Zhijing(Rey) 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: 3.2/4.0 | Track on 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**
Software Engineer Intern   *June 2021 - Aug 2021*
- Participated in Injection Molding Machine Operation with High-Net Control System Program
- Learned and operated basic OPC server and clients by different two different coding languages - Java and C Sharp, and applied them to IFMS (Intelligent digital factory management system)
- Imported production plans into manufacture system through ERP, monitored the processing parameters, checked the defective goods feedback and followed PDCA to complete the maintenance
- Set up Machine-To-Machine communication and improved back-ends of alarm system through computer server, mobile APP and emails

VALEO Automotive System Co.Ltd   **Shanghai, China**
Mechanical Engineer Intern   *June 2020 - Nov 2020*
- Participated in two main training programs: Wiper and Washer System of motor vehicles and Clean Project Management(CPM)
- Mastered two different front linkages of Parallel system and Overlap system as well as key characteristics of the linkage of wiping arm and blade, and investigated the performance of materials applications and assembly structures
- Improved the project decision making abilities, involving Critical (Supplier) Parts selection, NPP SoCo decision making process, Purchase Order – Workflow simplification and PM empowerment, etc
- Calculated and simulated the attack angle of wiper system, learned the wipe patterns and system components in industrial production line, and proposed the safety plans of the system

RELEVANT PROJECTS

Haptic Vision Cap for Visually Impaired Users   *Nov 2021 - Dec 2021*
- Designed and built up the 3D Haptic Cap System model involving: main body, laser cutting works, IR/Ultrasonic sensors, mini vibrators, circuit wire connections and Arduino boards on SolidWorks, and later handcrafted on assembling the corresponding real parts
- Developed Detect-to-Signal function coding in C/C++ programming on Arduino to realize 4 vibration feedback modes according to different presence of approaching objects to the users, transferring the sensing signals to specific frequencies of vibration feedback
- Set up and conducted the test procedures with 10 non-blinding trails on the 6 participants, simulating the encountered obstacles in various cases for the users
- Collected user feedback data for adjusting the frequencies of vibration in each case, and evaluated system performance via avoidance reminding success rates with users reaction times or distances differences

Low Cost COVID-19 Ventilator   *Aug 2020 - May 2021*
- Helped to conducted meetings with advisors and teams, devising project strategies and designing project features: low-cost, portable, remotely-controllable and automatic
- Responsible for designing sub-assemblies of ventilators including air delivery system and bellow-based compressor mechanism on SolidWorks, and performed 5+ trials for improving the relevant safety features (valves, alarms, controllers and sensors) in each subsystems
- Calculated the compressor volume changing rate for different air delivery modes in MATLAB and simulated the air flow in tube model using ANSYS for checking safety features and requirements
- Developed and debugged on the driving code for controlling the step-motor using C/C++ programming language in Arduino, and realized three different speeds of air delivery according to required user modes

Tripod Arms Grabbing Robot based on Delta 3D Printer   *May 2019 - Aug 2019*
- Pre-studied and observed the working principles of Delta 3D Printer in the laboratory, further designed and revised the Grabbing Sub-system on SolidWorks, including grabbing hand, Arduino board, circuit wire connections, MKS base and CNC controller
- Calculated and testified the spatial linkages and DOF (Degree of Freedom) of the system, and investigated 3D rotation, translation and motion velocities of rail joints with over 2000+ 3D coordinate matrices to adjust and optimize the motion path of grabbing hand
- Helped to set up the grabbing platform, acquisition system as well as the object category and pose recognition system, realizing the 3D point cloud data translation and outputting the object category and pose information to the control system
- Programmed and debugged the function code in C/C++ language on Arduino to realize the locate-and-grab motion paths according to the recognition result outputs

TECHNICAL SKILLS

Engineering: SolidWorks, ANSYS, ROS, Simulink, AutoCAD, LabView, Altair
Programming: MATLAB, C, C++, Python, Arduino, Git, Java, HTML5