

Charlotte Curtis

Curriculum Vitae

Dept. of Math and Computing
Mount Royal University
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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. A. Elahi, C. F. Curtis, E. Jones, M. Glavin, E. C. 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

- 2020–present Developer of PDFStitcher, 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

- 2023 SoTL Development Grant, Mount Royal University
- 2023 Open Resource Adaptation Grant, Mount Royal University
- 2023 Internal Research Grant Fund, Mount Royal University
- 2023 Faculty of Science and Technology Research Grant, Mount Royal University
- 2021 Faculty of Science and Technology Start-Up Grant, Mount Royal University

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

- 2024 Western Canadian Conference on Computing Education Reviewer
- 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)