Cameron Morland

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Education

2009 PhD Cognitive and Neural Systems, Boston University
    Thesis title: What it is Like to be a Bat: an Active Perception Sonar System for Humans.
    Supervisors: Barbara Shinn-Cunningham (Cognitive and Neural Systems)
                David Mountain (Biomedical Engineering)

2003 BASc Mechanical Engineering (options in Mechatronics and Cognitive Science), University of Waterloo

Other Professional Distinctions

Professional Engineer licensed in the Province of Ontario, October 2025.

Employment

Assistant Professor, Teaching Stream Cheriton School of Computer Science, University of Waterloo. August 2024 – present.

Lecturer Cheriton School of Computer Science, University of Waterloo. May 2020 – August 2024.

Lecturer Office of the Dean, Faculty of Mathematics, University of Waterloo. August 2016 – April 2020.

Sessional Instructor Department of Mathematics, Simon Fraser University. 2011 – 2016.

Teaching

I have been teaching at the University of Waterloo (UW), Simon Fraser University (SFU), the Pacific Institute for the Mathematical Science (PIMS), and Fraser International College (FIC),

Term	School	Course	Students
2025-3	UW	CS 135 – Designing Functional Programs	82 + 74
2025-2	PIMS	Math Summer School for Elementary Math Teachers	21
2025-2	UW	CS 241 – Foundations of Sequential Programs	79 + 79
2025-1	UW	CS 136 – Elementary Algorithm Design and Data Abstraction	80
2025-1	UW	CS 114 – Principles of Computing for Science	86
2024-3	UW	CS 114 – Principles of Computing for Science	70 + 118
2024-1	UW	CS 136 – Elementary Algorithm Design and Data Abstraction	95 + 94

Term	School	Course	Students
2024-1	UW	CS 114 – Principles of Computing for Science	103
2023-3	UW	CS 114 – Principles of Computing for Science	121 + 124
2023-2	UW	CS 234 – Data Types and Structures	95 + 105
2023-1	UW	CS 136 – Elementary Algorithm Design and Data Abstraction	$\frac{1}{2}(58 + 60 + 55 + 59)$
2023-1	UW	CS 114 – Principles of Computing for Science	70
2022-3	UW	CS 114 – Principles of Computing for Science	114 + 115
2022-2	UW	CS 114 – Principles of Computing for Science	66
2022-2	PIMS	Math Summer School for Elementary Math Teachers	21
2022-1	UW	CS 115 – Introduction to Computer Science 1	85 + 86
2021-3	UW	CS 114 – Principles of Computing for Science	169 + 31
2021-2	PIMS	Math Summer School for Elementary Math Teachers	21
2021-1	UW	CS 135 – Designing Functional Programs	65 + 36
2020-3	UW	CS 135 – Designing Functional Programs	129 + 112
2020-2	UW	CS 115 – Introduction to Computer Science 1	106 + 103
2020-1	UW	Math 114 – Linear Algebra for Science	54
2020-1	UW	CS 116 – Introduction to Computer Science 2	86
2019-3	UW	Math 135 – Algebra for Honours Mathematics	60
2019-2	PIMS	Math Summer School for Elementary Math Teachers	21
2019-2	UW	CS 115 – Introduction to Computer Science 1	69 + 88
2018-2	PIMS	Math Summer School for Elementary Math Teachers	23
2018-2	UW	CS 115 – Introduction to Computer Science 1	68 + 82
2018-1	UW	CS 116 – Introduction to Computer Science 2	72
2017-3	UW	CS 115 – Introduction to Computer Science 1	71
2017-2	PIMS	Math Summer School for Elementary Math Teachers	20
2017-1	UW	CS 116 – Introduction to Computer Science 2	64
2016-2	PIMS	Math Summer School for Elementary Math Teachers	20
2016-1	SFU	Math 130 – Geometry for Computer Graphics	91
2015-3	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	36
2015-2	PIMS	Math Summer School for Elementary Math Teachers	19
2015-1	SFU	Math 130 – Geometry for Computer Graphics	97
2014-3	SFU	Math 100 – Precalculus	248
2014-3	SFU	Math 310 – Introduction to Ordinary Differential Equations	85
2014-2	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	35
2014-1	SFU	Math 113 – Euclidean Geometry	15
2013-3	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	36
2013-3	FIC	Math 100 – Precalculus	39
2013-1	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	35
2013-1	FIC	Math 100 – Precalculus	38
2012-3	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	31
2012-3	FIC	Math 100 – Precalculus	39
2012-3	FIC	Math 151 – Differential Calculus	30
2012-2	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	35

Term	School	Course	Students
2012-2	FIC	Math 152 – Integral Calculus	64
2012-1	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	31
2012-1	FIC	Math 151 – Differential Calculus	31
2011-3	SFU	FAN X99 – Foundations of Analytical and Quantitative Reasoning	39

Curriculum Development & Coordination

Course Design CS 136, Elementary Algorithm Design and Data Abstraction. Created materials and infrastructure to better support active learning. Winter – Spring 2024.

