

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 (Mechatronics Option, Cognitive Science Option), University of Waterloo

Employment

Teaching

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

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

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
2021-3	UW	CS 114 – Principles of Computing for Science	169 + 31
2021-2	PIMS/UBC/SFU	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/UBC/SFU	Math Summer School for Elementary Math Teachers	21
2019-2	UW	CS 115 – Introduction to Computer Science 1	69 + 88
2018-2	PIMS/UBC/SFU	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/UBC/SFU	Math Summer School for Elementary Math Teachers	20
2017-1	UW	CS 116 – Introduction to Computer Science 2	64
2016-2	PIMS/UBC/SFU	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

Term	School	Course	Students
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
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

Course Design CS 114, Principles of Computing for Science. 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, piloted in Spring 2018, Spring 2019.

Course Design Math Summer School for Elementary Math Teachers (PIMS/UBC/SFU). Along with Melania Alvarez, the PIMS BC Education Coordinator, developed a month-long intensive mathematics experience for in-service elementary school teachers. Summers 2015-2019, 2021.

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.

LON-CAPA computerized problem development, FAN X99. Fall 2013 – Fall 2015.

Coordination

I managed several workshops at Simon Fraser University.

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
2017-1	CS 115 Lab Development	Jimmy Nguyen, Rosemary Wang
2016-1	Calculus Support Sessions	Adam Dyck, Olga Zasenکو, Seyyed Hosseini
2015-3	Calculus Support Sessions	Adam Dyck, Bebart Janbek, Olga Zasenکو, 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 McMahan
2014-2	Algebra Workshop	Avery Beardmore, Nathan Singer, Yue Zhao
2014-2	Calculus Support Sessions	Gaya Jayakody
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 McMahan
2013-3	Calculus Support Sessions	Baris Tuncer, Colin Exley, Gaya Jayakody, Iain Crump

Outreach

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” 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.

Other teaching

Problem Editor *Crux Mathematicorum*, 2016 –.

Volunteer Lecturer recording for Simon Fraser University Math 152.

Mathematics Tutor Pacific Institute for the Mathematical Sciences, Native Education College. 2010 – 2011.

Volunteer Pacific Institute for the Mathematical Sciences mathematics club, Vancouver Aboriginal Friendship Centre. 2009 – 2010.

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.

Other Employment

Freelance Consultant (2010). Guidance for intelligence machines research.

Research Assistant The Hospital for Sick Children (Toronto), Medical Imaging Dept. Winter and Fall 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.

Presentations

1. *1, 2, 4, 8, 16, 31!?!?*. SFU/CMS/PIMS Burnaby Math Camp, June 27, 2016.
2. *Totally Random, Perfectly Predictable Sequences*. A Taste of π , May 14, 2016.
3. *Making Cubes Flat and Triangles Not*. Changing The Culture 2016, May 13, 2016. (With Melania Alvarez.)
4. *Locus with Lego*. SFU/CMS/PIMS Surrey Math Camp, June 26, 2014.
5. *Geometry From a 2000 Year Old Book*. SFU/CMS/PIMS Burnaby Math Camp, June 25, 2014.

6. *Calculus Diagnostic Test: What Are We Learning?* Changing The Culture 2014, May 16, 2014. (With Justin Gray and Natalia Kouzniak.)
7. *Puzzling Pieces of Pythagorean Proofs*. SFU/CMS/PIMS Burnaby Math Camp, July 4, 2012.
8. *What it is Like to be a Bat: A Sonar System for Humans*. PhD Thesis Defence, April 6, 2009.
9. *What it is Like to be a Bat: A Sonar System for Humans*. PhD Prospectus, Boston University Hearing Research Center Seminar Series, February 29, 2008.
10. *An Acoustic Mobility Aid for the Visually Impaired*. Boston University Cochlear Biophysics Laboratory group, April 23, 2007.
11. *An Acoustic Mobility Aid for the Visually Impaired*. Boston University Binaural Gang, April 17, 2007.

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.

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