

CURRICULUM VITAE

Ricky G. Hu

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Research Interests

Elastography techniques for analysis of tissue abnormality, structural recognition in medical imaging, spatial reconstruction for image-guided surgery, surgical robotic systems, mathematical modelling of human physiology, applications of machine learning and computer vision in diagnostic radiology, , and photonic applications in medicine.

Education

The University of British Columbia

(Expected) May 2019

- MSc. Biomedical Engineering - GPA: 91%

The University of British Columbia

May 2016

- BSc. Engineering Physics (Electrical Specialization) - Final 2 Years GPA: 85%
- Minor in Honours Mathematics

Technical Skills

Programming and Software:

C, C++, Java, MATLAB, Python, Jupyter, Bash, Linux, Git, Mercurial, SolidWorks, SolidWorks, LumericalTarget Process.

Electrical and Mechanical:

Digital logic, control, signal processing, electrical filtering, Fourier analysis, spectral analysis, circuit simulation, information theory, CNC and manual machining, rapid prototyping (3D printing, laser cutting, waterjet cutting).

Mathematics & Physics:

Statistical modelling, differential error analysis, applied linear programming, numerical computation, partial differential analysis, statistical mechanics, optics, electrodynamics.

Publications

Journal Papers

1. H. Jayatileka, K. Murray, M. A. Guillen-Torres, M. Caverley, R. Hu, N. A. F. Jaeger, L. Chrostowski, and S. Shekhar, "Wavelength tuning and stabilization of microring-based filters using silicon in-resonator photoconductive heaters", Opt. Express (19), 25084-25097, 2015.

Conferences

1. M. Ma, K. Murray, M. Ye, S. Lin, Y. Wang, Z. Lu, H. Yun, R. Hu, N. A. F. Jaeger, and L. Chrostowski, "Silicon Photonic Polarization Receiver with Automated Stabilization for Arbitrary Input Polarizations", CLEO: Science and Innovations: Optical Society of America, pp. 4-8, 2016.

Selected Poster Presentations

- R. Hu, P. Mathur, P. Danaei, J. Wyss, and H. El-Hariri, "A Low-Cost Variable Frequency Vibration Device to Assist Speech Generation for Laryngectomy Patients", UBC Biomedical Engineering Symposium, 2018.
 - *Winner of Best Poster Award*
- R. Hu and R. Saha, "A Multi-Channel Resonance Stabilization Controller for Photonic Devices", UBC Engineering Physics Fair, 2016.

Technical Reports

1. Hu, R. and Saha, S. "Multi-Channel Resonance Stabilization Controller for Photonic Devices". (2016).

Professional Experience

Robotics and Control Laboratory, UBC

Graduate Research Assistant

Vancouver, BC

Aug 2017 – Present

- Designed and led 2 clinical studies on humans to develop algorithms to computer tissue properties for automatic detection of disease. Investigated non-invasive elastography methods to detect stiffness of tissue correlated with placental diseases in a third clinical study.

MDA Systems Ltd.

Software Engineer

Richmond, BC

Aug 2016 – April 2017

- Developed algorithms and system integration software for image processing, geodetic mapping, and earth ellipsoid modelling from satellite ephemeris and optical imagery data applications such as military surveillance.

Pacific Institute of Mathematical Sciences

Data Science Intern

Vancouver, BC

May 2016 – Aug 2016

- Developed numerous prototypes of data analytics software using a fully remote python kernel on a web browser, such as an image recognition interface for a user-input image or displaying custom points of interest on OpenStreetMap.

Photonics Research Group, UBC

Vancouver, BC

Research Assistant

May 2015 – Sep 2015

- Designed and implemented a microcontroller photocurrent stabilization system to maximize signal power output of a photonic chip, co-authored in two publications for my contributions.
- Designed and simulated new geometries of photonic filters, programming finite difference simulations to optimize design parameters for maximum energy storage,

Spot Solutions Ltd.

Vancouver, BC

Software Development Intern

May 2014 – Dec 2014

- Programmed C# applications in an Agile environment to monitor real time sensors by processing data to a database through SQL procedures and a .NET framework.

NORAM Engineering and Constructors

Vancouver, BC

Research Engineering Intern

Jan 2013 – Apr 2013

- Planned, executed, and analyzed chemical yield experiments, utilizing MATLAB signal processing algorithms to filter chemical reactor thermoconductivity data.

Academic Honours and Awards

- UBC Faculty of Applied Science Graduate Student Award Award (\$2000) 2018
- UBC School of Biomedical Engineering Graduate Student Initiative Award (\$2000) 2018
- UBC Dean's Honour List 2011-2012, 2014-2016
- Sun Rise Rotary Club Scholarship (\$1000) 2012
- UBC President's Entrance Scholarship (\$2500) 2011

Non-Academic Honours and Awards

- Scouts Canada Certificate of Commendation 2017, 2018
- Duke of Edinburgh's Award – Gold Level 2017
- Scouts Canada Bar to the Medal of Good Service 2017
- Scouts Canada Medal of the Maple 2013
- Queen's Venturer Award 2010