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Current Position

Professor
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Education

Sep.1987 - Aug.1993

Center for Research in Earth and Space Science
York University
Toronto, Ontario, CANADA
completed Ph.D. (Earth and Space Science)
Supervisor: John R. Miller/Charles E. Livingstone
Thesis: The Response of an Airborne Synthetic Aperture
Radar to Sea Ice in The Labrador Marginal Ice Zone.

Sep.1984 - Mar.1987

Department of Oceanography
University of British Columbia
Vancouver, British Columbia, CANADA
completed M.Sc. (Physical Oceanography)
Supervisor: William J. Emery
Thesis: The Estimation of Pack Ice Motion in Digital
Satellite Imagery by Matched Filtering.

Sep.1978 - Dec.1981

Department of Surveying Engineering
University of New Brunswick
Fredericton, New Brunswick, CANADA
completed B.Sc.Eng. (Surveying Engineering).
Final Report: The Least Squares Method in Hilbert Space.

Sep.1975 - Apr.1978

Department of Biochemistry
University of British Columbia,
Vancouver, British Columbia, CANADA
Completed third year

Professional Associations

Member: American Association for Engineering Education
Member: Association of Professional Engineers, Geoscientists of Alberta (APEGA)
Senior Member: Institute of Electrical and Electronics Engineers (IEEE)
Member: The Remote Sensing and Photogrammetry Society (UK)

Industrial Experience

- Sep.1990 - Dec.1992
Project Scientist
Institute for Space and Terrestrial Science
Earth Observation Laboratory
4850 Keele Street, second Floor
Toronto, Ontario, CANADA
Supervisor: John Miller, Lab Director
- May.1988 - Dec.1992
System Manager
Institute for Space and Terrestrial Science
Earth Observation Laboratory
4850 Keele Street, second Floor
Toronto, Ontario, CANADA
Supervisor: John Miller, Lab Director
- Dec.1982 - Jul.1984
Systems Development Engineer
McElhanney Surveying and Engineering Ltd.
Environmental Data Services Division
999 8th Street SW
Calgary, Alberta, CANADA
Supervisor: Simon K. Melrose, Division Head
- Feb.1982 - Dec.1982
Junior Survey Engineer
McElhanney Surveying and Engineering Ltd.
Geodetic Services Division
200-1166 Alberni Street
Vancouver, B.C., CANADA
Supervisor: Dr. D.B. Thompson, Division Head

Academic Experience

- Jul.2015 - Jul.2016
Visiting Professor
University of Edinburgh
School of Geosciences
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- Jul.2011 - Jul.2012
Visiting Research Engineer
Jet Propulsion Laboratory
4800 Oak Grove Drive
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- Jul.2006 - Jul.2007
Visiting Professor
University of Texas at Austin
Department of Electrical and Computer Engineering
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- Apr.2014 - Present
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Sep.1994 - Jun.1997
Professor
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Sep.1997 - Dec.1998 Associate Professor
University of New Brunswick
Department of Geodesy and Geomatics Engineering
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Jul.1993 - Aug.1994 Assistant Professor
University of Maine
Department of Surveying Engineering
and
National Centre for Geographic Information and Analysis
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Jan.1988 - Aug.1990 Research Assistant
York University
Centre for Research in Earth and Space Science
4700 Keele Street
North York, Ontario, CANADA
and
Institute for Space and Terrestrial Science
Earth Observation Laboratory
4850 Keele Street, second Floor
North York, Ontario, CANADA
Supervisor: Rene Ramseier

May 1987 - Aug.1987 Research Assistant
University of British Columbia
Department of Oceanography
and
Seaconsult Marine Research Ltd.
820 - 1200 West 73rd Avenue
Vancouver, British Columbia, CANADA
Supervisor: Don Hodgins

Jun.1987 Instructor
Royal Roads Military College
Victoria, British Columbia, CANADA

May 1987 - Aug.1987 Research Assistant
University of British Columbia
Department of Oceanography
Vancouver, British Columbia, CANADA
Supervisor: Paul Leblond

Sep.1984 - Dec.1986 Research Assistant
University of British Columbia
Department of Oceanography
Vancouver, British Columbia, CANADA
Supervisor: William J. Emery

Sep.1984 - Apr.1987 Teaching Assistant
University of British Columbia
Faculty of Science
Vancouver, British Columbia, CANADA

Administrative Experience

Jan.2001 - Jun.2006

Associate Dean (Student Affairs)
University of Calgary
Schulich School of Engineering
2500 University Drive NW
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Jan.1999 - July 2001

