

Ryan William Chu, M.H.Sc.

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SUMMARY OF QUALIFICATIONS

- ❖ Five years of experience in medical technology and health care software development.
- ❖ Working proficiency in various programming languages including Python, C#, C++, Android, Java, MATLAB, Qt/QML, SQL, and shell scripts.
- ❖ Experienced in use of computer vision and deep learning for classification, segmentation, etc.
- ❖ Working knowledge of optical techniques (e.g., photoplethysmography, OCT, depth sensing, fluorescent imaging) for recording physiological signals.
- ❖ Experienced in following medical device regulatory standards in a quality management system (QMS) in accordance with ISO 9001 and ISO 13485.

SKILL HIGHLIGHTS

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|-----------|-----------------------|------------------------|
| ❖ Python | ❖ Computer vision | ❖ Optical techniques |
| ❖ C++ | ❖ Signal processing | ❖ Windows, Linux |
| ❖ C# | ❖ Deep learning | ❖ VCS (Git, SVN, etc.) |
| ❖ Android | ❖ Google Cloud | ❖ DICOM / PACS |
| ❖ MATLAB | ❖ Fluorescent imaging | ❖ JIRA, Arena, Jama |
| ❖ Java | ❖ Depth sensing | ❖ Academic writing |
| ❖ Qt/QML | ❖ QMS documentation | ❖ Mentoring |

EXPERIENCE

Software Engineer, Perimeter Medical Imaging AI

May 2024 – June 2025

Toronto, ON

- Developed key software features for an OCT specimen imaging device for breast cancer.
- Worked on front-end and back-end software for clinician-facing applications using C++ and Qt.
- Worked closely with the AI team to process data for model training and develop support tools for annotation, benchmarking, etc.
- Developed spatial coordination for multiplanar reconstruction of DICOM images in Python.
- Oversaw a cloud-based transfer of the entire clinical data repository and validation of data integrity.

Software Engineer EIT, SBI ALApharma Canada

June 2022 – May 2024

Toronto, ON

- Developed key software features for a handheld fluorescent camera using Android AOSP.
- Designed and administrated an electronic case report form (eCRF) and data collection platform for surgical media collected during a Phase III clinical trial.
- Designed and implemented clinician-facing tools in Python for handling fluorescent camera images.

Graduate Student, Biophotonics Lab, University of Toronto

Aug 2018 – Feb 2021

Toronto, ON

- Designed and assembled a multi-camera system for remote monitoring of vital signs (heart rate, respiratory rate) based on light intensity and depth imaging.
- Refined computer vision and signal processing algorithms to optimize signal quality and compensate for subject motion.
- Evaluated vital sign accuracy in human participants and achieved clinical-level accuracy when compared to a gold standard bedside monitor.

EDUCATION

Master of Health Science, Clinical Engineering

Aug 2018 – Nov 2020

University of Toronto, Toronto, ON

- Supervised by Dr. Ofer Levi and Dr. Alex Mihailidis.
- Thesis available on the University repository: <https://hdl.handle.net/1807/126949>
- Relevant courses: Bioengineering Science; Clinical Engineering Instrumentation; Advanced Topics in Magnetic Resonance Imaging; Tissue Injury, Repair, and Regeneration.

Bachelor of Applied Science, Electrical Engineering

Sep 2013 – Jun 2018

University of Waterloo, Waterloo, ON

- Graduate of the Honours Electrical Engineering Co-op program.
- Completed 5 co-op work terms with 3 “Outstanding” performance scores.
- Recipient of the Dean’s List award in 2014 for exceptional academic performance.
- Relevant courses: Digital Signal and Image Processing, Adaptive Algorithms, Radio Frequency and Microwave Circuits, Organic Chemistry (I and II).

PATENTS AND INVENTIONS

O. Levi, E. Y. Zhu, D. A. Ringuette, **R. Chu**, “Remote portable vital signs monitoring” *US patent no. 11,850,026*; Issued Dec 26, 2023.

PUBLICATIONS

R. Chu, L. Kuramoto, D. Ringuette, E. Y. Zhu, and O. Levi, “Correlation of Near-Infrared Intensity and Depth Channels for Remote Vital Signs Monitoring”, SPIE Photonics West 2021 conference, paper 11651-16, San Francisco, CA (6-11 March 2021) (oral)

R. Chu, D. Ringuette, E. Y. Zhu, A. Mihailidis and O. Levi, “Motion-Tolerant Remote Respiration Monitoring with a Multi-Camera Configuration”, Imaging Systems and Applications (IS) conference, OSA Technical Digest (CD), paper 3395473, Vancouver, BC, (June 24, 2020), (oral)

R. Chu, M. Downing, A. Srivastava, J. Cafazzo, A. Mihailidis and O. Levi, “Remote Acquisition of Vital Signs Using Infrared and Depth-Enabled Cameras”, International Neuro-rehab symposium (NIRS 2019), Toronto, CANADA, paper INRS93 (June 24, 2019) (poster).

R. Chu, “A Double-Edged Sword: Advancements and Complications of Machine Learning in Healthcare”, Clinical Engineering Society of Ontario (CESO) conference, Toronto, CANADA, (February 5, 2019), (oral). Available at: <https://www.ceso.on.ca/ceso-2019-conference.html>

LICENSES & CERTIFICATIONS

DeepLearning.AI TensorFlow Developer Specialization, Coursera

Feb 2022

HONOURS & AWARDS

Harold E. Johns Studentship in Medical Physics, Princess Margaret Cancer Centre

May 2019

3rd Place – Three Minute Thesis (3MT) Competition, University of Toronto

Apr 2019

Dean’s Honours List, University of Waterloo

Jul 2014