Zihao Xu

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EDUCATION

Purdue University *Aug. 2022 – present*
- Ph.D. in Mechanical Engineering
- Advisor: Prof. Andrea Vacca

Purdue University *Aug. 2020 – Dec. 2021*
- M.S. in Mechanical Engineering, GPA: **3.93/4**

Purdue University *Aug. 2019 – May 2020*
- Exchange Student in Mechanical Engineering, GPA: **3.91/4**

Shanghai Jiao Tong University *Sep. 2016 – Jun. 2020*
- B.E. in Mechanical Engineering, GPA: **3.52/4**

RESEARCH EXPERIENCE

UAV Obstacle Avoidance Collaborated with Autonomous Boats *Jul. 2021 – Jan. 2022*
Graduate research program of Mechanical Engineering at Purdue University
Advisor: **Prof. Nina Mahmoudian**, Mechanical Engineering, Purdue University
- To implement a vision-based obstacle avoidance algorithm for a quadcopter in forests.
- To develop collaborative work with autonomous boats such as guiding the boats when necessary.
- Set up the **ROS** simulation environment including UAV model and basic movement controller.
- Tested several collision avoidance algorithms in different **Gazebo** worlds.

Geometric Optimization in Computer Aided Design *Aug. 2021 – Jan. 2022*
Graduate research program of Mechanical Engineering at Purdue University
Advisor: **Prof. Karthik Ramani** and **Dr. Min Liu**, C Design Lab, Purdue University
- Given a fixed number of control points and an arbitrary curve from hand sketches, minimized the B-spline reconstruction error by placing the control points.
- For predicting the optimal number of control points for an arbitrary curve from hand sketches, constructed the full workflow to train a **CNN** model, from generating the spline dataset to designing and training and validation process.

Design of Annular Traverse System for Zucrow Lab of Purdue *Jan. 2020 – May 2020*
Project for capstone course of Purdue Mechanical Engineering
Advisor: **Prof. Guillermo Paniagua**, Mechanical Engineering, Purdue University
- Designed a unique and relatively cheap annular traverse system for the wind tunnel in Zucrow Lab of Purdue, which required the traverse system to have high resolutions and the ability to withstand high temperature and air pressure while preventing air leakage.
- Validated the whole system in **SolidWorks**, created the explosive view and dynamic analysis, and decided the manufacturing method or source of supply of the system.
- Won the **Best Engineering Prize** in Malott Innovation Award of Mechanical Engineering.
- The traverse system was brought to reality in Zucrow Lab by faculties working there.

Hybrid Electric Vehicle Control *Aug. 2019 – May 2020*

Undergraduate research program of Mechanical Engineering at Purdue University

Adviser: **Prof. Peter Meckl**, Mechanical Engineering, Purdue University

- Debugged the **Equivalent Consumption Minimization Strategy (ECMS)** and **Partial State of Charge (PSoC)** in Simulink and proved their feasibilities by comparing with the benchmark.
- Located the abnormal vibrations in previous implementations by tracking the signals and proposed to fix the data collector at the acceleration pedal.

WORK EXPERIENCE

Algorithm Engineer Internship at PinOn, Inc. *Feb. 2022 – Jul. 2022*

- Design and test vison-based defect detection algorithms using **machine learning** technics.
- Customize the image annotator for training the defect detection algorithm.
- Be responsible for backend web development of an **optical inspection system**.

SERVICE

Class Representative *Sep. 2016 – Jun. 2019*

School of Mechanical Engineering of SJTU

- Conveyed various information about activities, new policies, and tests to classmates.
- Collected students' votes, opinions, and information.
- Helped classmates solve various problems, ranging from study to daily life.

Leader of Publicity Team *Sep. 2016 – Jun. 2019*

SJTU Student Science and Technology Innovation Association

- Invited professors and organized workshops for ME students.
- Conducted routine affairs and propaganda for robot design competitions.
- Instructed and coached the contestants on designing and manufacturing in the competition.
- Obtained excellent leader honor when holding the competition for new students.

SKILLS

Programming	Python, C++
Technical Tool	MATLAB, Simulink, ROS, SolidWorks, CAD, Git, LaTeX, PyTorch, Django Arduino, Raspberry Pi, STM32
Language	Chinese: Native, English: TOEFL 105 (R30, L27, S21, W27)

SELECTED HONORS

Best Engineering Prize in Malott Innovation Award of ME in Purdue *May 2020*

Merit Student of Shanghai Jiao Tong University (3 out of 40) *Oct. 2018*

Nomination Award of Science and Technology Innovation Scholarship (Top 50 in SJTU) *Oct. 2018*

Special award in the 11th national university student social practice and science contest on energy saving and emission reduction (Top 1 Team, National) *Aug. 2018*

Academic Excellent Scholarship (Third-Class) of SJTU (30%) *Oct. 2017*