

# Mark Asselin

## EDUCATION

### QUEEN'S UNIVERSITY

B.Sc. IN COMPUTER SCIENCE

BIOMEDICAL SPECIALIZATION

4th Year | Anticipated Graduation May 2019

### UNIVERSITY OF

### BRITISH COLUMBIA

B.ASc. IN ELECTRICAL ENGINEERING

BIOMEDICAL ENGINEERING OPTION

3 years completed

## SKILLS

### PROGRAMMING

C • C++ • HTML • CSS • JavaScript/React  
Java • 8051 Assembly • Python • LaTeX  
Visual Basic • VHDL

### OPEN SOURCE SOFTWARE DEVELOPMENT

PLUS Toolkit (Public software Library for  
UltraSound imaging research)  
3D Slicer (Platform for medical interventional  
navigation research)

### SOFTWARE TOOLS

3D Slicer • PLUS Toolkit • Visual Studio  
SolidWorks • Git (&Github)  
Lightroom • Photoshop

### OTHER SKILLS

- Expert in electronics hardware, PCB prototyping and creation of embedded systems.
- Very proficient amateur photographer.
- Formal training in machine shop environment.

## COURSEWORK

### UNDERGRADUATE

Software Engineering • Circuit Analysis & Design  
Rapid Prototyping (Electronic & Mechanical)  
Embedded Systems • Electromagnetics •

## CONTACT INFORMATION

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## EXPERIENCE

### SOFTWARE DEVELOPER | MARCH 2018-

NeuroImaging & Surgical Technologies Lab, Montreal Neurological Institute, McGill University

- Ongoing development to improve support in PLUS for the Atracsys optical trackers

### MEDICAL ENGINEERING CONSULTANT | DECEMBER 2017-

Verdure Imaging, Stockton, California

- Developing an ultrasound system for diagnostic assessment of the alignment of the spine.

### TEACHING ASSISTANT | SEPTEMBER 2017-

School of Computing, Queen's University

- CISC 251 (September 2018): Machine learning
- CISC 102 (July 2018): Introductory course on discrete mathematics for computing
- CISC 271 (January 2018): Scientific computing and introductory data science
- CISC 204 (September 2017): Formal logic for computer science

### UNDERGRADUATE RESEARCHER | MAY 2017-

Laboratory for Percutaneous Surgery, Queen's University

- Current body of work includes development and refinement of surgical navigation systems
- Deployment & operation of systems in the operating theatre
- Software development in 3D Slicer, PLUS Toolkit
- Instructed new students in learning to develop navigation systems using 3D Slicer & PLUS
- Developed a navigation system based upon an inexpensive commercially available webcam
- Prototyping of mechanical components using 3D printing

### ENGINEERING RESEARCH INTERN | OCTOBER 2015-MAY 2016

Djavad Mowafaghian Centre for Brain Health, University of British Columbia

- Responsible for the implementation of a circuit to perform in vivo single cell electroporation in Xenopus tadpoles for the injection of photosensitive dyes.

