Charlotte Curtis

Curriculum Vitae

Dept. of Math and Computing
Mount Royal University
4825 Mount Royal Gate SW
Calgary, AB T3E 6K6
ccurtis@mtroyal.ca
0000-0003-0079-7040

Education

2012–2015 **PhD**, *University of Calgary*, Calgary, AB, Electrical & Computer Engineering
Thesis: *Factors Affecting Image Quality in Near-field Ultra-wideband Radar Imaging for Biomedical Applications*
Supervisor: *Dr. Elise Fear*

2008–2011 **MSc**, *University of Calgary*, Calgary, AB, Biomedical Engineering
Thesis: *Estimation of Three-Dimensional Breast Features from Standard Two View Mammograms*
Supervisor: *Dr. Elise Fear*

2003–2008 **BEng (Co-op)**, *University of Guelph*, Guelph, ON, Biological Engineering
Biomedical stream, with distinction

Academic and Professional Appointments

2021–present **Assistant Professor**, *Mount Royal University*, Calgary, AB, Department of Math and Computing

2021–present **Adjunct Assistant Professor**, *University of Calgary*, Calgary, AB, Department of Electrical & Software Engineering

2015–2021 **Data Scientist**, *Baker Hughes Canada Corporation*, Calgary, AB, Pipeline Inspection

Teaching

COMP 4630 **Machine Learning for CS Majors**, *Winter 2024*, Mount Royal University

COMP 1633 **Programming II for CS Majors**, *Fall 2023 – Winter 2024*, Mount Royal University
Language of instruction: C++

COMP 1501/1701 **Programming I**, *Fall 2021 – Fall 2023*, Mount Royal University
Course Coordinator from Fall 2021 to Winter 2023
Languages of instruction: Java, Python

COMP 5690 **CS Senior Project**, *Winter 2023*, Mount Royal University
Student topic: Board game AI

COMP 1299 **Directed Reading**, *Winter 2022*, Mount Royal University
Student topic: Machine learning

ENEL 419 **Probability and Random Variables**, *Fall 2013*, University of Calgary

Research Activities

Journal Articles

C. Curtis, B. R. Lavoie, and E. Fear, "An analysis of the assumptions inherent to near-field beamforming for biomedical applications," *IEEE Transactions on Computational Imaging*, vol. 3, no. 4, pp. 953–965, 2017.

M. A. Elahi, C. Curtis, B. R. Lavoie, *et al.*, "Performance of leading artifact removal algorithms assessed across microwave breast imaging prototype scan configurations," *Computerized Medical Imaging and Graphics*, vol. 58, pp. 33–44, 2017.

D. Kurrant, J. Bourqui, C. Curtis, and E. Fear, "Evaluation of 3-D acquisition surfaces for radar-based microwave breast imaging," *IEEE Transactions on Antennas and Propagation*, vol. 63, no. 11, pp. 4910–4920, 2015.

E. C. Fear, J. Bourqui, C. Curtis, D. Mew, B. Docktor, and C. Romano, "Microwave Breast Imaging With a Monostatic Radar-Based System: A Study of Application to Patients," *IEEE Transactions on Microwave Theory and Techniques*, vol. 61, no. 5, pp. 2119–2128, May 2013.

C. Curtis, R. Frayne, and E. Fear, "Semiautomated multimodal breast image registration," *International Journal of Biomedical Imaging*, vol. 2012, 2012.

C. Curtis, R. Frayne, and E. Fear, "Using X-ray mammograms to assist in microwave breast image interpretation," *International Journal of Biomedical Imaging*, vol. 2012, 2012.

B. Maklad, C. Curtis, E. C. Fear, and G. G. Messier, "Neighborhood-based algorithm to facilitate the reduction of skin reflections in radar-based microwave imaging," *Progress In Electromagnetics Research B*, vol. 39, pp. 115–139, 2012.

Conference Papers

M. Payette and C. Curtis, "QuickRender: A Photorealistic Procedurally Generated Dataset with Applications to Super Resolution (Student Abstract)," in *Proceedings of the AAAI Conference on Artificial Intelligence*, vol. 38, Mar. 24, 2024, pp. 23 618–23 620.

K. Ardila, E. Munro, F. Vega, *et al.*, "Using Machine Learning to Study the Effects of Genetic Predisposition on Brain Aging in the UK Biobank," in *2023 IEEE 20th International Symposium on Biomedical Imaging (ISBI)*, Apr. 2023, pp. 1–5.

C. Curtis, "A document format for sewing patterns," in *Proceedings of the ACM Symposium on Document Engineering 2023*, ser. DocEng '23, New York, NY, USA: Association for Computing Machinery, Aug. 22, 2023, pp. 1–4.