Associate Head for Undergraduate Studies
University of Calgary
Department of Geomatics Engineering
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Publications

REFEREED JOURNAL ARTICLES AND BOOK CHAPTERS

- Ferdous, Md. Saimoom, Umma H Himi, Peter McGuire, Desmond Power, Thomas Johnson and Michael Collins** (2020) Assessing the Usefulness of Iceberg Electromagnetic Backscatter Modelling using a C-Band SAR Classifier. *IEEE Geoscience and Remote Sensing Letters*, 17(8), 1353–1357.
- Ferdous, Md. Saimoom, Umma Hafsa, Peter McGuire, Desmond Power, Thomas Johnson and Michael Collins** (2019) C-band Simulations of Melting Icebergs Using GRECOSAR and an EM model: Varying Wind Conditions at Lower Beam Mode. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 12(12), 5134–5146
- Collins, M.J., Meng Ma and Mohammed Dabboor** (2019) On the effect of polarization and incidence angle on the estimation of significant wave height from SAR data. *IEEE Transactions on Geoscience and Remote Sensing*, 57(7), 4529–4543
- Ferdous, Md. Saimoom, Peter McGuire, Desmond Power, Thomas Johnson and Michael Collins** (2018) A comparison of numerically modelled iceberg backscatter signatures with Sentinel-1 C-band synthetic aperture radar acquisitions. *Canadian Journal Remote Sensing*, 44(3), 232–242
- Denbina, M., and M.J. Collins** (2016) Wind Speed Estimation Using C-Band Compact Polarimetric SAR For Wide Swath Imaging Modes. *ISPRS Journal of Photogrammetry and Remote Sensing*, 113, 75–85
- Denbina, M. M.J. Collins, and Ghada Atteia** (2015) On the Detection and Discrimination of Ships and Icebergs Using Simulated Dual-Polarized Radarsat Constellation Data. *Canadian Journal Remote Sensing*, 41(5), 363–379
- Denbina, M. M.J. Collins, B. Minchew, C.E. Jones, and B. Holt** (2015) On the Use of Compact Polarimetry L-Band SAR for Characterizing The Deepwater Horizon Oil Spill. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 8(3), 1062–1077
- Otukeia, John Richard, Thomas Blaschke, and M.J. Collins** (2015) Fusion of TerraSAR-x and Landsat ETM+ data for protected area mapping in Uganda. *International Journal of Applied Earth Observation and Geoinformation*, 38, 99–104
- Atteia, Ghada and M.J. Collins** (2015) Ship Detection Performance Using Simulated Dual-Polarization Radarsat Constellation Mission Data. *International Journal Remote Sensing*, 36(6), 1705–1727
- Otukeia, John Richard, Thomas Blaschke, and M.J. Collins** (2014) Using the Wishart maximum likelihood classifier for assessing the potential of TerraSAR-X and ALOS PALSAR data for land cover mapping. *International Journal of Image and Data Fusion*, 5(2), 138–151.
- Denbina, M. and M.J. Collins** (2014) Iceberg Detection Using Simulated Radarsat Constellation Data. *Canadian Journal of Remote Sensing*, 40(3), 165–178
- Dabboor, M., M.J. Collins, V. Karathanassi, and A. Braun** (2013) An unsupervised classification approach for polarimetric SAR data based on the Chernoff distance for complex Wishart distribution. *IEEE Transactions on Geoscience and Remote Sensing*, 51(7), 4200–4213
- Maghsoudi, M., M.J. Collins and D.G. Leckie** (2013) Radarsat-2 polarimetric SAR data for boreal forest classification using SVM and a wrapper feature selector. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 6(3), 1531–1538
- Atteia, G.E. and M.J. Collins** (2013) On the Use of Compact Polarimetry SAR for Ship Detection. *ISPRS Journal of Photogrammetry and Remote Sensing*, 80, 1–9
- Collins, M.J., M. Denbina and G.A. Atteia** (2013) On the reconstruction of quad-pol SAR data From compact polarimetry data for ocean target detection. *IEEE Transactions on Geoscience and Remote Sensing*, 51(1), 591–600
- Otukei, J., T. Blaschke and M. Collins** (2012) A Decision Tree Approach for Identifying the Optimum Window Size for Extracting Texture Features from TerraSAR-X Data. In: Car, A., T. Jekel, J. Strobl and G. Griesebner (eds.). *GI Forum 2012: Geovisualisation, Society and Learning*, Wichmann, Heidelberg, 466–474.

