Haobo Zhao

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EDUCATION

Johns Hopkins University, Baltimore, MD *Sep. 2023 - Present*
Master in Mechanical Engineering
GPA: 3.86/4
Advisor: Dr. Rajat Mittal and Dr. Jung-Hee Seo

Southern Illinois University, Carbondale, IL, U.S. *2022-2023*
Aviation Technologies (Dual Degree Program with SAU)
GPA: 4.0/4.0
Dean's list: Spring 2022, Fall 2022
Magna cum Laude

Shenyang Aerospace University, Shenyang, Liaoning, China *2019-2023*
Aircraft Propulsion Engineering
GPA: 3.8/4.0
National Scholarship (2021, top 1% in Department)
SAU First Class Scholarship (Fall 2020, Fall 2021, Spring 2022)

MAJOR HONORS AND AWARDS

- **National Scholarship (2021)**: Top 1% in Department (Academic Performance).
- **First Prize of National Mathematics Competition (China, 2020)**: Top 8%
- **Third Prize of Mechanics Competition of Zhou Peiyuan(China, 2021)**
- **Top 5 in China of iCAN Innovation Contest (2021)**: 5/3000 in China, AI video surveillance clarity process

RESEARCH INTERESTS

Fluid dynamics, applied mechanics, computational fluid dynamics, multiphase flows, biological flows, immersed boundary methods, multi-physics modeling

RESEARCH EXPERIENCE

- **Johns Hopkins University** *Sep. 2023 - Present*
  Master Thesis (Advisor: Dr. Rajat Mittal, Dr. Jung-Hee Seo) – Department of Mechanical Engineering

- Developed an imaging data-based computational model of pancreatic duct (PD) using CFX solver, validated against clinical data.
- Built a pipeline for generating patient-specific PD models using cine-MRI data.
- Formulated a theoretical flow model to predict pressure variations along the PD.
- Simulated the mechanism of PD flow, correlating pressure drop with ERCP-related pain score.
- Collaborated medical group lead by Dr. Venkata Akshintala and Dr. Ibadat Singh Boparai
- Integrated computational models with clinical insights for potential diagnostic applications.

- **Shenyang Aerospace University** *Sep. 2021 - Dec. 2021*
  Project: Oil Tank Movement Simulation (Advisor: Dr. Wei Sha) – Department of Aerospace Engineering
  - Conducted CFD simulations to analyze oil-gas mixture behavior in a moving tank under various flight conditions.
  - Analyzed the impact of flight maneuvers on fluid stability, contributing to safety assessments.
- **Southern Illinois University** *Jan. 2022 - May. 2022*
  Urban UAV System – School of Aviation
  - Designed a truck-based UAS network for extended range through mid-route cargo exchange and power replenishment.
  - Developed a modular platform for universal UAS takeoff, landing, and maintenance.
  - Implemented dynamic route planning to optimize UAS operations and logistics.

VOLUNTEERING & TEACHING

Core Team Member *May. 2022 - Dec. 2022*
SIU-SAU University Colloberation Program Student Helper

- Provide counseling for students from Shenyang Aerospace University (SAU) for SIU-SAU Colloberation program
- Negotiated with Southern Illinois University (SIU) Center for International Education for Course-arrangement
- Worked with professional counselors to aid in providing emotional, mental, and financial support to students.

SAU Student Study Helper *Dec. 2019 - Dec. 2021*
Student Teacher, Shenyang Aerospace University

- Provided tutoring and guidance for Calculus I & II and College Physics I, including study sessions and final exam reviews.

- Assisted 66 students from the classes of 2023 and 2024, improving their understanding and performance.
- Collaborated with lecturers to enhance lecture quality and student comprehension.
- Developed final review materials, including Mind-Maps and instructional videos, to aid in retention.
- link:[Mind-maps]
- link:[videos]