Mosarruf Hossain Shawon

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Research interests

Wind/gust/wake sensing & estimation, System identification of UAS, Small/micro UAS development.

Education

University of Kansas Lawrence, KS
PhD in Aerospace Engineering Aug 2021 – Present
Supervisor: Dr. Haiyang Chao

Military Institute of Science and Technology Dhaka, Bangladesh
B.Sc. in Aeronautical Engineering, major in Aerospace Feb 2014 – Jan 2018
Supervisor: Dr. M. A. Taher Ali

Publications

Vertical Wind Velocity Estimation during UAS Fire Plume Encounters
Mosarruf H. Shawon, Haiyang Chao, Matthew Rhudy, Tor Arne Johansen, Harold Patrick Flanagan, Pengzhi Tian, and Jacksen Goyer
Accepted for publication, AIAA Science & Technology Forum & Exposition, 2025

Estimation of Vertical Wind Velocity and Wake Parameters during UAS Wake Vortex Encounters
Mosarruf H. Shawon, Haiyang Chao, and Zhenghao Lin
AIAA 2024-2487, AIAA Science & Technology Forum & Exposition, 2024

Longitudinal System Identification for a Small Flying-wing UAS
Justin J Matt, Haiyang Chao, **Mosarruf H. Shawon**, Steven G Hagerott
AIAA 2023-0628, AIAA Science & Technology Forum & Exposition, 2023

Research experience

Cooperative Unmanned Systems Laboratory (CUSL)
Graduate Research Assistant Aug 2021 – Present
- Team lead on flight test of fixed wing UAS
- Developed a new vertical wind estimation algorithm during UAS wake vortex encounter and fire plume encounter
- Formulated and developed an optimal wake parameter identification method
- Utilized and modified the HawkWakeSim v2.1-VLM, a MATLAB-based flight dynamics simulator for the UAS response to wake vortices
- Servo model identification for the UAS actuator and control surfaces

Teaching experience

Graduate Teaching Assistant, Department of Aerospace Engineering
Spring 2022 & Spring 2024
AE 551: Dynamics of Flight II

The course contains mathematical modeling of airplane and control system analysis in state space, analysis on dynamic stability, phugoid, short period, dutch roll, roll, spiral, and other important modes, and transfer functions and their application.

Graduate Teaching Assistant, Department of Aerospace Engineering
Spring 2021
AE 430: Aerospace Instrumentation Lab
Overview and hands-on laboratory experiments using various experimental techniques available to aerospace engineers (pressure probes, thermocouples, strain gauges, hot-wire anemometer, laser Doppler velocimeter, and flow visualization techniques). - Used Labview to collect the sensor data and analyze using MATLAB - Conducted the lab sessions, assess and provide feedback on the student's work

Skills

Programming
Proficient in: MATLAB, C, C++
Familiar with: Python

Languages
Bengali (Native), English (Advanced)

Service and outreach

Teach for Bangladesh Nov 2018 – Dec 2020
Worked in a government primary school as a facilitator to reduce disparity and achievement gap of students from unprivileged communities.

Other interests

Playing chess, soccer, and reading non-fiction books