Dept. of Math and Computing
Mount Royal University
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Charlotte Curtis

Curriculum Vitae

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

Instructor

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

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

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

C. Curtis, "A Document Format for Sewing Patterns," in *Proceedings of the 23rd ACM Symposium on Document Engineering*, ser. DocEng '23, Limerick, Ireland: Association for Computing Machinery, August 2023 (Accepted for Presentation).

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 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

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–present New student orientation, 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)