- Allan, J.M. and M.J. Collins** (2012) The generation of correlated gamma distributed random fields for the simulation of synthetic aperture radar images. *SIAM Journal on Imaging Sciences*, 5(4), 1261–1290
- Denbina, M. and M.J. Collins** (2012) Iceberg Detection Using Pseudo Quad-Pol Reconstruction of Compact Polarimetric SAR. *Atmosphere Ocean*, 50(4), 437–446
- Maghsoudi, M., M.J. Collins and D.G. Leckie** (2012) Polarimetric Classification of Boreal Forest Using Nonparametric Feature Selection and Multiple Classifiers *International Journal of Applied Earth Observation and Geoinformation*, 19, 139–150
- Kopp, E.B. and M.J. Collins** (2012) On the use of a shape constraint in a pixel-based SAR segmentation algorithm. *IEEE Transactions on Geoscience and Remote Sensing*, 50(8), 3158–3170
- Maghsoudi, Y., M.J. Collins and D.G. Leckie** (2012) Speckle reduction for the forest mapping analysis of multi-temporal Radarsat-1 images. *International Journal of Remote Sensing*, 33(5), 1349–1359
- Maghsoudi, Y, M.J. Valadan Zoej, M.J. Collins** (2011) Using a class-based feature selection for the classification of hyperspectral data. *International Journal of Remote Sensing*, 32(15), 4311–4326
- Maghsoudi, Y., M.J. Collins and D.G. Leckie** (2011) On the use of feature selection for classifying multi-temporal Radarsat-1 images for the forest mapping. *IEEE Geoscience and Remote Sensing Letters*, 8(5), 904–908
- Wollersheim M. and M.J. Collins** (2011) Estimating boreal forest species type with airborne polarimetric synthetic aperture radar. *International Journal of Remote Sensing*, 32(9), 2481–2505
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- Collins, M.J. and J.M. Allan** (2009) Modeling and Simulation of SAR Image Texture. *IEEE Transactions on Geoscience and Remote Sensing*, 47(10), 3530–3546
- Kopp, E.B. and M.J. Collins** (2008) On the Design and Evaluation of Multi-Objective Single Channel SAR Image Segmentation Algorithms. *IEEE Transactions on Geoscience and Remote Sensing*, 46(6), 1836–1846
- Warren, A.J. and M.J. Collins** (2007) A pixel-based semi-empirical system for predicting vegetation diversity in Boreal forest. *International Journal of Remote Sensing*. 28(1), 83-105
- Raafaub, L.D. and M.J. Collins** (2006) The Effect of Error in Gridded Digital Elevation Models. *Environmental Modelling and Software*. 21(5), 710-732
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- Sharma, J.J., C.H. Geirull and M.J. Collins** (2005) The influence of target acceleration on velocity estimation in dual-channel SAR-GMTI. *IEEE Transactions on Geoscience and Remote Sensing*, 44(1), 134-147
- Collins, M.J., M.A. de Jong** (2004) Neuralizing target super-resolution algorithms. *IEEE Geoscience and Remote Sensing Letters*, 1(4), 318–321.
- Collins, M.J., C. Dymond and E.A. Johnson** (2004) Mapping Subalpine Forest Types using Networks of Nearest Neighbour Classifiers. *International Journal of Remote Sensing*, 25(9), 1701–1721
- Warren, A.J., M.J. Collins and E.A. Johnson** (2003) Mapping Biodiversity from Space in the Boreal Forest *Research Links*, 11(1), 16–24
- Warren, A.J., M.J. Collins, E.A. Johnson and P. Ehlers** (2002) Managing Uncertainty in a Geospatial Model of Biodiversity, In: *Uncertainty in GIS and Remote Sensing*, P. Atkinson and G. Foody (Eds), John Wiley and Sons. 167–185.
- Collins, M.J., J. Wiebe, and D. Clausi** (2000) The effect of speckle filtering on scale dependent texture estimation of a forested scene. *IEEE Transactions on Geoscience and Remote Sensing*, 38(3), 1160–1170
- Yang G. Collins, M.J. and P. Gong** (1998) Multisource Data Integration with Neural Networks: Optimal Selection of Net Variables for Lithologic Classification. *International Journal of Remote Sensing*, 19(18), 3675–3680
- Collins, M. J., R. Keith Raney, and Charles E. Livingstone** (1998) On the model-based estimation of backscatter texture from SAR image texture for area-extensive scenes. *Proceedings of the Royal Society of London*, 454, 2859–2891

