

JUNQI MA

805 West Green Street, Urbana, IL 61801 • 217-979-0258 • junqima2@illinois.edu

EDUCATION

University of Illinois at Urbana Champaign May 2020
Bachelor of Science in Mechanical Engineering GPA: 3.96/4.0

East China University of Science and Technology September 2014 - January 2016
Mechanical Engineering GPA: 3.60/4.0

EXPERIENCE

Human Dynamics and Control Lab Urbana, IL
Undergraduate Research Assistant, Ballbot and Lower Limb Prosthetics Project September 2019 – Present

- Design the testbed and assemble the circuit components to test the brushless DC motor power and torque performance

Creative Thermal Solutions (CTS) Urbana, IL
Mechanical Engineering R&D Intern, Offset-fin Heat Exchanger Project June 2019 – August 2019

- Built and tested the condition section and the test section for the measurement of the system heat transfer performance
- Collected measurement data using LabView based on facility shakedown and the operation of system components
- Analyzed the system heat transfer performance data using Engineering Equation Solver and Excel to provide feedback for modification of the system sections
- Conducted conjugate heat transfer CFD analysis for the heating blocks using ANSYS Fluent to validate the uniformity of the heat flux distribution of the heating surface

Air Conditioning and Refrigeration Center (ACRC) Urbana, IL
Undergraduate Research Assistant, Oil Separation of Scroll Compressors Project January 2017 – February 2019
Advisor: Professor Pega Hrnjak (ACRC Director) pega@illinois.edu

- Designed and tested the vane plate array separators to increase the overall oil-refrigerant separation efficiency of a scroll compressor air-conditioning system
- Developed the separator 3D models using Creo based on flow and geometric parameters and prototyped separator models using SLA 3D printing
- Operated system components using LabView to achieve the testing conditions for system separation efficiency
- Analyzed experimental and theoretical results using MATLAB and Excel to improve the separator design

Volunteering (Engineering)

PSYONIC (Medical Devices) Champaign, IL
Mechanical Engineering Volunteer, Bionic Prosthetic Arm Project June 2019 – September 2019

- Designed the new finger four-bar mechanism and analyzed the kinematics using MATLAB to achieve desirable output motion
- Created Solidworks CAD model for the fingerbone structure and the molds to encase the magnets and pressure sensor
- Performed stress analysis, fatigue analysis, static loading test and cyclic testing for the finger linkage to ensure finger structure safety under 50 lbs tensile load and 150,000 cycles of finger open-and-close operation
- Improved the wrist disconnect mechanism design to provide quick disconnection with the socket and to reduce cost

ACTIVITIES

Illini Formula Electric (SAE) Urbana, IL
Team Member, Suspension and Cooling Team August 2016 – May 2017

- Collaborated with team to design the pushrod suspension system setup for desirable static and dynamic racing events
- Generated design idea for the bell crank and performed dynamics analysis to achieve a motion ratio of 0.7571
- Engaged in the machining and fabrication process of the rear pushrod suspension arms and cooling system radiator
- Analyzed cooling system performance data to determine the heat transfer load for the cycle component design

SKILLS AND AWARDS

Tools: Microsoft Package, Instron Machine, High-speed Camera, Rapid Prototyping

Design Skills: 3D Modeling (Solidworks and Creo), AutoCAD, FEA, CFD, MATLAB, Python, EES

University Scholarship: CI-ASHRAE Student Award First Prize

Spring 2019

Design Project Award: Mechanical Design Robot Walker First Prize

ME 370, Fall 2018

Society Award: Konzo ASHRAE Engineers Award

UIUC MechSE, Spring 2018