

## **Design of a Low-Cost Flight Parameterization System for use by General Aviation**

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*The views expressed herein are those of the author and do not reflect the position of the United States Military Academy, the Department of the Army, or the Department of Defense.*

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**Abstract:** Experimental Amateur-Build (EA-B) aircraft are 350% more likely to be involved in an accident during the first 40 hours of flight than all other aircraft in the General Aviation (GA) fleet. Pilots must manually collect measurements that are used to develop a pilot's operating handbook, to include emergency procedures. Currently, no system exists to automate the process of recording specific in-flight aircraft measurements, parameterizing the aircraft, and creating the necessary manuals and documents required by the FAA. This project proposes a low-cost flight data recording and analysis system that uses a combination of hardware and software for E-AB pilots to use during the first 40 hours of their testing process that will help reduce error and inconsistencies. Final simulation data will be used to influence the ultimate device requirements for both the microcontroller platform, and inertial and positional sensors.

**Keywords:** Experimental Amateur-Built Aircraft, Stochastic Modeling, Flight Data Analysis