

CONTACT INFORMATION	<i>E-mail:</i> candicejxi@gmail.com <i>Web:</i> candicei.github.io	
EDUCATION	<p><b>The University of British Columbia (UBC)</b> <span style="float: right;">Vancouver, BC</span>  <i>M.Sc., Physics</i> <span style="float: right;">Sep 2020 - Present</span></p> <ul style="list-style-type: none"> <li>• Thesis Topic: quantitative MRI using Luminal Water Imaging for clinical prostate cancer detection</li> <li>• <u>Relevant Coursework:</u> Quantum Mechanics, Special Relativity and Classical Electromagnetism, and Nuclear Magnetic Resonance Imaging</li> </ul> <p><b>Eidgenössische Technische Hochschule Zürich (ETHZ)</b> <span style="float: right;">Zurich, Switzerland</span>  <i>Exchange Student</i> <span style="float: right;">Sep 2016 - Feb 2017</span></p> <ul style="list-style-type: none"> <li>• Studied graduate level courses during an exchange semester during my B.A.Sc.</li> <li>• <u>Relevant Coursework:</u> Plasmonics, Quantitative Flow Visualization, Nuclear Energy Conversion, Solar Cells, and Radiation Heat Transfer</li> </ul> <p><b>The University of British Columbia (UBC)</b> <span style="float: right;">Vancouver, BC</span>  <i>B.A.Sc., Engineering Physics, Minor in Commerce</i> <span style="float: right;">Sep 2013 - May 2018</span></p> <ul style="list-style-type: none"> <li>• Graduation with Dean's Honour List</li> <li>• <u>Relevant Coursework:</u> Optics, Electromagnetic Theory, Introduction to Quantum Mechanics, Statistical Mechanics, Signals and Systems, Systems and Control, Electronic Circuits, Applied Partial Differential Equations, Variational and Approximate Methods</li> </ul>	
RESEARCH	<p><b>MRI Research Lab, UBC</b> <span style="float: right;">Vancouver, BC</span>  <i>MSc Student advised by Dr. Piotr Kozlowski</i> <span style="float: right;">Sep 2020 - Present</span></p> <p>Developing computer vision algorithms for quantitative MRI analysis of prostate tissue using novel Luminal Water Imaging (LWI) technique.</p> <ul style="list-style-type: none"> <li>• Systematically improved image contrast of prostate cancer in T2-weighted (T2W) images with LWI parameter augmentation (abstract submitted to ISMRM)</li> <li>• Developing software protocol using LWI, T2W images, and histology to quantify cancer grades and probabilities in MR images for radiological assessment of prostate cancer</li> <li>• Implemented and tested U-NET architectures to automatically segment prostate regions in MR T2 multi-echo images</li> </ul> <p><b>Nanoplasmonics Laboratory, University of Victoria</b> <span style="float: right;">Victoria, BC</span>  <i>Undergraduate Researcher advised by Dr. Reuven Gordon</i> <span style="float: right;">May 2017 - Aug 2017</span></p> <p>Awarded an NSERC Research Award to research optical tweezing techniques for egg-white protein analysis and co-authored two peer-reviewed publications.</p> <ul style="list-style-type: none"> <li>• Developed MATLAB code to analyze Brownian motion signals to characterize and identify proteins based on molecular mass</li> <li>• Assisted in the design of double-nanoholes apertures and characterized its degradation and efficacy through SEM and protein trapping ability</li> </ul> <p><b>RREACH Lab, UBC</b> <span style="float: right;">Vancouver, BC</span>  <i>Undergraduate Researcher advised by Dr. Machiel Van der Loos</i> <span style="float: right;">May 2016 - Aug 2016</span></p> <p>Awarded a Undergraduate Research Fellowship for conducting clinical studies and successfully developed a pediatric "smart" mattress prototype.</p> <ul style="list-style-type: none"> <li>• Designed, produced, and tested SleepSmartV2 prototypes with digital sensors to measure temperature and motion in real time with a PIC18F4550 microcontroller, and programmed using C, LabVIEW, and MATLAB</li> <li>• Conducted human research trials with SleepSmartV1 under the guidelines of the Research Ethics Board of Canada</li> </ul>	

**Atomically Resolved Dynamics, Max Planck Institute for the Structure and Dynamics of Matter**

*Undergraduate Researcher advised by Dr. Wesley Robertson*

Hamburg, Germany

Jan 2015 - Apr 2015

Developed software and hardware for laser and mass spectrometry research and contributed to a peer-reviewed journal publication.

