Model Predictive Control (MPC) and other advanced control techniques on resource-constrained platforms.

**Recent Developments & Traction:**

* In 2021, RIF was awarded a Phase II SBIR grant from the US Air Force to develop improved sensor fusion algorithms for GPS-denied navigation in UAVs.
* Ongoing participation in various US Department of Defense sponsored research programs focusing on autonomous navigation and resilient flight control for unmanned systems.
* Partnership with small UAV manufacturers to integrate their autopilot and navigation solutions into commercial drone platforms, enabling enhanced autonomy and reliability in challenging environments.

**Leadership & Team:**

* (Limited public information readily available on key leadership outside of general contact information). Information suggests a team composed of PhD-level engineers with expertise in aerospace engineering, computer science, and control systems. Further research is likely needed to identify specific leadership roles and individual backgrounds.

**Competitive Landscape:**

* Honeywell Aerospace: While a much larger company, Honeywell develops and provides navigation and flight control systems for a range of aerospace applications, including UAVs. RIF differentiates itself through its specialization in customized solutions and its focus on GPS-denied navigation, offering a more nimble and tailored approach compared to Honeywell's broad product portfolio.
* Autonodyne LLC: Autonodyne provides flight control solutions including autonomy and software for commercial and military UAVs, and advanced helicopter control. RIF differentiates itself through a focus on algorithms and sensor integration services.

**Sources:**

* [https://www.researchinflight.com/](https://www.researchinflight.com/)
* [https://sbir.defensebusiness.org/](SBIR database search for "RESEARCH IN FLIGHT LLC" reveals granted awards, though specific details are often limited to the abstract.)
* [https://www.sam.gov/SAM/](SAM.gov data provides basic company registration information)