

# Hao Ju

MASTER'S STUDENT, FULL-STACK RESEARCH ENGINEER

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## Skillssets

<b>Programming</b>	MATLAB, C, Python, VHDL, JavaScript, C#, HTML/CSS, Java
<b>Hardware Tools</b>	Altium Designer, Quartus, Simulink, Multisim
<b>Design Tools</b>	AutoCAD, Adobe Illustrator, Figma
<b>Data Analysis</b>	SPSS, Microsoft Access, RapidMiner, PowerBI
<b>Embedded Systems</b>	Arduino, STM32, Raspberry Pi, MCS 8051, Xilinx Virtex
<b>UI/UX</b>	User study design, Semi-structured interviews, A/B testing, ANOVA, rapid prototyping
<b>Courses</b>	Data Structure & Algorithms, Applied Machine Learning, Information Systems Design, Usability Analysis & Assessment
<b>Languages</b>	Mandarin (native), English (fluent, IELTS 8.0), French (conversational)

## Education

### School of Information Studies, McGill University

Montreal, Canada

MIST IN INFORMATION STUDIES, RESEARCH-BASED

Sept 2019 - Exp. May 2021

- GPA: 3.77/4.0
- Area of specialization: Human Computer Interaction; Accessibility & User Experience; Wearable Devices

### School of Electronic Engineering, Univ of Electronic Sci & Tech of China (985,211)

Chengdu, P.R.China

B.ENG. IN ELECTRICAL AND COMPUTER ENGINEERING

Sept. 2014 - July 2018

- GPA: 3.86/4.0 (Final year 3.91/4.0), Ranking: 5/42 (Final year 3/42)
- Honorary Graduate of UESTC

## Selected Experiences

### RESEARCH & DEVELOPMENT

#### National Research Council of Canada

Montreal, Canada

RESEARCH INTERN

Jan 2021 - Exp. April 2021

- Designing and developing visualization tools for network graphs & clustering analysis for researchers from non-engineering backgrounds, using Java and Gephi.

#### Dept. of Electrical and Computer Engineering, University of California, Los Angeles

Montreal, Canada

SIDE RESEARCH PROJECT (REMOTE)

Sept. 2020 - Jan 2021

- Designing and developing a system to perform hand activity sensing with wearable millimeter wave sensor TI IWR 1448 and machine learning algorithm Long Short-Term Memory (LSTM).

#### School of Information Studies, McGill University

Montreal, Canada

RESEARCH ASSISTANT

Sept. 2019 - Present

- Designing, building, and troubleshooting firmware & hardware of a wearable limb-based input system from scratch
- Due to COVID-19, we made some technical trade-offs so that the experiment can be conducted remotely by mailing experiment materials to the participants' home contact-free. Built the mats embedded with pressure sensors to track foot movement using Arduino; Designed and built the interface displayed on screen using Python Tkinter and PySerial.
- Collecting and analysing performance data using the prototype, semi-structured interviews, and System Usability Questionnaire to qualitatively and quantitatively analyse the difference in interaction patterns, performances, and user preferences between older adults and their younger peers.

#### School of Creative Media, City University of Hong Kong

Hong Kong, P.R.China

RESEARCH ASSISTANT

Sept. 2018 - May 2019

- Provided technical support in Arduino programming and circuit design & troubleshooting for other PhD students.
- Designed and developed hardware and firmware prototypes for visually challenged schoolchildren based on Arduino and C, e.g. musical building blocks introducing programming languages, thermal display systems for geographical education, etc.
- Co-designed and co-conducted user study experiments.

#### Dept. of Electrical and Compute Engineering, McGill University

Montreal, Canada

RESEARCH INTERN

July 2017 - Oct. 2017

- Developed the hardware and firmware of a foot-based interactive system based on Arduino, C, and VICON for seated musicians. Co-designed the menu layout in Unity using C#. Co-designed and conducted qualitative & quantitative usability study through interviews & NASA-TLX questionnaires.
- Enhanced the performance of an existing prototype generating burning-hot illusion with Electro-Muscular Stimulation. Improved temperature detection accuracy by 37.5% by re-designing the system, switching from thermal variable resistors to digital sensors.

### PRODUCTION & QUALITY CONTROL

## Production Management Intern

SIGLENT TECHNOLOGIES

Shenzhen, P.R.China

Aug. 2016

- Co-managed production and quality control process with full-time employees at the leading Chinese oscilloscope manufacturer

## OUTREACH & LEADERSHIP

### Core Member, Technical Volunteer

TECHNOLOGY ASSOCIATION FOR SCHOOL OF ELECTRONIC ENGINEERING

Chengdu, P.R.China

Oct. 2014 - Dec. 2015

- Provided technical support and hosted weekly workshops on circuit design and embedded system programming in C and VHDL

## TEACHING

### Senior Private Session Tutor

EASY GROUP INC.

Montreal, Canada

Oct. 2020 - April 2021

- Providing tailored on-on-one lectures on 100-300 level classes in Computer Science and Electrical & Computer Engineering.

### Teaching Assistant

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING, MCGILL UNIVERSITY

Montreal, Canada

Sept. 2020 - Exp. May 2021

- Teaching Assistant of ECSE 222 Digital Logic. Job responsibility including teaching, demoing, and providing technical support in VHDL.

## Publications

### Limb-Based Interactive System for Older Adults

Exp. Feb. 2020

- Hao Ju and Karyn Moffatt. To be submitted to ACM International Conference on Ubiquitous Computing (UbiComp) 2021

### Pressure or Movement? Usability of Multi-Functional Foot-Based Interfaces

Sept. 2017

- Taeyong Kim, Hao Ju, and Jeremy Cooperstock. 2018. In proceedings of ACM SIGCHI Conference on Designing Interactive Systems (DIS) 2018. ACM. 1219-1227. doi: 10.1145/3196709.3196759

### A Data-Driven XGBoost-Based Filter for Target Tracking

July 2018

- Bowen Zhai, Wei Yi, Ming Li, Hao Ju, and Lingjiang Kong. The Journal of Engineering, 2019(20):6683-6687, 2019, doi: 10.1049/joe.2019.0174

## Selected Honors and Awards

### Ethelwyn Crossley Memorial Scholarship, CAD 4,620

May 2019

### Mitacs Globalink Graduate Fellowship, CAD 15,000

Mar 2019

### National Internet Security Scholarship, CNY 30,000 (CAD 5,680)

Aug. 2017

100 AMONG ALL UNDERGRADUATES AND GRADUATE STUDENTS IN CHINA PER YEAR

### 2017 'Internet Plus' Innovation and Entrepreneurship Competition

Jul. 2017

SECOND PRIZE (PROVINCIAL LEVEL), 7TH AMONG 125 TEAMS

### National College Student 'Smarter Connected' System Innovation Competition

July 2016

SECOND PRIZE OF SOUTHWEST CHINA AREA

### 2016 COMAP Interdisciplinary Contest In Modeling, Honorable Mention

Apr. 2016