FUJUN RUAN

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA — Aug 2021 – Present
Master of Science, Mechanical Engineering (GPA:4.0/4.0, Half Funded)

Virginia Tech, Blacksburg, VA — Sep 2017 – May 2021
Bachelor of Science, Mechanical Engineering (GPA: 3.61/4.0)

RESEARCH EXPERIENCE

Biorobotics Lab-The Robotics Institute – Pittsburgh, PA — Jan. 2021 – Present
Graduate Research Assistant for Boeing Addtive Manufacturing

- Design a Closed-loop manufacturing system with different tools for inspecting and maintaining airplanes
- Develop a smart system for pipe welding and combined machining using multi-functional platforms
- Set up a simulation for two-arm robots to plan and visually guide aircraft painting, like the Boeing 787
- Develop a custom robotic arm 3D scanner to calibrate hand-eye coordination, cameras, and lasers easily

Graduate Research Assistant for Robotic Wire Arc Additive Manufacturing (rWAAM)

- Design a real-time control system for metal 3D printing to enhance print quality and reduce material costs.
- Design a high-speed extrusion 3D printing system based on UR5e to simulate metal printing extrusion

Graduate Research Assistant for Aerosol Jet Additive Manufacturing

- Improve Aerosol Jet printing ability with add-on components, allowing for complex 3D surface printing.
- Created a system for 3D scanning and automatic adjustments during the printing process.

Research Team Sponsored by E – Wave Technologies LLC, Partnered with Virginia Tech and InnovaSea – Blacksburg, VA
Engineer for Self-Reactive Marine Energy Converter to Power Ocean Aquaculture — Dec. 2019 – May. 2020

- Design the electricity generating system with ocean wave energy to power the intelligent fish farm
- Design the Power Take-Off System for the fish farm and Built the Power Take-Off System scale down version for prototype

Research Team Sponsored by the Field and Space Experimental Robotics Laboratory – Blacksburg, VA — Aug. 2020 – May.2020
Engineer for the In-Space Robotic Assembly Infrastructure Development

- Designed the Stewart Platform — the parallel robots capable of high-precision manipulation
- Build a closed-loop control system for position calibration using vision sensors

Hybrid Dynamic Systems and Robot Locomotion Lab – Blacksburg, VA — Jan. 2019 – Apr.2020
Engineer for Balto and Togo, Four-Legged Robot Locomotion Project

- Design a multi-degree of freedom & high-precision parallel robot to build the foundational structure for a space platform, and establish a closed-loop control system using visual sensors for position calibration.

WORK EXPERIENCE

Tech Education Startup Company- Next Innovation– Guangzhou, China — May. 2019 – Sep.2022
coFounder

- Created and developed tech courses and products for student competitions, catering to different age groups and interests.
- Led five high school teams to win numerous awards through in-house training in programming and mechanical design.
- Set up a unique FRC-based 3D modeling platform for Chinese high school students, with over 400,000 total views.

Makeblock – Shenzhen, China — Jun. 2019– Aug. 2019
Advisor & Competition R&D intern& Operational intern

- The solution helped to increase the business scale by 35 times in two years (the third in the world in business), the company's largest revenue growth point, with an annual sale of 50 million.
- Design competition topic base on students' level and needs, and design the robots to verify the topic
- Offer guidance on U.S. robot competitions, covering topics like team organization, community development, and contest coordination.

DJI Innovations – Shenzhen, China — Jan. 2017– Feb. 2019
RoboMaster Department - Competition Intern

- Test the robot's recognition feature with OpenCV code and work on enhancing its suspension system.

PUBLICATION

Toward Closed-loop Additive Manufacturing: Paradigm Shift in Fabrication, Inspection, and Repair (Submitted) -IROS 2023
A self-reactive ocean wave energy converter with winch-based power take-off: design, prototype, and experimental evaluation -IDETC 2022

SKILLS

Programing Language: Python, C++, MATLAB; **3D Model Software:** Solidwork, Fusion 360, Onshape
Robotics Middleware Suite: ROS; **Language:** Mandarin, English, Cantonese