

# Justin J. Matt

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## Experience

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### Research Aerospace Engineer

June '22 – Present

Flight Dynamics Branch at NASA Langley Research Center

- Served as technical authority and subject matter expert for system identification as applied to flight simulation and flight testing of various aerospace vehicles, including experimental aircraft, launch vehicles, fighter jets, small multirotor aircraft, and advanced air mobility (AAM) vehicles
- Responsible for design, simulation analysis, implementation, and post-flight analysis of programmed test inputs as part of the Space Launch System flight control system
- Conducted data analysis from Space Launch System flight data to identify control system stability margins, aerodynamic model parameters, and nonlinear actuator dynamics
- Designed control laws and estimation algorithms to facilitate automatic and/or autonomous formation flight between two fighter aircraft
- Developed piloted flight simulations and designed control laws for electric vertical takeoff and landing (eVTOL) concept vehicles based on military design and certification standards
- Assessed flying qualities and handling qualities of eVTOL concept vehicles from piloted simulation test data collected at the NASA Ames Vertical Motion Simulator including the susceptibility of the vehicle system to engine failures and pilot induced oscillations
- Designed and conducted wind tunnel tests and flight tests to characterize and identify aerodynamics of small multirotor vehicles from experimental data using novel system identification and experiment design techniques

### Research Assistant

May '19 – May '22

Cooperative Unmanned Systems Laboratory at University of Kansas

- Designed, built, and flight tested small uncrewed aircraft systems (sUAS) to support research of modeling, estimation, control, and remote sensing problems
- Designed sUAS control laws based on time-domain and frequency-domain control objectives that were programmed into a digital flight controller in C++
- Performed sUAS system identification from flight test data and used models for simulation, control law design, and state estimator design (e.g., complementary and Kalman filters)

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## Education

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### University of Kansas

Awarded May 2022

M.S. in Aerospace Engineering

### University of Kansas

Awarded May 2020

B.S. in Aerospace Engineering