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- Collins, M.J. and J. Huang** (1998) Uncertainties in the Estimation of ACF-Based Texture in Synthetic Aperture Radar Image Data *IEEE Transactions on Geoscience and Remote Sensing*, 36(3), 940–949
- Collins, M. J., Charles E. Livingstone, and R. Keith Raney** (1996) Discrimination of Sea Ice in the Labrador Marginal Ice Zone from Synthetic Aperture Radar Image Texture. *International Journal of Remote Sensing*, 18(3), 535–571
- Collins, M.J, F. G. R. Warren, and J. L. Paul** (1996) The airborne imaging microwave radiometer (AIMR) Part I: Radiometric Analysis. *IEEE Transactions on Geoscience and Remote Sensing*, 34(3), 643–655
- Collins, M.J, and Charles E. Livingstone** (1996) On the dimensionality of multiparameter microwave image data from thin sea ice in the Labrador Sea. *IEEE Transactions on Geoscience and Remote Sensing*, 34(1), 114–136
- Collins M.J** (1993) Information fusion in sea ice remote sensing. In: *Microwave Remote Sensing of Sea Ice*. F. Carsey (Ed.), Washington, DC: American Geophysical Union, 431–442
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- CONFERENCE/WORKSHOP PROCEEDINGS _____
- Denbina, M., and Collins, M.J.** (2014) Iceberg Detection Using Simulated RADARSAT Constellation Data. 11th International Conference and Exhibition on Ships and Structures in Ice (ICETECH 2014), July 28-31, 2014, Banff Alberta.
- Atteia, Ghada and Collins, M.J.** (2014) Ship detection performance assessment for simulated RCM SAR data. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2014*, July 22-27, 2014
- Denbina, M., and Collins, M.J.** (2014) Iceberg detection using analysis of the received polarization ellipse in compact polarimetry. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2014*, July 22-27, 2014
- Atteia, Ghada and Collins, M.J.** (2013) Ship Detection Performance Assessment Using Simulated Radarsat Constellation Mission Data. Advanced SAR Workshop, Longueuil, Quebec, October 15-18, 2013
- Denbina, M., and Collins, M.J.** (2013) Iceberg Detection Using Simulated RADARSAT Constellation Data Advanced SAR Workshop, Longueuil, Quebec, October 15-18, 2013
- Holt, Benjamin, Cathleen E Jones, Brent M Minchew, Michael Collins, Camilla Brekke** (2012) UAVSAR Ocean Observations: Small Eddies, Oil Spills, and Someday Sea Ice. American Geophysical Union Fall Meeting, December 3-7, 2012.
- Renaudin, E. B. Mercer, Q. Zhang, and M.J. Collins** (2012) Biomass estimation using vertical forest structure from SAR tomography: a case study in Canadian boreal forest. International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Melbourne, Australia.

