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Dartmouth, Nova Scotia, Canada

Education

2023	*University of Guelph - Guelph, Ontario* PhD in Computational Science *LOA: Fall 2021-Winter 2023 (Sessional Teaching and external work)* *GPA: (4.0)*
2012	*University of Western Ontario - London, Ontario* MSc in Computer Science *Interactions* *GPA: (4.0)*
2006	*Saint Mary's University - Halifax, Nova Scotia* Honors Bachelor of Science: Computer Science *GPA: (3.75)*

Thesis and Dissertations

2023	**Ph.D. Thesis:** *Learning to Code: Examining Student Profiles in Novice Programming.* **Co-Supervision:** *Dr. Judi McCuaig and Dr. Dan Gillis* **Research:** *Machine Learning, Artificial Intelligence, Student Modeling, Educational Data Mining*
2012	**MSc Thesis:** *Game Challenge: A Factorial Analysis Approach* **Co-Supervision:** *Dr. Michael Katchabaw and Dr. Robert Mercer* **Research:** *Adaptive Gaming, Artificial Intelligence, Human-Computer Interactions*

Patents

2018	*System and method for automatic alignment and projection mapping (US 10089778 B2)*

2015   *System and method for automatic alignment and projection mapping (US 20180338123 A1)*

Achievements

2018   *PSEER Conference and Workshop Travel Grant (University of Guelph)*

2018   *College of Physical & Engineering Science Graduate Dean's Scholarship (University of Guelph)*

2017   *(NSERC CGS-D 3-Years) Alexander Graham Bell Canada Graduate Scholarships (University of Guelph)*

2017   *College of Physical & Engineering Science Graduate Dean's Scholarship (University of Guelph)*

2016   *Ontario Graduate Scholarship (OGS) (University of Guelph)*

2016   *Achievement Scholarship Graduate Studies (University of Guelph)*

2007   *Nomination for Graduate Teaching Assistant Award (Western University)*

2007   *Achievement Scholarship Graduate Studies (Western University)*

2006   *Achievement Scholarship Graduate Studies (Western University)*

2006   *ACM 2nd place finish in APICS Programming Content*

2002-04 *Dean's List for Academic Achievement (Saint Mary's University)*

Professional Experience

2020-2023 Western University - Software Developer and Research Support II

- *Lead Developer for Research Team - 2-3 programmers.*

- *Consulting with multidisciplinary teams of medical professionals, developers, and researchers.*

- *Co-authored 12 research papers on the impact of COVID-19 on family workload, sexuality, anxiety, and depression.*

- *Key Development Projects included:*

- *Developed a cutting-edge Tele-Health application to track patient's range of motion and evaluate physiotherapy progress.*

- *Oculus Rift game to gamify physical therapy and evaluate patient rehabilitation with rotator cuff injuries.*

- *Patient Care Website directing patients to additional care for Carpal Tunnel and other injuries.*

- *Data analytics platform to extract COVID-19 patient data related to family workload, anxiety, and depression.*

2016-2018 University of Guelph - Lead Developer/Researcher

- *Developed an educational platform (IFS) for student learning and educational research.*

- *Managed a team of junior software developers, including MSc students and co-ops*

- *Experiment website ran for four years and supported five graduate degrees.*

2012-2016 Christie Digital Systems - Application Software, Software Developer

- *Front-end development using C++/Qt/Web for digital cinema and visual solution projectors and touch panels.*

- *Team Scrum Master for Agile process and organized software development team sprints.*

- *Professional software development continuous integration build system, unit testing, code reviews, and constant QA validation.*

- *Developed a JsonRPC communication system for the company's projectors and client interfaces.*

- *Website development for smart canvas applications.*

- *Development iOS awarding-winning projector remote applications.*

2013-2016 Christie Digital Systems - Research Software Developer

- *Research and development of patented projection mapping prototype.*

- *Projection Mapping system presented at significant conferences (SIGGRAPH and ISE).*

- *Focused on machine vision techniques, 3D reconstruction, and projection mapping.*

- *Developed prototypes for facial and demographic recognition systems.*

- *Implemented advanced research algorithms for camera orientation in projection mapping.*

2008-2011 *Big Blue Bubble - Game Programmer*

- *Lead Programmer: released 6 iPhone/iPad Games (Fighting Fantasy Series)*

- *Programmer: Developed two games for the Wii and 2 for PC.*
  - *Developed tools for the company's PC division.*
  - *Produced 2D and 3D video games.*

2002-06   *Research In Motion - Order Processing Representative*

Teaching Experience

2017-   *Sessional Lecturer - University of Guelph*
           Develop course content, manage teaching assistants, and weekly lectures to upwards of 300 students.