- Implemented image-based auto-alignment algorithms in MATLAB and LabVIEW for high-throughput (16 Hz) microfluidic sampling, obtaining an accuracy of  $3.7 \mu\text{m} \pm 0.4 \mu\text{m}$
- Constructed the dynamic fluid system as part of the published experiment for picosecond laser ablation of various solutions situated on wells in nanofabricated structures

WORK  
EXPERIENCE

**The University of British Columbia**

*Senior (Mentor) Teaching Assistant*

Vancouver, BC

Sep 2021 - Present

Mentored newly admitted teaching assistants in the department of Physics and Astronomy in addition to teaching undergraduate courses.

- Developed teaching assistant (TA) training feedback for new TAs
- Observed and provided actionable feedback to TAs
- Participated in teaching and equity and inclusion, and diversity workshops

**Stokō Design Inc.**

*Engineering Physicist*

Vancouver, BC

Oct 2018 - July 2020

Brought mechanical, research, and imaging expertise to design, develop, and test the Stoko K1 knee brace from prototype to production.

- Independently developed the proprietary 3D imaging system software to inform and combine biomechanics to the design of the knee brace
- Supervised two engineering interns and collaborated in designing and developing an automated test jig to determine and confirm the mechanical efficacy of the brace
- Developed and conducted pilot studies together with physiotherapists under the guidelines of Research Ethics Board of Canada

**Dynamic Optics**

*Project Coordinator & Mechanical Engineer*

Port Coquitlam, BC

Jun 2018 - Oct 2018

Managed mechanical designs, optimized optical and fluid subsystems, and coordinated among key industry stakeholders for the HyDRA optical mirror polisher.

- Developed preliminary designs for optical metrology systems using both commercial and experimental interferometry systems
- Supervised mechanical engineering co-op students on the design of HyDRA force plates and safety systems with KUKA robots

TEACHING  
ASSISTANCE AT  
UBC

**Physics 401: Electromagnetic Theory**

Spring 2021, Spring 2022

Topics: Maxwell's Theory, Wave propagation in dielectrics, conductors and plasmas, wave guides, radiation, antennae, and special relativity

**Physics 100: Introductory Physics**

Fall 2020, Fall 2021

Topics: Kinematics, force, energy, momentum, use of graphs and vectors in physics; thermal energy, heat transfer, and electricity

PEER-  
REVIEWED  
PUBLICATIONS

N. Hachohen, **C. J. X. Ip**, and R. Gordon. "Analysis of Egg White Protein Composition with Double Nanohole Optical Tweezers". *ACS Omega*. 2018, 3, 5, 5266-5272. doi.org/10.1021/acsomega.8b00651. *My contributions: aided in performing analysis and manuscript writing.*

N. Hachohen, **C. J. X. Ip**, G. K. Laxminarayana, T. S. DeWolfe, and R. Gordon. "Nanohole optical tweezers in heterogeneous mixture analysis". *Proc. SPIE 10347, Optical Trapping and Optical Manipulation XIV 103470F*, 2017. doi.org/10.1117/12.2273358.

