

# Candice Ip

📁 Portfolio | 🌐 Website | 📧 /candicei | in /candicei | ☎ 778.996.6896 | ✉ candicejxi@gmail.com | 📍 Vancouver

## SKILLS

### Electrical

PCB layout, Altium, Hardware Noise Reduction, SPI, I<sup>2</sup>C, Soldering, Filtering, Amplification

### Software

**Fluent:** MATLAB, LabVIEW, C, **Proficient:** C++, Python, RobotC **Familiar:** Java, VHDL, Assembly

### Mechatronics

Embedded Programming, Closed-loop Control, Computer Vision, SolidWorks, **MCU:** PIC, ARM Cortex, 8051

### Other Skills

Project Budgeting & Scheduling, Event Planning, Grant Proposal Writing, Professionalism, Coaching

## EXPERIENCE

### Nanoplasmonics Laboratory | Research Intern

May 2017 – Aug 2017 | Victoria, CA

- Co-authored two peer-reviewed papers in ACS Omega and SPIE Optical Trapping and Optical Micromanipulation.
- Performed novel optical tweezing experiments and was able to determine protein composition in heterogeneous solutions.
- Developed MATLAB code to analyze signals using physics knowledge and statistical techniques.

### HRI Robotics Laboratory (RREACH) | Mechatronics Engineering Intern

May 2016 – Aug 2016 | Vancouver, CA

- Developed a prototype of their biomedical and mechatronics device, SleepSmart v2, for detecting physiological signals.
- Implemented SPI and UART communication protocol on the microcontroller, PIC 18F4550, to communicate with digital 3-axis accelerometers and temperature sensors.
- Used LabVIEW and MATLAB software to decode and process digital acceleration and temperature data from the device.
- Conducted human research trials with SleepSmart v1 under Research Ethics Board of Canada guidelines.

### Max Planck Institute (MPSD) | Experimentalist & Software Intern

Jan 2015 – Apr 2015 | Hamburg, DE

- Co-authored a paper on novel instrumentation and automation for mass spectrometry experiments in Scientific Instruments.
- Developed code in LabVIEW and MATLAB to bring together the hardware system which involved real-time image processing, control of a 3-axis piezo stage, and pulsed-laser timing.
- Achieved auto-alignment with precision to the micrometer scale.

## SELECTED TECHNICAL PROJECTS

### Hardware Alpine Sensor | Software & Electrical Lead

Sep 2017 – Jan 2018 | Vancouver, CA

- Designed low-powered and cost-effective weather monitoring device in Alpine regions.

### Electrical Impedance Tomography | Individual | 📧

Nov 2017 | Vancouver, CA

- Implemented mathematical Green's Functions using finite element analysis to image an artificial tumor in MATLAB.

### Senior Engineering Design Competitions | Software & Management Lead | 📧

Fall 2015 & 2017 | Vancouver, CA

- Competed in autonomous robotics competitions and presented to industry professionals; 1st in 2015, 3rd in 2017.

### Autonomous Item Retrieval Robot Competition | Software Lead | 📧

Apr 2015 – Aug 2015 | Vancouver, CA

- Built and programmed an autonomous robot to navigate an obstacle course and retrieve targets; 1st in design quality.

## EDUCATION

### University of British Columbia | B.A.Sc., Engineering Physics | Minor in Commerce

May 2018 | Vancouver, CA

- A physics and applied mathematics program enriched by design fundamentals in electrical and mechanical engineering.

### Swiss Federal Institute for Technology (ETHZ) | International Exchange

Sep 2016 – Dec 2016 | Zurich, CH

- Studied Data Visualization, Physics, and Energy Technologies with the Department of Mechanical and Process Engineering.

## SELECTED PUBLICATIONS

- [1] N. Hachohen, **C. J. X. Ip**, G. K. Laxminarayana, T. DeWolf and R. Gordon, 'Nanohole optical tweezers in heterogeneous mixture analysis', (San Diego Convention Centre, 6th–10th Aug. 2017), SPIE, San Diego, United States, 2017. doi: 10.1117/12.2273358.
- [2] W. D. Robertson, L. R. Porto, **C. J. X. Ip**, M. K. T. Nantel, F. Tellkamp, Y. Lu and R. J. D. Miller, 'Note: A simple image processing based fiducial auto-alignment method for sample registration,' Review of Scientific Instruments, 2015. doi: 10.1063/1.4929408.