           CIS1500 Introduction to Programming (W22)
           CIS2910 Discrete Structures in Computing II (W22)
           CIS1500 Introduction to Programming (F21)
           CIS1910 Discrete Structures in Computing I (F21)
           CIS2520 Data Structures DE (S18)
           CIS1910 Discrete Structures in Computing I (W18)
           CIS2520 Data Structures (F17)

2017-   *Course Development - University of Guelph*
           Developing course content for textbooks, slides, and online assessments.

           CIS1500 Introduction to Programming (W22)
           CIS2910 Discrete Structures in Computing II (W22)
           *Co-Developer/Organizer - UNIV*9999 (F18)*
           Content Developer - CIS2520 (DE)

2016-2020 *Teaching Assistant - University of Guelph*
Teach course sections, labs, proctoring exams, and managing online discussion boards.

CIS3050(F20), CIS3750(F20), CIS4510(W20),
CIS4150(W19), CIS3050(W19), CIS3110(W19),
CIS2910 (F18, F17), CIS2520 (DE) (S17,S16),
and CIS3490 (W16)

2006-08 *Western University*

2003-06 *Saint Mary's University*

Publications

2023 *Examine the construct validity of the PHQ-9 in the general population before and after the COVID-19 pandemic using Rasch modelling*
*Ze(Steve) Lu, Hoda Seens, **James Fraser**, Joy C MacDermid*
(Accepted - CSEB Conference and Reproducibility and Replicability in Neuroscience and Mental Health Research studies)

2023 *Construct validity and internal consistency of the Home and Family Work Roles Questionnaires: a cross-sectional study with exploratory factor analysis*
*Authors: Armaghan Dabbagh, Hoda Seens, **James Fraser**, Joy C MacDermid*
(Accepted - BMC Women's Health)

2023 *Age, Gender, and Ethnicity as Predictors of Family Role Responsibilities*
*Authors: Sheena Philip, Hoda Seens, **James Fraser**, Alison Rushton, Pulak Parikh, Joy C MacDermid, Laura Brunton, and Samantha Doralp*
(Accepted - Poster - Interdisciplinary Social Accountability Conference in Healthcare)

2022 *Work-related predictors of post-COVID-19 home and family work roles: a cross-sectional survey*
*Authors: Armaghan Dabbagh, Hoda Seens, **James Fraser**, Jacob Boudreau, Joy C MacDermid*
(Accepted - Journal of Occupational and Environmental Medicine)

2022   *Understanding the distributions of unpaid work roles amongst households during COVID- 19*
*Authors: Rochelle Furtado, Hoda Seens, Christina Ziebart, Paul F Tremblay, **James Fraser**, Joy C MacDermid*
(Accepted - Aging and Health Research)

2022   *What are the mental health changes associated with the COVID-19 pandemic in people with medical conditions? An international survey*
*Authors: Shirin Modarresi, Hoda Seens, Uzair Hussain, **James Fraser**, Jacob Boudreau, Joy C MacDermid*
(Accepted - BMJ open 12)

2022   *An intersectional approach to identifying factors associated with anxiety and depressive symptoms following the COVID-19 pandemic*
*Authors: Hoda Seens, Ze (Steve) Lu, **James Fraser**; Joy MacDermid, David M Walton, Ruby Grewal*
(Accepted- Nature Portfolio Scientific Reports)

2022   *Understanding the distributions of unpaid work roles amongst households during COVID- 19*
*Authors: Rochelle Furtado, Hoda Seens, Christina Ziebart, Paul F Tremblay, **James Fraser**, Joy C MacDermid*
(Accepted - Aging and Health Research)

2022   *COVID-19 attributed Changes of Home and Family Responsibilities among Single Mothers*
*Authors: Lisbeth Pinto, Hoda Seens, **James Fraser**, Marudan Sivagurunathan, Joy C MacDermid, Laura Brunton, and Samantha Doralp*
(Accepted - Journal of Family Issues)

2021   *The Role of Sex and Gender in the Changing Levels of Anxiety and Depression during the COVID-19 Pandemic*
*Authors: Hoda Seens, Shirin Modarresi, **James Fraser**, Joy MacDermid, David M Walton, Ruby Grewal*
(Accepted - Women's Health)

2021   *What are the work-related predictors of Post-COVID-19 home and family work roles? A Cross-sectional survey*
*Authors: Armaghan Dabbagh, Hoda Seens, **James Fraser**, Joy C MacDermid*
(Accepted - Journal of Occupational and Environmental Medicine)