*My contributions: aided in performing analysis and manuscript writing.*

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.” *Rev. Sci. Instrum.* 2015, 86. 086105. doi.org/10.1063/1.4929408.  
*My contributions: aided in performing experiments, development of instrumentation, and manuscript writing.*

GRANTS	<p><b>“Science Communication Skills Grant”</b> (co-applicant), \$19,700  The Natural Sciences and Engineering Research Council of Canada  Aug 2021 - Aug 2022</p> <p><b>“Student Ambassador Grant”</b> (principal applicant), \$1,000  The Natural Sciences and Engineering Research Council of Canada  Aug 2021</p>
HONOURS & AWARDS	<p>Dean’s Honour List 2018</p> <p>NSERC Undergraduate Student Research Award 2017</p> <p>Engineers in Scrubs USRA Fellowship 2016</p> <p>Applied Science Coordinated International Exchange Award 2016</p> <p>District Dogward Authority Award Scholarship 2013</p> <p>Carol Lobb Award (Athletics, Good Academic Standing, &amp; Contribution to Community) 2013</p> <p>Athletic Director’s Merit Award 2013</p>
MEMBERSHIPS	<p>International Society for Magnetic Resonance in Medicine, Member 2021 - Present</p>
PROFESSIONAL DEVELOPMENT	<p>Creating Inclusive Classrooms Training Workshop Sep 2021</p> <p>TRIUMF Summer Institute: Cornerstone Models of Quantum Computing, audited Aug 2021</p> <p>Effective Visual Scientific Communication Workshop Aug 2021</p> <p>DeepLearning.AI: Neural Networks and Deep Learning Course Jun 2021</p> <p>Stanford d.School: Research as Design Pop-Out Course, attendee May 2019</p> <p>BC Tech Summit, company representative &amp; attendee Mar 2019</p> <p>Laser Safety Training May 2017</p> <p>Workplace Hazardous Materials Information System Training May 2017</p> <p>Innovation in Health and Research Technologies Symposium, attendee Jun 2016</p> <p>Tri-Council Policy Statement: Course on Research Ethics May 2016</p>
WORKSHOPS ORGANIZED	<p><b>SciComm 101 - Telling your science as a story</b>, host Vancouver, BC  <i>Hosted with SciCATs</i> Dec 2021</p> <p>Supported with the NSERC Student Science Communication Skills Grant, we present on how to effectively communicate graduate-level research as a series of workshops.</p> <p><b>Thinking Through the Crap</b>, presenter Vancouver, BC  <i>Hosted for Science Literacy Week &amp; UBC Library</i> Sep 2021</p> <p>Supported with the NSERC Student Ambassador grant, I organized and presented to high school and university student audiences on how to think critically about science in media.</p>
OUTREACH	<p>The (Un)Scientific Method, founding member Mar 2021 - Present  <i>Founded a science communication outreach organization with goals of increasing science literacy in our community. We have been collaborating with various faculties at UBC and professionals to deliver science communication workshops for research trainees and to publish podcast episodes about ongoing science research.</i></p> <p>Physics and Astronomy Outreach, volunteer Sep 2020 - Present  <i>Organizing physics sessions for interested high school students every other week and teaching physics to various audiences, including youth and underrepresented students in STEM</i></p>

UBC Women in Science, mentor Sep 2020 - Aug 2021  
*Mentored an undergraduate female student in applied science on academic and career goals*

STEM Mentoring Cafe, volunteer Fall 2019  
*Participated in mentoring events as part of Open Science Network for high school students to discuss with STEM professionals and learn about various scientific fields*

Shad International, project mentor Jul 2019  
*Mentored a diverse team of high school students involved in the Shad Program on a project about solving problems in food security, water management, and waste*

VEX & First Robotics, volunteer Spring 2018, Spring 2019  
*Volunteered as a robotics judge for high school VEX and FIRST Robotics competitions*

Engineering Physics Student Association, graduate representative Sep 2017 - May 2018  
*Organized and supported the graduating class of Engineering Physics to meet graduation requirements and raised funds (approx. \$4,500) to subsidize the class for international professional development events*

Engineering Physics Student Mentorship Program, mentor Sep 2017 - May 2018  
*Coordinated weekly activities and mentored a group of younger Engineering Physics students to build community and rapport*

Engineering Physics Student Association, events coordinator Sep 2015 - May 2017  
*Obtained permits and raised funds through grants and sponsorships from the university and private companies (approx. \$23,000 in total) to organize and host yearly networking and social events for students, faculty, and alumni*