23rd September 2018

Candice Ip

Website | Portfolio | /candicei | /candicei | 778.996.6896 | candicejxi@gmail.com | Vancouver

SKILLS

Electrical PCB layout, Altium, Hardware Noise Reduction, SPI, I^2C, Soldering, Filtering, Amplification
Software **Fluent:** MATLAB, LabVIEW, C, **Proficient:** Python, RobotC **Familiar:** C++, Java, VHDL, Assembly
Mechatronics Embedded Programming, Closed-loop Control, Computer Vision, CAD, **MCU:** PIC, ARM Cortex, 8051
Other Skills Rapid Prototyping, Finite Element Analysis, Project Budgeting & Scheduling, Grant Proposal Writing, 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 a low-powered and cost-effective weather monitoring device for 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.