Jiashuai Liu

+86-19801311765

ljsnwpu@163.com

Beijing, China

RESEARCH AREA

- Modeling, simulation, and control of the aero-engine and Altitude Ground Test Facility.
- Robust adaptive control, anti-windup design, control allocation of over-actuated system, etc.

EDUCATION

- **Beihang University** — Beijing, China
  Doctor of Engineering in Aerospace Propulsion Theory and Engineering — *Sep. 2018 – Dec. 2023*
- **Northwestern Polytechnical University** — Xi'an, China
  Bachelor of Engineering in Automation — *Sep. 2014 – Jun. 2018*

PROJECTS

- **Hardware-in-the-loop System** — 2022 – 2023
  - Constructed a real-time hardware-in-the-loop simulation system integrating an Altitude Ground Test Facility model and an aero-engine model.
  - Implemented L_1 adaptive control algorithm for the Altitude Ground Test Facility based on Programmable Logic Controller (PLC) in the hardware-in-the-loop system.
- **Modeling of Aero-engine Control System** — 2018 – 2022
  - Participated in establishing models of aero-engine controllers, fuel systems, and sensors.
  - The software involved are MATLAB and AMESim.
- **Modeling of Altitude Ground Test Facility** — 2020 – 2022
  - Proposed a general quasi-one-dimensional flow method. Using it to develop the general model library and system-level nonlinear model for Altitude Ground Test Facility.
  - The numerical simulation platform has been realized for engineering applications, including equipment commissioning and control algorithm verification.
- **Control of Altitude Ground Test Facility** — 2019 – 2021
  - Adopted μ synthesis method to improve the accuracy of pressure and temperature control of Altitude Ground Test Facility.
  - Established an optimal control allocation algorithm to realize the cooperative control of multiple valves in Altitude Ground Test Facility.
- **Stability Design of Fuel Metering Valve** — 2018 – 2019
  Designed fuel metering valve by closed-loop system stability to address fuel flow fluctuations in aero-engine under afterburner condition.

TEACHING EXPERIENCE

- **Undergraduate Research Guidance** — 2023
  Guided undergraduates research on "Cooperative Control Design of Variable Cycle Engine's Regulation Mechanism Based on Shape Memory Alloy". The project won Third Prize in "University Students' Energy Saving Competition of Beijing Municipality" and "Feng Ru Cup Competition of Beihang University".
- **Teaching Assistant** — 2020
  Undergraduate Course: MATLAB Control System Design (Spring Semester). School of Energy and Power Engineering, Beihang University.

PUBLICATIONS

- **J. Liu**, X. Wang, X. Liu, et al. μ-Synthesis control with reference model for aeropropulsion system test facility under dynamic coupling and uncertainty. *Chinese Journal of Aeronautics*, 2023, 36(10): 246–261. (Q1, 2/34, IF: 5.7)

- **J. Liu**, X. Wang, X. Liu, et al. μ-Synthesis-based robust L_1 adaptive control for aeropropulsion system test facility. *Aerospace Science and Technology*, 2023, 140: 108457. (Q1, 3/34, IF: 5.6)

- **J. Liu**, X. Wang, X. Liu, et al. An anti-windup design with local sector and H_2/H_∞ optimization for flight environment simulation system. *Aerospace Science and Technology*, 2022, 128: 107787. (Q1, 3/34, IF: 5.6)

- **J. Liu**, X. Wang, X. Pei, et al. Generic modeling method of quasi-one-dimensional flow for aeropropulsion system test facility. *Symmetry*, 2022, 14(6): 1161. (Q2, IF: 2.94)

- **J. Liu**, X. Wang, M. Zhu, et al. Multivariable adaptive control method for turbofan engine with dynamic and input uncertainties. *Journal of Engineering for Gas Turbines and Power-Transactions of the ASME*, 2021, 143(7): 71027. (Q3, IF: 1.732)

- **J. Liu**, X. Wang, M. Zhu, et al. Precise pressure control of constant pressure chamber based on control allocation. *Journal of Propulsion Technology*, 2022, 43(10): 383–391. (EI)

- **J. Liu**, S. Yang, X. Wang, et al. Open loop-closed loop compound control method for pressure stabilizing chamber based on double-valve control. *Journal of Propulsion Technology*, 2022, 43(12): 339–346. (EI)

- **J. Liu**, X. Wang, M. Zhu, et al. Two-valve regulation-based precise control method and system for air volume. China Patent: ZL202110762537.1, Jun. 3, 2022.

- **J. Liu**, X. Wang, S. Zhang, et al. Quasi-one-dimensional flow modeling toolbox software for piping systems (Educational version). China Software Copyright: 2022SR0553246, Apr. 29, 2022.

- **J. Liu**, X. Wang, X. Pei, et al. Research of Modeling and simulation study for air piping system of test bed. Proceedings of the Aero-engine Altitude Simulation Test Technology, Aug. 25–27, 2020, Mianyang, China. (**Outstanding Paper**)

- **J. Liu**, X. Wang, S. Yang, et al. Design of servo and anti-interference control of electro-hydraulic actuator system. Proceedings of the Fifth Joint Conference on Aerospace Propulsion, Sep. 16–19, 2020, Nanjing, China. (**Outstanding Paper**)

- **J. Liu**, X. Wang, M. Zhu, et al. MRAC-based aero-engine control research. Proceedings of the Fourth Joint Conference of Aerospace Propulsion, Aug. 14–17, 2019, Kunming, China.

HONORS AND AWARDS

Outstanding Graduates of Beijing Municipality	2023
Outstanding Academic Innovation Award of Beihang University	2023
Outstanding Paper Award of the Sixth Joint Conference on Aerospace Propulsion	2022
Excellent Graduate Students in Beihang University	2021
Merit student in Beihang University	2021
Outstanding Paper Award of the Fifth Joint Conference on Aerospace Propulsion	2020
Outstanding Paper Award of the Aero-engine Altitude Simulation Test Technology	2020
Outstanding Graduates of Northwestern Polytechnical University	2018
National Encouragement Scholarship	2016
National Encouragement Scholarship	2015