C. Curtis, "Anonymizing and obfuscating PDF content while preserving document structure," in *Proceedings of the 22nd ACM Symposium on Document Engineering*, ser. DocEng '22, Association for Computing Machinery, Nov. 18, 2022, pp. 1–4.

C. Curtis, "Modifying PDF sewing patterns for use with projectors," in *Proceedings of the 22nd ACM Symposium on Document Engineering*, ser. DocEng '22, Association for Computing Machinery, Nov. 18, 2022, pp. 1–4.

C. F. Curtis and E. C. Fear, "Near field radar imaging in the frequency domain with application to patient data," in *2015 USNC-URSI Radio Science Meeting (Joint with AP-S Symposium)*, IEEE, 2015, pp. 306–306.

M. Elahi, C. Curtis, E. Jones, M. Glavin, E. Fear, and M. O'Halloran, "Detailed evaluation of artifact removal algorithms for radar-based microwave imaging of the breast," in *2015 USNC-URSI Radio Science Meeting (Joint with AP-S Symposium)*, IEEE, 2015, pp. 307–307.

C. Curtis and E. Fear, "Beamforming in the frequency domain with applications to microwave breast imaging," in *The 8th European Conference on Antennas and Propagation (EuCAP 2014)*, IEEE, 2014, pp. 72–76.

C. Curtis and E. Fear, "Coherent summation of monostatic radar signals," in *2013 7th European Conference on Antennas and Propagation (EuCAP)*, IEEE, 2013, pp. 628–629.

C. F. Curtis and E. C. Fear, "Characterizing the point spread function of a near field ultrawideband monostatic radar imaging system," in *2013 USNC-URSI Radio Science Meeting (Joint with AP-S Symposium)*, IEEE, 2013, pp. 179–179.

B. Maklad, C. Curtis, E. Fear, and G. Messier, "A skin response estimation and suppression technique for radar-based microwave breast imaging applications," in *2012 6th European Conference on Antennas and Propagation (EUCAP)*, IEEE, 2012, pp. 1772–1775.

C. Curtis, R. Frayne, and E. Fear, "Automated registration of X-ray mammograms and magnetic resonance breast images," in *Medical Physics*, vol. 37, Wiley Online Library, 2010, pp. 3902–3902.

Talks

C. Curtis, "Using Git and Github for assignment submissions in CS1: Experience from a first time instructor," presented at the Western Canadian Conference on Computing Education (University of British Columbia), May 6, 2022.

Other Research Activities

2024–present Contributor to Pattern Projector, a web app to help calibrate and project PDF sewing patterns. Available at `https://www.patternprojector.com`.

2022–present Maintainer of PDF Mangler, a Python library to mangle the contents of PDFs while preserving document structure. Available at `https://github.com/cfcurtis/pdf-mangler`.

2020–present Maintainer of PDF Stitcher, an open source program to modify PDF sewing patterns for use with projectors. Available at `https://www.pdfstitcher.org`.

2023 Foundations of Python Programming: Functions First. Open source textbook adaptation for use with COMP 1701, available at Runstone Academy.

Awards and Honours

Awards

2014 Outstanding Teaching Performance Award, Schulich School of Engineering, University of Calgary

2013 Teaching Assistant Excellence Award, Schulich School of Engineering, University of Calgary

2011–2013 Graduate Student Productivity Award, Department of Electrical & Computer Engineering, University of Calgary

2011 Best Oral Presentation Award Runner-Up, Alberta Graduate Conference, University of Calgary

Grants

2024 SoTL Development Grant, Mount Royal University ($1,500)

2023 Open Resource Adaptation Grant, Mount Royal University ($2,000)

2023 Internal Research Grant Fund, Mount Royal University ($5,000)
2023 Faculty of Science and Technology Research Grant, Mount Royal University ($10,000)
2021 Faculty of Science and Technology Start-Up Grant, Mount Royal University ($7,000)

Service Activities

Mount Royal University

2023–present University General Education Curriculum Committee, Mount Royal University
2022–present Data Science Degree Program planning, Department of Math and Computing
2022–present Inclusion, diversity, equity, and accessibility committee, Faculty of Science and Technology
2022–present Contract hiring committee, Department of Math and Computing
2022–2023 New student orientation coordinator, Department of Math and Computing
2023 Vice Dean selection committee, Faculty of Science and Technology
2021–2022 First year programming curriculum development committee, Department of Math and Computing

Service to the Profession

2023 ACM Document Engineering Symposium Committee Member

Community Outreach

July 13, 2023 Projector Sewing Demonstration, Workroom Social (Online)
2015–2021 Canada Learning Code Mentor for Python, SQL, Scratch and Web development workshops

Professional Certification and Memberships

2018–2020 Professional Member, Association of Professional Engineers and Geoscientists of Alberta (APEGA)