Course Design CS 114, Principles of Computing for Science. Course coordinator. Designed in Spring 2021, piloted in Fall 2021.

Course Design CS 115, Intro to Computer Science 1. Substantial rearrangement of material; focus on problem solving. Designed in Fall 2017 and Winter 2018, ran in Spring terms 2018 – 2020.

Course Design Math Summer School for Elementary Math Teachers (PIMS). Along with Melania Alvarez, the PIMS BC Education Coordinator, developed a month-long intensive mathematics experience for in-service elementary school teachers.

Course Design Math 130, Geometry for Computer Graphics. Reworking the focus of the course; assignments, LON-CAPA computerized exercise development. Spring 2015, Spring 2016.

Course Design Math 113, Euclidean Geometry. Created a new incarnation of the course better suited to the SFU student population. Spring 2014.

Computerized Exercise Development FAN X99. Fall 2013 – Fall 2015.

Outreach

Workshop Participant Banff International Research Station. Putting Together Resources to Support Current and Future Elementary School Teachers, July 2023.

Program development Perimeter Institute. Planned and started a math/computation enrichment program for in-service teachers. Winter 2020. (Interrupted by COVID-19.)

Volunteer Berlin British School, Berlin. Ran twice-weekly afternoon classes introducing computer programming to high school students. Fall 2018.

Classroom volunteer Centennial Public School, Waterloo. Ran "Morland Mondays" in a grade 7-8 classroom where we explored mathematics by writing computer programs. Spring 2017, Fall 2017 – Spring 2018.

Instructor Laurier Enriched Academic Program (LEAP) summer program. Designed and ran a five day, three hour programming/discovery camp for children in grades 4-6. Summer 2017.

Instructor Laurier Enriched Academic Program (LEAP) Sensational Saturdays. Designed and ran a six-week, three hour programming/discovery camp for children in grades 4-6. Winter 2017, Winter 2018.

Guest lecturer Faculty of Education, Laurier. Computational thinking for pre-service teachers. November 9, 2017.

Guest lecturer Faculty of Education, Laurier. Special Education. March 27, 2017.

Committee service

EDI/WiCS admissions subcommittee UWaterloo, 2024.

EDI committee UWaterloo, 2024.

Faculty Awards Committee UWaterloo, 2023 – 2025.

CS Undergraduate Recruiting Committee UWaterloo, 2020 – 2022.

Education Committee CMS, 2017 – 2019.

Other service

Enrollment Demographics Visualization UW Odyssey, 2020 – 2024.

Contest Grading CEMC: EFGH, CSIMC, 2018 – 2025.

Problem Editor *Crux Mathematicorum*, 2016 – 2017.

Volunteer Lecturer Simon Fraser University, recording for online Math 152.

Mathematics Tutor Pacific Institute for the Mathematical Sciences, Native Education College. 2010 – 2011. Worked with adult First Nations students working on high school equivalency.

Volunteer Pacific Institute for the Mathematical Sciences mathematics club, Vancouver Aboriginal Friendship Centre. 2009 – 2010. Worked with First Nations youth in an after-school math outreach program.

Teaching Fellow CN570 (Neural and Computational Models of Conditioning, Reinforcement, Motivation and Rhythm), Boston University. Winter 2005.

Assistant Instructor Campcraft, Christie Lake Camp, Summer 1994 – 1997.

Presentations

Should We Teach Geometry in Schools?, Invited Panel Discussion. Changing the Culture 2023, May 19, 2023.

Locus and Physics in Scratch. Changing the Culture 2023, May 19, 2023.

Fractals from Recursion and Iteration, CS4U 2021.
    `https://www.youtube.com/watch?v=j8aAUgJvBV0t`

How has Coronavirus changed the teaching of Mathematics?, Invited Panel Discussion. Changing the Culture 2021, May 14, 2021.

Thinking Computationally, Discussion Leader. Fields Mathematics Education Forum, November 28, 2020.

Sophisticated Play: Real Mathematics for Novice Learners. University of Waterloo Teaching and Learning Conference, April 4, 2017.

1, 2, 4, 8, 16, 31?!?. SFU/CMS/PIMS Burnaby Math Camp, June 27, 2016.

