Mark Asselin

EDUCATION

QUEEN'S UNIVERSITY
B.Computing. honours
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

Email:
mark.asselin@queensu.ca

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 (Houston, TX, USA, 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 (Toronto, ON, Canada, 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 31(10):1158-1160 (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 (Granada, Spain, 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 (San Diego, CA, USA, 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 (San Diego, CA, USA, 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 (San Diego, CA, USA, 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 (San Diego, CA, USA, 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 (San Diego, CA, USA, February 2019).
- Pearl Tan, Jacob Laframboise, Charles Scott, Robert Bechara, Andras Lasso, Mark Asselin, Matthew Holden, Tamas Ungi, Gabor Fichtinger and Lawrence Hookey. "Quantitative assessment to determine changes in colonic curvature with supine versus prone position using computed tomography colonography". Canadian Digestive Diseases Week 2019 Conference (Banff, AB, Canada, March 2019) **(submitted)**.
- Mark Asselin, Martin Kaufmann, Natasja Janssen, Julia Wiercigroch, Kyle Sunderland, Tamas Ungi, Andras Lasso, John Rudan, Gabor Fichtinger. "Navigation of the iKnife for intra-operative tissue characterization in neurosurgery". Imaging Network Ontario Symposium 2019 Proceedings (London, ON, Canada, March 2019) **(submitted)**.
- Mark Asselin, Julia Wiercigroch, Kyle Sunderland, Martin Kaufmann, Natasja Janssen, Tamas Ungi, Andras Lasso, John Rudan, Gabor Fichtinger. "Accounting for surgical aerosol propagation delay in navigated intra-operative tissue characterization by mass spectrometry". International Conference of Computer Assisted Radiology and Surgery (CARS) (Rennes, France, June 2019) **(submitted)**.
- Victoria Wu, Mark Asselin, Tamas Ungi, Gabor Fichtinger. "Detection of Spinal Ultrasound Landmarks Using Convolutional Neural Networks". International Conference of Computer Assisted Radiology and Surgery (CARS) (Rennes, France, June 2019) **(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 demo
outstanding commitment to the education of students.
2017 Queen's Dean's Honour List
2017 QHacks RBC prize for best use of natural language processing 2013
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)