Jiaoran WANG

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SUMMARY

- **Objective:** Applying for 2021 Fall Mechanical Engineering Ph.D. Program
- **Research Interests:** Advanced Manufacturing, Bio-inspired Robotics, FEA, Structural Design and Optimization, Control and Automation

EDUCATION

09/2019 - 05/2021 **University of Southern California (USC)** **Los Angeles, CA, USA**
- M.S. in Mechanical Engineering.
- GPA: 3.84/4.0

09/2015 - 07/2019 **Harbin Engineering University (HEU)** **Harbin, China**
- B.E. in Aerospace Engineering **(**Flight Vehicle Design and Engineering**)**
- GPA: 3.42/4.0 (Major GPA: 3.46/4.0)
- Dissertation: *Design and Experimental Study of Thermoelectric Structure in Aerospace Aircraft*

QUALIFICATIONS

- ✧ **Programming Language:** MATLAB-Simulink (proficient), Python (good at data structure), R/RStudio (familiar), C/C++ (familiar), Octave (familiar)
- ✧ **Web Application Language:** HTML5, CSS3, PHP, JavaScript, SQL (familiar)
- ✧ **CAD Software:** SolidWorks (proficient), Auto-CAD (proficient), UG-NX (familiar), CATIA (familiar)
- ✧ **Simulation Software:** ANSYS (proficient in APDL/FLUENT/CFX), COMSOL (familiar with Multiphysics)
- ✧ **Equipment:** 3D Printer (proficient), Laser Cutting Machine, CNC Machine and other machine tools

EXPERIENCE

01/2021 - 06/2021 **Flexible Pressure Sensing Device Fabrication,** CAM Lab, USC **Los Angeles, CA, USA**
Graduate Research Assistant (Advisor: Prof. Hangbo Zhao)
- Experiment: convert the small thrust and pull force into the color rendering of the liquid film of the sensor
- Test and analysis: test and get the push and pull stress and sensor grayscale curve, used for micro sensor applications

01/2020 - 05/2021 **Bio-inspired Biped Robot Project,** Brain-Body Dynamics Lab, USC **Los Angeles, CA, USA**
Graduate Research Assistant (Advisor: Prof. Francisco Valero-Cuevas)
- Implemented proprioceptive artificial skin fabrication and signal testing of biomechanical leg for Center of Pressure (CoP) estimation
- Conducted K-Nearest Neighbors (KNN) algorithm for clustered data evaluation and prediction

01/2020 - 05/2020 **Additive Manufacturing Research,** CAM Lab, USC **Los Angeles, CA, USA**
Directed Research (Advisor: Prof. Satyandra K. Gupta)
- Worked on Additive Manufacturing 3D Printing of Conformal Antenna
- Designed an Arduino – Python UDP communication system for manually and remotely control for robot 3D printing with linear control and robotic path planning algorithm involved

09/2019 - 11/2019 **Design Project on Automatic Test-tube Sorting System,** Yaskawa America, Inc. **Los Angeles, CA, USA**
Course Project (Advisor: Prof. Satyandra K. Gupta)
- Conceived a design proposal using rollers and conveyers for rapid Test-tube Sorting System
- Designed OpenCV (visual image recognition technology) for tube identification

02/2019 - 06/2019 **Design and Experimental Study of Thermoelectric Structure in Aerospace Aircraft,** HEU **Harbin, China**
Capstone Project (Advisor: Prof. Jia Yu)
- Invented the thermoelectric piece architecture among annular thermoelectric module at gunship nozzle, and the temperature difference experiment was carried out
- Proposed a method to determine the optimal size based on the conversion efficiency extremum. Increased the thermoelectric conversion efficiency by 37.30% and the output power by 285.14%

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2016 - 2019 **Aircraft Model Aerodynamic Optimization,** Aircraft Innovation Lab, HEU **Harbin, China**
- Renovated the overall process of aircraft model manufacturing, including designing, painting with software like ***Auto-CAD and UG***, Mastered the use of ***3D printers*** and large ***laser cutting machines***

12/2017 - 04/2018 **National University Students Innovation and Entrepreneurship Training** **Harbin, China**
- Finished research on a new-type giant magneto strictive material and tried to use this material to connect a high-density coil to produce a high frequency vibrator

11/2017 - 12/2018 **Dynamic Analysis and Motion Accuracy Evaluation,** Tsinghua University **Beijing, China**
Remote Research Project (Advisor: Prof. Yi Yang)
- Topic: Dynamic analysis and motion accuracy evaluation of multibody system with clearance mechanism considering uncertain parameters
- Introduced OpenCV flow field modeling for flight environmental construction

03/2017 - 06/2017 **Industrial Metalworking Practice,** Engineering Training Center, HEU **Harbin, China**
- Studied the operation methods of milling machines, planers, lathes and grinding machines, miniature-semiconductor spot welding and electric-arc welding, robot installment and operation, CNC machine tool programming and wire-electrode cutting, benchwork, etc.