## PUBLICATIONS

### PEER-REVIEWED

- Mark Asselin, Andras Lasso, Tamas Ungi, Gabor Fichtinger, "Towards webcam-based tracking for interventional navigation", Proc. SPIE 10576, Medical Imaging 2018: Image-Guided Procedures, Robotic Interventions, and Modeling, 1057627 (February 2018).
- Mark Asselin, Andras Lasso, Tamas Ungi, Gabor Fichtinger, "Component fusion in a webcam based optical tracker for interventional navigation", Imaging Network Ontario Symposium 2018 Proceedings (March 2018).
- Andras Lasso, Hannah H. Nam, Patrick V. Dinh, Csaba Pinter, Jean-Christophe Fillion-Robin, Steve Pieper, Sankhesh Jhaveri, Jean-Baptiste Vimort, Ken Martin, Mark Asselin, Francis X. McGowan, Ron Kikinis, Gabor Fichtinger, Matthew A. Jolley, "Interaction with Volume-Rendered Three-Dimensional Echocardiographic Images in Virtual Reality", Journal of the American Society of Echocardiography (August 2018).
- Mark Asselin, Tamas Ungi, Andras Lasso, Gabor Fichtinger, "A Training Tool for Ultrasound-guided Central Line Insertion with Webcam-based Position Tracking", MICCAI 2018 Point of Care Ultrasound Workshop (September 2018).
- Mark Asselin, Martin Kaufmann, Julia Wiercigroch, Tamas Ungi, Andras Lasso, John Rudan, Gabor Fichtinger, "Navigated real-time molecular analysis in the operating theatre, demonstration of concept", SPIE Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling (February 2019).
- Laura Connolly, Tamas Ungi, Andras Lasso, Thomas Vaughan, Mark Asselin, Parvin Mousavi, Scott Yam, Gabor Fichtinger, "Mechanically-Controlled Spectroscopic Imaging for Tissue Classification", SPIE Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling (February 2019).
- Jacob Laframboise, Tamas Ungi, Andras Lasso, Mark Asselin, Matthew S. Holden, Pearl Tan, Lawrence Hookey, Gabor Fichtinger, "Analyzing the curvature of the colon in different patient positions", SPIE Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling (February 2019).
- Shaun Lund, Thomas Vaughan, Tamas Ungi, Andras Lasso, Mark Asselin, Caitlin Yeo, C. Jay Engel, Gabor Fichtinger, "Controlling virtual views in navigated breast conserving surgery", SPIE Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling (February 2019).
- Sydney Perrin, Zachary Baum, Mark Asselin, Grace Underwood, Saleh Choueib, Hillary Lia, Tamas Ungi, Andras Lasso, Gabor Fichtinger, "Reproducibility of freehand calibrations for ultrasound-guided needle navigation", SPIE Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling (February 2019).
- Tan, P., Laframboise, J., Scott, C., Bechara, R., Lasso, A., Asselin, M., Holden, M. S., Ungi, T., Fichtinger, G. Hookey, L., "Quantitative assessment to determine changes in colonic curvature with supine versus prone position using computed tomography colonography", Canadian Digestive Diseases Week 2019 Conference (**submitted**)

### NON-PEER-REVIEWED

- Mark Asselin, Tamas Ungi, Andras Lasso, Jay Engel, John Rudan, Gabor Fichtinger, "A navigated intelligent knife for breast cancer surgery", Inquiry @ Queen's Undergraduate Research Day (March 2018).
- Mark Asselin, Martin Kaufmann, Andras Lasso, Tamas Ungi, Gabor Fichtinger, "Navigated molecular analysis for surgery, a demonstration", CSearch: Queen's Computing Student Research Conference (September 2018).

## AWARDS

- 2018 Queen's Dean's Honour List
- 2018 NSERC Undergraduate Student Research Award - Undergraduate summer research award.
- 2018 Christopher Knapper Award Honorable Mention - Recognizes Queen's teaching assistants who have demonstrated outstanding commitment to the education of students.
- 2017 Queen's Dean's Honour List
- 2013 NKB Presidents Award - Awarded to most outstanding swimmer based on leadership, commitment and passion for excellence.
- 2013 Silver Medal Society (90% or above average, all 4 years of high school).

## EXTRACURRICULAR ATHLETICS

### **IRONMAN DISTANCE TRIATHLETE | 2 YEARS, ONGOING**

- 2018 All World Bronze Athlete (top 10% in age group worldwide)

### **COMPETITIVE SWIMMER | 10 YEARS, INCLUDING 3 YEARS AT CANADIAN SENIOR NATIONAL LEVEL & 2 YEARS AT THE CANADIAN UNIVERSITY LEVEL**

- Multiple gold medalist Canadian Age Group National Swimming Championships (Montreal 2013)
- Finalist at World Championships and Commonwealth Games Trials (Victoria 2013)
- Competed at Canadian Olympic Swimming Trials (Montreal 2012)