Hao **Ju**

Master Student

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Education

Department of Information Studies, McGill University
Montreal, Canada

MIST in Information Studies — *Sept 2019 - Exp. May 2021*

- Supervised by Dr. Karyn Moffatt (http://act.mcgill.ca/karyn/)

School of Electronic Engineering, Univ of Electronic Sci & Tech of China (985,211)
Chengdu, P.R.China

B.Eng. In Electronic Information — *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

Employment

Research Assistant
Hong Kong, P.R.China

School of Creative Media, City University of Hong Kong — *Sept. 2018 - May 2019*

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

Research Intern
Montreal, Canada

Shared Reality Lab, McGill University — *July 2017 - Oct. 2017*

- Developed the hardware and firmware of a foot-based interactive system for seated musicians based on Arduino and C. Co-designed the menu layout in Unity using C#. Co-designed and conducted qualitative & quantitative usability study through interviews & NASA-TLX questionnaires. Published at ACM DIS'18 conference.
- 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 Management Intern
Shenzhen, P.R.China

Siglent Technologies — *Aug. 2016*

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

Core Member, Technical Volunteer
Chengdu, P.R.China

Technology Association for School of Electronic Engineering — *Oct. 2014 - Dec. 2015*

- Provided technical support and hosted weekly workshops on embedded system programming in C and VHDL for undergrad students.

Publications

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

Second Author — *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. http://doi.acm.org/10.1145/3196709.3196759

Research Projects

Limb-Based Interactive System for Aphasia Patients
Montreal, Canada

Student researcher, McGill University — *Sept. 2019 - Present*

- Designing and developing a wearable limb-based input system for google glasses based on Arduino. Intended for aphasia patients.

The Singing Cubes: A Multi-Sensory Programming Media
Hong Kong

Research Assistant, City University of Hong Kong — *Oct. 2018 - May 2019*

- Designed and developed all hardware and firmware for a set of musical building blocks based on Arduino and C. The system introduces basic programming ideas such as variables and programming sequences (loop, switch and sequential order, etc.) to the visually impaired schoolchildren.

Simulating Touch Experience of Different Materials Through Thermal Feedback
Hong Kong

Research Assistant, City University of Hong Kong — *Sept. 2018 - Dec. 2018*

- Designed a system based on peltiers, Arduino and C, simulating thermal feedback when interacting with items of different materials, (e.g. metal, wood, ice, etc.) , temperature and humidity. Intended for VR developers.

Thermal-Based Displaying Device for the Visually Impaired Schoolchildren
Hong Kong

Research Assistant, City University of Hong Kong — *Aug. 2018 - Oct.2018*

- Designed and developed a thermal-based displaying device prototype based on peltier matrix, Arduino and C, set in the context of geographical education for visually impaired schoolchildren. Usability of the system (especially in picture displaying) compared with traditional Brailles.

Target Recognition and Tracking based on XGBoost (Undergraduate Thesis) *Chengdu, China*

Undergraduate Researcher, UESTC *Oct. 2017 - May 2018*

- Developed a supervised learning based target tracking algorithm and estimated its performance versus traditional target tracking algorithms (filtering algorithm: Kalman, LSM; target co-relating algorithms: JPDA, NNJPDA). Implemented in MATLAB and Python
- Received as poster presentation for IET International Radar Conference 2018

Raising the Heat *Montreal, Canada*

Research Assistant, Shared Reality Lab, McGill University *Sep. 2017 - Oct. 2017*

- A set of hardware system using Electro-Muscular Stimulation to generate an illusion of burning-hot sensation.
- Improved temperature detection robustness and accuracy. Minimum increment of the prototype was improved from approximately 0.1 °C to 0.0625 °C by re-designing detection method, switching from thermal variable resistors to DS18B20 temperature sensor.

Usability of Multi-Functional Foot-based Interfaces *Montreal, Canada*

Research Assistant, Shared Reality Lab, McGill University *Jul. 2017 - Sep. 2017*

- Compared the performance of two mainstream foot interaction methods (foot rocking and heel-pivoted rotation) in selection and parameter controlling tasks, set in the use case of a hands-free interface designed for seated musicians.
- Developed the hardware and firmware of the instrumented shoes using Arduino and C. Co-designed the menu layout in Unity using C#. Co-designed and conducted qualitative & quantitative usability study through interviews & NASA-TLX questionnaires.
- Published at ACM DIS'18 conference. http://doi.acm.org/10.1145/3196709.3196759

Data Secured USB Mass Storage Device *Chengdu, P.R.China*

Undergraduate Researcher, School of Electronic Engineering, UESTC *Mar. 2017 - July 2017*

- Co-developed a data secured USB Flash Disk capable of data encrypting, anti-losing alerting and data retrieving using STM32 and C.
- Ranked 7th among 125 teams in the provincial final of the National 'Internet Plus' Innovation and Entrepreneurship Competition.

Network-based RF Device Analyzer *Chengdu, P.R.China*

Undergraduate Researcher, School of Electronic Engineering, UESTC *Mar. 2016 - July 2016*

- Developed a network-based RF device analyzer with 4 GHz bandwidth and 125 MHz baseband bandwidth based on Xilinx Virtex VC707.
- Awarded second prize of Southwest China in 2016 National College Student Smarter Connected System Innovation Competition

Honors and Awards

Graduate Honors

Ethelwyn Crossley Memorial Scholarship

CAD 4,620, entrance scholarship for top 10 in all candidates. *May 2019*

Mitacs Globalink Graduate Fellowship

CAD 15,000 *Mar 2019*

Undergraduate Honors & Awards

Honorary Graduate of UESTC

10% *Oct. 2017*

Renmin Scholarship 2017

First Class in 2017, CNY 1,500 (USD 226) *Oct. 2017*

National Internet Security Scholarship

CNY 30,000 (USD 4,556), 100 among all undergraduates and graduate students in China per year *Aug. 2017*

2017 'Internet Plus' Innovation and Entrepreneurship Competition

Second Prize (provincial level), 7th among 125 teams *Jul. 2017*

Jiuzhou Scholarship 2016

CNY 1,000 (USD 150), 2 per school per year *Sep. 2016*

2016 National College Student 'Smarter Connected' System Innovation Competition

Second Prize of Southwest China Area *Jul. 2016*

2016 COMAP Interdisciplinary Contest In Modeling

Honorable Mention, 30 % *Apr. 2016*

Renmin Scholarship 2015

Third Class, CNY 500 (USD 75) *Oct. 2015*

Relevant Skills

Programming	MATLAB, C, VHDL, Python, HTML, Javascript, C#, LaTeX
Tools	Altium Designer, Quartus II, VICON, Unity 3D, AutoCAD, SPSS
Embedded Systems	Arduino, Xlinx Virtex, STM32, MCS 8051
Languages	Chinese (native), English (fluent, IELTS 8.0), French (basic, CEFR A1, certified by Alliance Française)