Totally Random, Perfectly Predictable Sequences. A Taste of π, May 14, 2016.

Making Cubes Flat and Triangles Not. (With Melania Alvarez.) Changing the Culture 2016, May 13, 2016.

Locus with Lego. SFU/CMS/PIMS Surrey Math Camp, June 26, 2014.

Geometry From a 2000 Year Old Book. SFU/CMS/PIMS Burnaby Math Camp, June 25, 2014.

Calculus Diagnostic Test: What Are We Learning? (With Justin Gray and Natalia Kouzniak.) Changing the Culture 2014, May 16, 2014.

Puzzling Pieces of Pythagorean Proofs. SFU/CMS/PIMS Burnaby Math Camp, July 4, 2012.

What it is Like to be a Bat: A Sonar System for Humans. PhD Thesis Defence, April 6, 2009.

Coordination

I managed several workshops at Simon Fraser University. These workshops are open study rooms where students can work with their peers or course staff. Coordinating involves organizing course staff, managing exam grading, and for the Calculus Support Sessions, managing a placement test.

Semester	Workshop
2016-1	Calculus Support Sessions
2015-3	Calculus Support Sessions
2015-1	Algebra Workshop
2014-2	Q Support Centre
2014-2	Calculus Support Sessions
2014-2	Algebra Workshop
2014-1	Q Support Centre
2014-1	Calculus Support Sessions
2013-3	Calculus Support Sessions

TA Supervision

Semester	Course/Workshop	Students
2018-1	CS 115 Lab Development	Jimmy Nguyen, Rosemary Wang
2016-1	Calculus Support Sessions	Adam Dyck, Olga Zasenko, Seyyed Hosseini
2015-3	Calculus Support Sessions	Adam Dyck, Bebart Janbek, Olga Zasenko, Yusuf Tuncer
2015-1	Algebra Workshop	John Kluesner, Lucien Lapierre, Mahdieh Malekian, Argyrios Petras, Viswanadh Nekkanti, Nathan Singer, Stefan Trandafir, Hao Ze, Brett Nasserden, Adriano Arce, Iain Crump, Eric Rinne, Justin Chan, Kevin Halasz
2014-2	Q Support Centre	Ryan McMahon
2014-2	Algebra Workshop	Avery Beardmore, Nathan Singer, Yue Zhao
2014-2	Calculus Support Sessions	Gaya Jayakody
Semester	**Course/Workshop**	**Students**
2014-1	Math 113	Emily Macalister
2014-1	Calculus Support Sessions	Colin Exley, Maryam Yazdanpoor
2014-1	Q Support Centre	Daryl Funk, Emily Macalister, Lee Safranek, Ryan McMahon
2013-3	Calculus Support Sessions	Baris Tuncer, Colin Exley, Gaya Jayakody, Iain Crump

Publications

1. Yeats K., Burrill S., Emmioglu E., and Morland C. *Depth of experience in MACM 201.* Poster presented at *Celebrating 10 Years of Teaching & Learning Research @ SFU*, 2016.

2. Mountain, D. and Morland, C. *Acoustic Mobility Aid for the Visually Impaired*, U.S. Patent Application.

3. Morland, C. and Mountain, D. Design of a Sonar System for Visually Impaired Humans. in *Proceedings of the 14th International Conference on Auditory Display*, 2008.

4. Morland, C. and Mountain, D. An Acoustic Mobility Aid for the Visually Impaired. Poster, CIMIT Innovation Congress. November 13-14, 2007. (Awarded Best Student Poster)

5. Morland, C. Autonomous Navigation Using Visual Landmarks. Canadian Undergraduate Journal of Cognitive Science. **1** (2002), 20-33.

Other Employment

Freelance Consultant Wearable computing, Android alpha development, 2015 – 2016.

Freelance Consultant Guidance for intelligence machines research, 2010.

Postdoctoral Fellow Simon Fraser University, Engineering Science. Signal and data analysis for multi-angle swath bathymetry sonar, 2009.

Research Assistant The Hospital for Sick Children (Toronto), Medical Imaging Department, 2002.

AI Researcher Applied AI Systems, Inc. Summer 2001, Fall 2000.

Assistant Engineer Dew Engineering. Winter 2000.

Associate Systems Engineer ATI Technologies Inc. Summer 1999.

Programmer Carleton University Electrical and Computer Systems Dept. 1996 – 1997.

Free Software Projects

changetrack file monitor, project lead. 1999 –

octplayer interface library, project lead. 2004

RASP a sneakernet proxy, project lead. 2007 – 2008

Freeciv civilization game, contributor: auto-explore, land reclamation. 2000 – 2003