Alex Baowend Soom M. A. Zongo

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EDUCATION

PhD in Mechanical and Aerospace Engineering   August 2024 - Present
School of Engineering and Applied Sciences,
George Washington University, Washington, DC, USA.
GPA: 3.9/4.0

Master in Control Sciences and Engineering   September 2021 - May 2024
Department of Automation,
Tsinghua University, Beijing, China.
GPA: 3.81/4.0

Machine Learning Summer School   June 2022 - August 2022
Oxford University, London, United Kingdom.

Bachelor of Engineering in Aircraft Design   September 2018 - June 2021
Department of Aeronautics,
Beijing University of Aeronautics and Astronautics, Beijing, China.
GPA: 3.78/4.0

Freshman year in Aeronautics and Astronautics   September 2017 - June 2018
Department of Aeronautics and Astronautics,
National Cheng Kung University, Tainan, Taiwan.
GPA: 4.05/4.3

SKILLS AND INTERESTS

Interests	Artificial Intelligence, Flight Control, Reinforcement Learning, Optimization, Robotics, Modeling and Simulation
Software And Frameworks	MATLAB, SIMULINK, ROS/ROS2 (Robotic Operation System), Python, C/C++, PyTorch, Scikit-learn, OpenCV
Soft Skills	Self-learning, Initiative, Team Work, technical writing, presentation and great communication
Languages	French(native), English(C2), Chinese(B1)

PROJECTS

Courses Projects   September 2024 - May 2025
George Washington University

- Analysis and implementation of an efficient algorithm for the maximum matching problem (Jack Edmon's algorithm on graphs)
- Design and implementation of ML algorithm applied to the prediction of NBA game winners.
- Application of System Identification techniques, classical control, and non-linear control methods on motor plant;
- Control and guidance of a SpaceX Grasshopper test vehicle in simulation to land back on its launch pad.
- Visual Odometry classical algorithm implementation on self-recorded datasets around my home.
- Air Traffic Control separation assurance and real-time conflict resolution via Multi-Agent Reinforcement Learning.

Courses Projects   September 2021 - September 2023
Tsinghua University

- Music Sound Source Separation via Deep Learning
- Menon Cells Hierarchical Classification with Machine Learning (ML)

Aircraft Modeling, Control and Simulation
March 2020

Beijing University of Aeronautics and Astronautics

· Modeling of a flight simulator within MATLAB/SIMULINK using the RCAM model (FM_AG-08_TP088-9). FlightGear was incorporated as an interface for graphical illustration.

General Aviation Aircraft Design
Sept 2020 - May 2021

Beijing University of Aeronautics and Astronautics

· Design of a lightweight sport aircraft that satisfies specific requirements, including maximum speed, endurance, weight, range, and flight envelope.
· Preliminary design of a helicopter, also based on some requirements provided.

RESEARCH PUBLICATION

Zongo, A.B., Wei Peng. (2025). Submitted, September 2025

Robust Multi-Agent Reinforcement Learning for Small UAS Separation
Assurance under GPS Degradation and Spoofing, In American Control Conference (ACC) 2026.

Zongo, A.B., LiQing. (2025). Published, March 2025

Towards Intelligent Fault Tolerant Attitude Flight Control Of A Fixed-Wing Aircraft,
In: Yan, L., Duan, H., Deng, Y. (eds) Advances in Guidance, Navigation and Control. ICGNC 2024. Lecture Notes in Electrical Engineering, vol 1353. Springer, Singapore. `https://doi.org/10.1007/978-981-96-2264-1_15`

PEER REVIEWS

Reviewer, **Journal of Aerospace Information Systems (JAIS)** March-September 2025

Reviewer, **International Conference in Guidance, Navigation, and Control (ICGNC) 2024** March 2024

INTERNSHIP/TRAININGS

Robotics Software Engineer Intern,
Popular Robotics, Beijing, China June-November 2022

I worked on a biped simulation in Gazebo with ROS & ROS2

A course on gait motion basics was drafted for an online course.

POSITION OF RESPONSIBILITY AND EXPERIENCE

Graduate Teaching Assistant
January 2025 - May 2025

George Washington University, School of Mechanical and Aerospace Engineering

· Course: Linear Systems Dynamics (MAE 3134), Spring 2025
· Responsibilities: Grading assignments and exams;
conducting recitations (office hours) to reinforce the lecture material.

Graduate Research Assistant
September 2024 - Present

George Washington University Intelligent Aerospace Systems Lab

· Focus: **Robust Markov Decision Processes / (Multi-Agent) Reinforcement Learning**
· Organizing and hosting the *Safe and Responsible AI workshop* on September 27, 2024, Washington, DC, USA. This workshop provided participants with the opportunity to identify challenges and opportunities, share work progress from multiple agencies (FAA, HASS COE, Johns Hopkins APL, and MIT Lincoln Labs) and institutes (TRAILS, NIST AI, RAIUK), and promote research collaborations.

Research Assistant
September 2021 - May 2024

Tsinghua University Navigation and Control Lab

- Participated in various lab projects, including Trajectory-Based Optimization Performance Graphical Simulation
- Research on applying AI to Flight Control: Fault-tolerant flight control
- Resulting in a publication to the International Conference on Guidance, Navigation, and Control (ICGNC 2024).
- Reviewer of ICGNC 2024.

Secretary General   May 2022 - May 2024
Tsinghua University African Student Association
- A student association established by students with the aim of cultural exchanges,
  learning, and leadership skill development among students and peers.
- Lead in cultural activities planning and organization
- Team leader and active member working to promote leadership
  and engagement in community service and problem-solving.

R&D Engineer   September 2022 - May 2023
Tsinghua University Artificial Intelligence International Student Association club
- A graduate-level AI club established by students with the aim of learning
  and professional skill development among students and peers
- Active member working to develop AI solutions for societal problems

EXTRA-CURRICULAR

Seminar on *Future of AI, The 6th Academic Forum on Artificial Intelligence of Beijing Universities*, Beijing, China	April 2024
Church Musician at *North Cathedral of Beijing*	September 2023 - July 2024
Campus Service Volunteer at *Tsinghua University*	September 2021 - May 2024
Performed as a piano player during the *Global Village* and *Starry Night* events at Tsinghua University, Beijing, China	May 2023

ACHIEVEMENTS

Graduate Research and Teaching Assistantship Recipient	2024 - Present
Chinese Government Scholarship Recipient	2018 - 2024
Outstanding Academic Achievement Awardee	2019 - 2020
Taiwan Ministry of Foreign Affairs Scholarship Recipient	2016 - 2018

DECLARATION

I hereby declare that the information provided above is true and accurate to the best of my knowledge and belief.