PUBLICATION

✧ Darío Urbina-Meléndez, **Jiaoran Wang,** et al. "Estimating Center of Pressure of a Bipedal Mechanism Using Proprioceptive Synthetic Skin around its Ankles." 2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). **(in submission)**

INTERNSHIPS

06/2020 - 07/2020 **BCG Virtual Experience Program,** InsideSherpa 2020 (online) **Los Angeles, CA, USA**
Participated in the open access Digital Technology Data Analytics Program Virtual Experience:
- Categorize and process data structures
- Data visualization

02/2019 - 03/2019 **Intern,** China Academy of Launch Vehicle Technology (CALT) **Beijing, China**
- Worked in the structure of transportation rocket projector and participated in the unit part grinding and assembly process

07/2018 - 09/2018 **Intern,** AVIC Shenyang Aircraft Co., Ltd. **Shenyang, China**
- Visited the workshops of civil and military aviation and learnt practical aircraft manufacturing knowledge and skills as well as the differences in the procedures of manufacturing

AWARDS

Issue Date	Name	Issuing Organization
06/2019	**2019 Outstanding Dissertation** • Dissertation: *Design and Experimental Study of Thermoelectric Structure in Aerospace Aircraft* • Won the award of ***Meritorious Winner***	HEU
02/2018	**2018 Interdisciplinary Contest in Modeling** • Addressed analysis model for climate change influences regional instability using AHP • Won the prize of ***Honorable Mention***	Consortium for Mathematics and its Application. Inc
11/2017	**HEU Students Innovation Training Program** • Design a degeneration control deicing robot with infrared detection wires and assemble a robot model	Committee of Aerospace Engineering

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- Won the ***Award of Excellence*** — Department, HEU

2015 - 2019 **HEU Outstanding scholarship** — HEU
- Merit Student and Outstanding Party Member: ***Twice***
- University-level Excellent Scholarship: ***Six Times***

EXCHANGE EXPERIENCE

02/2018 - 03/2018 **International Programs,** UC San Diego Extension — **San Diego, CA, USA**
- Program: English for Engineering and Technology
- Grade: *A*

01/2018 - 02/2018 **Course Leaning Program,** University of Minnesota — **Minneapolis, MN, USA**
- Department: Chemical Engineering and Material Science
- Core Courses: Reactor and reaction engineering, Chemical engineering laboratory, Numerical methods in chemical applications

LICENCES & CERTIFICATES

Issue Date	Name	Issuing Organization
08/2020	**Control of Mobile Robots** ✧ Credential:https://www.coursera.org/account/accomplishments/certificate/HG7HQRA6QB6W	Coursera (Georgia Institute of Technology)
08/2020	**Data Processing and Feature Engineering with MATLAB** ✧ Credential:https://www.coursera.org/account/accomplishments/certificate/VQVCQZ8TKA8S	Coursera (MathWorks)
08/2020	**Digital Manufacturing & Design** ✧ Credential:https://www.coursera.org/account/accomplishments/certificate/TKJTUZV8E7WD	Coursera (The State University of New York)
07/2020	**Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization** ✧ Credential:https://www.coursera.org/account/accomplishments/certificate/DUTMMYEAC8H7	Coursera (Deeplearning.ai)
06/2020	**R Programming** ✧ Credential:https://www.coursera.org/account/accomplishments/certificate/HH6LDFV5BNJA	Coursera (Johns Hopkins University)
06/2020	**MATLAB-Deep Learning Onramp** ✧ Credential:https://matlabacademy.mathworks.com/progress/share/certificate.html?id=9284795f-2558-4dcf-836b-1881ccc339a3	MATLAB-Online Training Service
05/2020	**Python Data Structures** ✧ Credential:https://www.coursera.org/account/accomplishments/verify/K2SS6NVE756G	Coursera (University of Michigan)

PERSONAL INTERESTS

- Arduino programing for robot car control.
- Models (Keen on collecting Lego models of aerospace series).
- MIDI keyboard controller for electrical song arrangement.