Zhijing Hu

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EDUCATION

Johns Hopkins University — **Baltimore, MD, US**
Master of Science in Engineering in Robotics — *Aug 2021 - May 2023*
- Major GPA: 3.5/4.0 | Program Track: Perception and Cognitive Systems

Rutgers University - New Brunswick — **New Brunswick, NJ, US**
Bachelor of Science in Mechanical Engineering with Honors — *Aug 2017 - May 2021*
- Major GPA: 3.6/4.0 | Honor Student in Dean's List | Best Overall ME Senior Design of Class 2021

WORK EXPERIENCE

Hangzhou KEQIANG Information Technology Co., ltd — **Zhejiang, China**
Research & Development Engineer Intern — *June 2021 - Aug 2021*
- Learned and operated to build basic OPC servers with Python and C#, and successfully applied 2 demo servers to IFMS (Intelligent factory management system) with 5+ pairs of clients
- Improved the Back-end Alarming System in Injection Molding Machine Operation with High-Net Control System, sending the important notifications and emails on computer interfaces and mobile APP in 10s or emergencies in 5s
- Participated in energy saving reconstruction and system maintenance, saving 9% workshop cost, and monitored the automation production line, filtering out 3,000+ defective products

RELEVANT PROJECTS

SLAM Auto-driving Car Robot — *June 2022 - Present*
- Designed and assembled a mechanical car robot with Raspberry Pi, and tested the demo in ROS using RRT (Rapidly Exploring Random Tree), simulating and updating the map of an unexplored virtual environment
- (Current Working on, will keep updating)

Various Hand Gestures and Motion Recognition — *Apr 2022 - May 2022*
- Designed and created our own datasets with 8 different hand gestures by collecting 10,000+ RGB images from webcam, classified and tested with the convolutional neural network (CNN)
- Improved the object extraction method based on the landmarks, cropping out the images around the landmark position with 21 key points
- Trained the model with 8,000+ images in Python including both RGB images and landmark images, and later evaluated on the 1,000+ validation images, achieving 97.6% accuracy with real-time speed of 60 ($\pm$ 20) fps on feedback interface via MediaPipe

Haptic Vision Cap for Visually Impaired Users — *Nov 2021 - Dec 2021*
- Developed and improved Detect-to-Signal functionality in C/C++ on Arduino with 4 vibration feedback modes according to different presence of approaching objects to the users
- Led a team of 4 to designed and worked on the Haptic Cap System with 4 direction vibrator motors and IR sensors in SolidWorks, and handcrafted on laser cutting and 3D printing

Low Cost COVID-19 Ventilator — *Aug 2020 - May 2021*
- Developed and debugged the functionality in controlling the stepper motor using C/C++ in Arduino, realizing 3 different speeds of air delivery according to required user modes
- Designed and improved 5+ sub-assemblies of ventilators in air delivery system and bellow-based compressor mechanism on SolidWorks
- Simulated and analyzed the air flows in 3 different user modes with 5 different tube models using ANSYS

Tripod Arms Grabbing Robot based on Delta 3D Printer — *May 2019 - Aug 2019*
- Debugged and improved the functionality of stepper motors in Arduino with C/C++ to preform the locate motion according to the recognition result outputs
- Collaborated with teammate to investigate the 3D rotations, translations and motion velocities of rail joints with over 2000+ 3D coordinate matrices and optimize the motion path of grabbing hand
- Designed and improved the grabbing system on SolidWorks, increasing the success rate of grabbing motion to 98% with 300+ grabbing trails

SIDE EXPERIENCE

VALEO Automotive System Co.Ltd — **Zhejiang, China**
Mechanical Engineer Intern — *June 2020 - Aug 2020*
- Collaborated with a team of 10+ to investigate key characteristics of wiping system, and the performance of materials applications and assembly structures
- Analyzed and simulated the attack angles of 2 wiper systems, Parallel system and Overlap system, and learned the wipe patterns and system components in industrial production line, and proposed the safety plans of the system
- Improved the project decision making abilities, such as Critical (Supplier) Parts selection, NPP SoCo process