Jiaoran WANG

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SUMMARY

- **Research Interests:** *Implantable Device Monitoring, Adaptive Wireless Antenna*
- **Research Background:** *Machine Learning, Control, Automation, Bio-inspired Robot, Additive Manufacturing, Structural Design and Optimization.*

EDUCATION

06/2024 - *Present*	**University of Glasgow** • Postgraduate Student in **Electrical and Electronics Engineering**	**Glasgow, United Kingdom**
09/2022 - 09/2023	**McGill University** • Postgraduate Student in **Bioengineering** (Dropped out)	**Montréal, Canada** (*remote study*)
09/2019 - 05/2021	**University of Southern California (USC)** • M.S. in **Mechanical Engineering**. • GPA: 3.84/4.0	**Los Angeles, USA**
09/2015 - 07/2019	**Harbin Engineering University (HEU)** • 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*	**Harbin, China**

QUALIFICATIONS

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

EXPERIENCE

06/2024 - *Present*	**University of Glasgow** *Postgraduate Student in Electrical and Electronics Engineering*	**Glasgow, Scotland, United Kingdom**
10/2021 - 05/2024	**Algorithm Engineer, Huawei Technologies Co., Ltd.** *Junior Engineer.* • Engaged in research and design for advanced communication transmission system and networking products relating to 5G/5.5G technology, integrated the ***Large Language Model (LLM)*** and communication algorithm to realize parameter ***Cluster Analysis (CA)*** • Desiged automated test frameworks for product performance testing optimization (Python) • 5G Massive MIMO AAU (Active Antenna Unit) in the established sub-6 GHz frequency spectrum, base stations typically apply a high number of TX/RX antenna elements to serve multiple users with parallel data streams. This is known as multi-user MIMO (MU-MIMO). • ***Key Performance Indicators (KPI)*** Platform Building	**Shanghai, China**
09/2022 - 09/2023	**Machine Learning Assisted Reconfigurable Metamaterials** *Remote Study Program* Working on: • Metamaterials (mechanical, phononic, acoustic etc.) • Reconfigurable and Multistable metamaterials (multi-material) • Nonlinear finite element concept (buckling, instability, nonlinear elasticity) • Inverse design using machine learning and differences with optimization.	**Shanghai, China**
01/2021 - 06/2021	**Colorimetric Pressure Sensing Device Fabrication (CAM Lab, USC)** *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	**Los Angeles, USA**

- Test and analysis: test and get the push and pull stress and sensor grayscale curve, used for micro sensor applications.
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01/2020 - 05/2021	**Bio-inspired Biped Robot Project (Brain-Body Dynamics Lab, USC)**	**Los Angeles, USA**

Graduate Research Assistant (Advisor: Prof. Francisco Valero-Cuevas)
- Working on the design of biomechanical leg for Zero Moment Point calculation
- Using Machine Learning (KNN) module to architecture and artificial wearable sensor data analysis to predict the balanced pressure center position of the bionic robot. (see the publication)

01/2020 - 05/2020	**Additive Manufacturing Research (CAM Lab, USC)**	

Directed Research (Advisor: Prof. Satyandra K. Gupta)
- Project: *Additive Manufacturing 3D Printing of Conformal Antenna*   **Los Angeles, USA**
- Using the 6-DOF industrial robot created by USC Advanced Manufacturing Center combined with fused deposition (FDM) method in 3D printing and path planning algorithm，addressed 3D printing of smooth curved conformal array antenna.
- Designed an Arduino – Python UDP communication system for manually and remotely control for robot 3D printing with linear control involved.

09/2019 - 11/2019	**Design Project on Automatic Test-tube Sorting System for YASKAWA**	

Course Project (Advisor: Prof. Satyandra K. Gupta)
- Conceived a design proposal using rollers and conveyers for rapid   **Los Angeles, USA**
Test-tube Sorting System
- Designed OpenCV (visual image recognition technology) for tube identification.

01/2019 - 06/2019	**Preparation and Thermal Properties of Carbon-based Mesoporous Phase Change Composites**

Capstone Project (Advisor: Prof. Jia Yu)
- Conducted design and experimental study of ***Thermoelectric Structure***   **Harbin, China**
in ***Aerospace Aircraft.***
- 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%

2016 - 2019	**Aircraft Model Aerodynamic Optimization (Aircraft Innovation Lab, HEU)**

- Renovated the overall process of aircraft model   **Harbin, China**
manufacturing, including designing, painting with
software like ***Auto-CAD and UG***, mastered the use of ***3D printing.***
- 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.

11/2017 - 12/2018	**Remote Research Projects Guided by Tsinghua University**

• *Topic: Dynamic analysis and motion accuracy evaluation of multibody system with clearance mechanism considering uncertain parameters*	**Beijing, China**
• Introduced OpenCV flow field modeling for flight environmental construction.	

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).

INTERNSHIPS

06/2020 - 07/2020	**BCG Virtual Experience Program (InsideSherpa 2020)**	**Los Angeles, USA**

Participated in the open access Digital Technology Data Analytics Program Virtual Experience:
- Categorize and process data structures.
- Data visualization

02/2019 - 03/2019	**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	**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

EXCHANGE EXPERIENCE

02/2018 - 03/2018	**International Programs in UC San Diego Extension**	**San Diego, USA**

- Program: English for Engineering and Technology
- Grade: *A*

01/2018 - 02/2018	**Course Leaning Program in The University of Minnesota**	**Minneapolis, 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)

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| 05/2020 | **Python Data Structures** | Coursera (University of Michigan) |

- ✧ Credential:https://www.coursera.org/account/accomplishments/verify/K2SS6NVE756G

Introduction:
Jiaoran