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Haobo Zhao

EDUCATION BACKGROUND

Southern Illinois University (SIU), *School of Aviation* Carbondale, IL

- Bachelor of Science in Aviation Technologies (Dual Degree Program with SAU) Expected May 2023
- GPA: 4.0/4.0
- SIU Dean's List for Spring 2022

Shenyang Aerospace University (SAU), *College of International Engineer* Shenyang, China

- Bachelor of Engineering in Aircraft Propulsion Engineering, GPA: 3.79/4.0 Expected June 2023
- ***Scholarships:***
  2021 China National Scholarship
  Won Comprehensive First-Class Scholarship for three times (Academic Performance), 2020&2021(1/50)

KEY COMPETENCIES

- Proficient in using ANSYS Fluent, LaTex, Python, SPSS, C
  - Proficient in using ANSYS 2021 to calculate basic turbulence model and heat transfer model
  - Using LaTex layout more than 20 competition and course papers
  - Experienced in using python to process data and perform data visualization
  - Have experience in using SPSS to perform data analysis and curvefitting
- 3D modeling with professional software such as CAD, Solidworks, CATIA
  - CAD for 2D mechanical drawing, Solidworks for 3D modeling, and CATIA for curve surface processing
- Passed FCC element 1 and 3 examination^

ACADEMIC PROJECT

Mathematical Modeling--Simulation of the Movement of Oil in the Tank September-October, 2021

Group Member, Sha Wei's Group, SAU

- Simulated the movement of the liquid in the fuel tank under flight conditions and determined the influence of relevant parameters on the flight state
- Conducted the post-processing of experimental data, and analyzed the effects of different inclination angles, shapes, and flight states on the movement of the contents of the fuel tank

Business Plan: 21st Generation UAS System (Independent Project) May 2022

- Proposed a new truck-based UAS network, making different UAVs exchange cargo with each other
- Used several bus-like scheduled moving trucks as platforms, provided the ability for UAS to fly over long distances by using these platforms for replenish
- Conducted dynamic transportation network optimization
- Bus-type Moving UAV Platform, Automatic Landing Trajectory, UAVs, Nonlinear System

SELECTED COMPETITION PROJECTS

Multi-bypass and Multi-electric Aviation Generator based on Adaptive System, *Team Leader* May 2022

- Proposed an aero-engine improvement plan to adapt to the future trend of multi-electric design, aimed to increase power generation and provide sufficient energy base for the aircraft
- With XA100 phototype, adopted a revolutionary adaptive three-bypass system, maximized the advantages of different bypass ratios and energy utilization, achieved heat flow management and stealth
- Designed the SAMAFDEC (Self-Adaptable+MA+FADEC) adaptive multi-electric control system to automatically monitor and adjust the operation of the external environment in the event of a failure in the control chain

Power Allocation Planning in Time Trials (2022 MCM/ICM), *Paper writer & programmer* February 2022

- Developed the combined OmPD model to define the power curves for different types of riders
- Developed a ramp power output model and an anaerobic energy consumption model to determine how cyclists' power is distributed across different tracks

- A paper, "OmPD model-based all-terrain power distribution approach for bicycle", was accepted by Heilongjiang Science

Design of Electromagnetic Flowmeter based on Electromagnetic Induction Principle September 2021
Team Leader

- Created an electromagnetic flowmeter to realize measurement of conductive media in industrial production
- Designed experimental device diagram, and conducted multiple experiments to verify the feasibility
- Opted for a signal amplifier to address the issue of a weak voltage signal that prevented accurate calculation
- Selected powerful magnets to address the issue of susceptibility to interference from the surrounding magnetic environment

JOJO "Jiongtu" Intelligent Electronic Guide Dog, *Team Leader* May 2020

Aim: *Through the current emerging Internet+ technology, relying on a variety of positioning methods, we designed electronic glasses containing obstacle recognition and ranging function, vehicle avoidance function, and voice navigation function, that is, JOJO electronic guide dog, which is convenient for blind travel.*

- Provided navigation functions, connected directly to cell phones, added more functions--modular system could be customized with optional functions
- Carried out the primary functions with an obstacle recognition module and a positioning navigation module
- Designed prototype appearance, stimulated circuit control, debugged navigation and position system
- Added solar panels and graphene batteries to extend the travel range of the blind
- Analyzed and compared the operation of object recognition module to make timely and correct judgment
- Visualized the collected road information data and road condition information data to match the existing parameters in the information base, and analyzed the obstacles to optimize the design
- Calculated and processed the satellite network of the Beidou Navigation Satellite System and related parameter data, to receive the accurate information

AWARDS

Math and Mathematical Modeling:

- First Prize of National Mathematics Competition for College Students (Top 8%), 2020
- First Prize of Mathematical Modeling Competition in Liaoning Province, 2021
- Second Prize of Mathematical Modeling Competition in Liaoning Province, 2020
- Second Prize of National Mathematics Competition for College Students, 2021
- Third prize in China CUMCM (Contemporary Undergraduate Mathematical Contest in Modeling), 2021
- Third Prize of MathorCup Undergraduate Mathematical Modeling Challenge, 2021
- Second Prize in Asia Pacific Mathematical Contest in Modeling, 2020
- SAU Second Prize of Mathematical Contest in Modeling of Three Provinces in Northeast China, 2020

Physics:

- Third Prize of China Mechanics Competition in Honour of Zhou Peiyuan, 2021
- First Prize of Physics Experiment Competition in Liaoning Province, 2020

Others:

- Top 5 in China of iCAN Innovation Contest 2021 (Final), 2021
- Third Prize of China College Students' "Internet+" Innovation and Entrepreneurship Competition, 2021
- Second Prize of the 6th China International "Internet +" College Student Innovation and Entrepreneurship Competition SAU Selection Competition, 2020
- First Prize of SAU Future Engine Design Competition

EXTRA-CURRICULAR ACTIVITIES

Part-time Editor, **Global Science (Chinese edition of Scientific American)**, December 2020-June 2022
Leader of media production team, **Chinese TEDX Entrepreneurial Club**, February 2020-June 2021
Deputy head, **Science and Technology Department of the College**, September 2020-June 2021
Founder, **Pioneer Engineering Club of College**, 2020
Leader, **English Corner Planning Group of the College,** 2020
Member, **SAU Student Aircraft Innovation Practice Base**, 2020-2022

^ FCC-E1-LOFT-RP-201603 Knowledge Examination, FCC-E3-LOFT-RP-201603 Knowledge Examination