2021	*Understanding the unpaid work roles amongst households, during COVID-19* *Authors: Rochelle Furtado, Hoda Seens, Christina Ziebart, Paul F Tremblay, **James Fraser**, Joy C MacDermid* *(Accepted - Journal of Family and Economic Issues)*
2019	*IFS: An educational platform for analyzing course outcomes and student experience* *ICER 2019 Workshop proceedings* *https://cssplice.github.io/ICER19/proc/SPLICE_2019_ICER_paper_5.pdf*
2015	*A method of automatically aligning projection mapping systems* *Presented by: Team Lead Kevin Moule* *ACM SIGGRAPH 2015 Emerging Technologies* *https://dl.acm.org/citation.cfm?id=2785590*
2014	*A Methodological Approach to Identifying and Quantifying Video Game Difficulty Factors* *Entertainment Computing* *https://www.sciencedirect.com/science/article/pii/S1875952114000251*
2013	*An Experimental Approach to Identifying Prominent Factors in Video Game Difficulty* *Advances in Computer Entertainment* *http://www.springer.com/gp/book/9783319031606*
2012	*Thesis: Game Challenge: A Factorial Analysis Approach*

Conference Presentations

2021	*The Role of Sex and Gender in the Changing Levels of Anxiety and Depression during the COVID-19 Pandemic: A Cross-sectional Study* *Seens, H., Modarresi, S., **Fraser, J**., MacDermid, J.C., Walton, D.M., & Grewal, R* *Joint Mental Health Research and Innovation Day: The Shifting Landscape of Mental Health Across the Lifespan*
2021	*Factors associated with anxiety and depressive symptoms following the COVID-19 pandemic: a cross-sectional study* *Authors: Hoda Seens, Ze (Steve) Lu, **James Fraser**; Joy MacDermid, David M Walton, Ruby Grewal* *Joint Mental Health Research and Innovation Day: The Shifting Landscape of Mental Health Across the Lifespan*

2019	*IFS: An educational platform for analyzing course outcomes and student experience1* *ICER 2019 workshop proceedings* *https://cssplice.github.io/ICER19/proc/SPLICE_2019_ICER_paper_5.pdf*
2017	*Teaching with Tech: How to Upgrade Your In-Class Teaching* *Graduate Student University Teaching Conference (GSUTC - Guelph)*
2015	*A method of automatically aligning projection mapping systems* *Presented by: Team Lead Kevin Moule* *ACM SIGGRAPH 2015 Emerging Technologies* *https://dl.acm.org/citation.cfm?id=2785590*
2013	*An Experimental Approach to Identifying Prominent Factors in Video Game Difficulty* *Presented by: Prof Michael J. Katchabaw*

Programming Experience

- *Main Languages: C/C++, Python (10+ Years)*
- *Frameworks: Pandas, Numpy, Scikit-Learn, Qt, NLTK, OpenCV*
- *Web Frameworks: NodeJS, Javascript, jQuery, React, AngularJS*
- *Database and Tools: MySql, Reddis, MongoDB, Docker, GIT, Jenkins*
- *Other Keywords: CI/CD, RESTful, API, GIT, HTML, JSON, CSS*

Service Experience

2017-2020	*School of Computer Science Faculty Council*
2017-2020	*Graduate Teaching Community (GTC) Guelph*
2018	*Graduate Student University Teaching Conference Committee*
2017-2018	*Graduate Curriculum Council Committee*
2017-2018	*Admissions and Progress Committee*
2016-2018	*Entertainment Computing Elsevier Peer Reviewer*
2017	*Cybersecurity Faculty Search Committee*

2004-06   *Saint Mary's University Programming Team*
                Competitive Programming Team Member
                2nd Place finish in Atlantic provinces

2004-06   *Saint Mary's University - Computer Science Games*
                Represented University in Software Engineering, artificial intelligence and algorithms.

2004-06   *Coaching/Mentoring High School Students*
                Helping Students prepare for University Computer Science

2000   *Special Olympics Woodstock Ontario - Athletic Guide*

Personal Development

- *UNIV*6800: University Teaching: Theory/Practice Course*
  Provides graduate students with the opportunity to engage in intensive, interdisciplinary discussions about topics, including learning outcomes, assessment, active learning, course design, and the context of teaching in higher education. Graduate students will practice teaching, develop the skills of reflective practice, and provide feedback on teaching.

- *Instructional Skills Workshop (ISW)*
  Completed ISW instructor development program offered at the University of Guelph. The workshop provides the opportunity for instructors to enhance the effectiveness of their teaching style by providing experiential feedback. The workshop provides theory and practice for utilizing additional teaching techniques.

- *Teaching Development Program (TDP)*
  Completed Teaching Development Program offered at the University of Guelph. The Teaching Develop Program is a certified program that offers a large number of teaching workshops on a large variety of topics such as lesson planning, providing effective feedback and engaging learners to help instructors acquire experience and improve in career and classroom management.