

Jesse Couch | Résumé

📧 • ✉ jesse.c.couch@gmail.com • 🌐 www.jesse-couch.com

Aerospace engineer and computer scientist, looking to provide an intelligent, hardworking, and team-oriented attitude to a fast-paced and challenging environment.

Employment

Adaptive Aerospace Group, Inc.

R&D Engineer, Computer Scientist

Hampton, VA

May 2015–Present

Modeling and simulation analysis lead for NESC CCP software common cause failure assessment. *(Ongoing)*

Development lead for Microsoft HoloLens application to view wind tunnel data during operation. *(Ongoing)*

Implement guidance algorithms and sensor models in POST2 simulation environment for NESC CCP IV&V. *(Ongoing)*

Develop MATLAB/Simulink-based simulation and control laws for HLS demonstrations and handling quality studies. *(Ongoing)*

Design hardware and software system to record control surface positions and sensor information on general aviation aircraft for turbulence study. Assist with data collection flights as Flight Test Engineer.

Develop MATLAB/Simulink-based simulation and Monte Carlo analysis approach for a hypersonic flight research vehicle aimed at validating controls robustness to off-nominal conditions.

Develop Monte Carlo approach for fixed wing sUAS simulation aimed at the statistical variation of off-nominal trajectories following simulated flight failures.

Head-mounted-display application development for pilot alerting and loss-of-control prevention.

Software design, development, and simulation for Safe Autonomy Flexible Innovation Testbed (SAFIT™) UAS flight management system, including waypoint following, traffic and obstacle avoidance, geospatial containment, and flight envelope protection.

sUAS design, construction, maintenance, and mission operations.

Develop software to interface with various certified and experimental avionics instruments on-board a general aviation aircraft for data collection and display.

Configure and maintain I.T. equipment. *(Ongoing)*

Adaptive Aerospace Group, Inc.

Apprentice R&D Engineer, Computer Scientist

Hampton, VA

October 2012–May 2015

Assist in development of low-boom aircraft simulator for handling qualities analysis. Hardware and controller development for an Active Ride Improvement System demonstration sUAS.

Education

Old Dominion University

Aerospace Engineering (ME)

Norfolk, VA

August 2020–December 2022

North Carolina State University

Aerospace Engineering (BS), Computer Science (BS)

Raleigh, NC

August 2009–May 2015

Technical and Personal Skills

Programming Languages: C, C++, C#, Fortran, Java, JS, MATLAB, PHP, Python, Ruby

Markup Languages: HTML5, LaTeX

Industry Software Skills: Android Studio, Ansys, AVL, AutoCAD, Bazel, Circuit Maker, Eagle, eCalc, Eclipse, Electron, GitLab, GTest, IntelliJ, Jenkins CI, Mathematica, MATLAB, MissionPlanner, .Net, POST2, Simulink, Solidworks, STK, Unity, QGroundControl, Qt, Visual Studio, XFLR5

Other: Embedded Systems/Microcontrollers, sUAS Autopilots, Soldering, Git, SVN, SQL, MongoDB, Windows and Unix Platforms

Certifications and Training

Nov 2022: AGI STK Level 2 Certification

Sep 2018: RTCA DO-178C Training

May 2016: Private Pilot License

Oct 2019: Instrument Airplane Rating

Sep 2016: Part 107 sUAS License

Dec 2013: Amateur Radio License

Publications

Alec J. Bateman, Stephan De Wekker, Keith D. Hoffler, Jesse Couch and Eugene A. Morelli. "Flight Testing an Automated Turbulence Recognition System for Unmanned Aircraft," AIAA 2022-3407. AIAA AVIATION 2022 Forum. June 2022.

Sally C. Johnson and Jesse Couch. "A Wrapper Paradigm for Trusted Implementation of Autonomy Applications," AIAA 2017-4271. 17th AIAA Aviation Technology, Integration, and Operations Conference. June 2017.

Mary T. Stringer, Brandon Cowen, Keith D. Hoffler, Jesse C. Couch, Marilyn E. Ogburn and Corey Diebler. "Piloted Simulation Assessment of the Impact of Flexible Structures on Handling Qualities of Generic Supersonic Aircraft," AIAA 2013-4606. AIAA Atmospheric Flight Mechanics (AFM) Conference. August 2013.