- Renaudin, E., B. Mercer, and M.J. Collins**, (2012) Forest biomass derivation from single pass dual baseline polarization coherence tomography. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2012*, July 22-27, 2012
- Maghsoudi, Y, Collins, M.J. and Leckie, D.G.** (2012) A wrapper feature selection for the polarimetric SAR data classification *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2012*, July 22-27, 2012
- Poncos, V. and Collins, M.J.** (2012) On the use of TerraSAR-X and Radarsat-2 spotlight data for persistent scatterers and tomographic analysis *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2012*, July 22-27, 2012
- Maghsoudi, Y, Collins, M.J. and Leckie, D.G.** (2011) Nonparametric feature selection and support vector machine for polarimetric SAR data classification. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2011*, July 24-29, 2011.
- Poncos, V. and Collins, M.J.** (2011) SAR tomography development for Radarsat-2. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2011*, July 24-29, 2011.
- Otukei, J.R., Blaschke, T., Collins, M.J., and Maghsoudi, Y.** (2011) Analysis of ALOS PALSAR and TerraSAR-X Data for Protected Area Mapping: A case of the Bwindi Impenetrable National Park-Uganda. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2011*, July 24-29, 2011.
- Maghsoudi, Y, Collins, M.J. and Leckie, D.G.** (2010) Analyzing multitemporal SAR images for forest mapping. *Image and Signal Processing for Remote Sensing XVI*, Edited by Bruzzone, Lorenzo. Proceedings of the SPIE, Volume 7830, pp. 78300W–78300W-8.
- Poncos, V. and M.J. Collins** (2010) Increased monitoring accuracy using the spotlight mode Radarsat-2. *3rd Radarsat-2 Workshop*, Montreal, Canada.
- Wollersheim, M.J. and M.J. Collins** (2008) Extraction of forest biophysical parameters using polarimetric SAR. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2008*, July 6-11, 2008.
- Allan, J. and M.J. Collins** (2007) SARSim: A Digital SAR Signal Simulation System. *Proceedings of RSPSoc Conference 2007*, 11 - 14 September 2007, Newcastle upon Tyne, UK.
- Collins, M.J. and J. Allan** (2007) SARSim: A Digital SAR Signal Simulation System: Clutter Analysis. *Proceedings of RSPSoc Conference 2007*, 11 - 14 September 2007, Newcastle upon Tyne, UK.
- Kopp, E.B. and M.J. Collins** (2007) On the Design of Optimal Single Channel SAR Image Segmentation Algorithms. *Proceedings of RSPSoc Conference 2007*, 11 - 14 September 2007, Newcastle upon Tyne, UK.
- Allan, J. and M.J. Collins** (2006) Design and Testing of a Java-based Digital SAR Signal Simulation System. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2006*, July 31 2006-Aug. 4 2006, 3204 - 3207
- Kopp, E.B. and M.J. Collins** (2005) On the use of Spatial Constraints in SAR Image Segmentation. *GSPx, Embedded Signal Processing Conference*, October 24-27, 2005, Santa Clara, CA USA
- Sharma, J.J., M.J. Collins** (2004) Focusing Accelerating Ground Moving Targets in SAR imagery. *EUSAR 2004*, May 2004, 25–27
- Hu, Y., C.V. Tao and M.J. Collins** (2003) Automatic extraction of buildings and generation of 3D city models from airborne LIDAR data. *ASPRS Annual Conference*, 3-9 May, Anchorage Alaska, 12p
- Raaflaub, L. and M.J. Collins** (2002) The Effect Errors in Gridded Digital Elevation have on Derived Topographic Parameters Using Monte Carlo Simulation: A Comparison of Algorithms, *Proceedings of 5th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences*, Melbourne, Australia, 10-12 July 2002
- Raaflaub, L., M.J. Collins, R. Quinonez-Pinon and C. Valeo** (2002) The Effect of Errors in Gridded Digital Elevation data on the Distributed Hydrological model TOPMODEL, *Proceedings of 5th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences*, Melbourne, Australia, 10-12 July 2002
- Raaflaub, L. and M.J. Collins** (2002) The Effect Errors in Gridded Digital Elevation have on Derived Topographic Parameters Using Monte Carlo Simulation: A Comparison of Algorithms, *Proceedings of International Geoscience and Remote Sensing Symposium*, Sydney, Australia, 24-28 June 2002

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- Raaflaub, L., M.J. Collins, R. Quinonez-Pinon and C. Valeo** (2002) The Effect of Errors in Gridded Digital Elevation data on the Distributed Hydrological model TOPMODEL, *Proceedings of FIG 2002 XII International Congress*, Washington, DC, 19-26 April 2002
- Watts, D.C. and M.J. Collins** (2001) On the Use of Class Conditional Kappa to Estimate Neural Network Training Time. *Proceedings of RSPS Conference 2001*, September 12-14 2001, London, UK.
- Warren, A.J., M.J. Collins and E.A. Johnson** (2001) Managing Uncertainty in a Geospatial Model of Biodiversity in the Boreal Forest. *Proceedings of the RSPS Uncertainty Workshop*, June 20-22 2001 Southampton UK.
- Warren, A.J., M.J. Collins and E.A. Johnson** (2001) Managing Uncertainty in a Geospatial Model of Biodiversity. *Proceedings of the International Geoscience and Remote Sensing Symposium, IGARSS 2001*, July 9-13, 2001, Sydney, Australia.
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- Watts, D.C. and M.J. Collins** (2001) Improving Land Cover Mapping of Remotely Sensed Data by Addition of Auxiliary Data Sets. *Proceedings of the Third GEOIDE Research Conference*, June 20-22 2001, Fredericton NB. *Best Poster Prize*.
- Watts, D.C. and M.J. Collins** (2000) Combining neural network classifiers to improve subalpine landcover mapping. *Proceedings of RSS2000*, September 12-14 2000, Leicester, UK. *Best Poster Prize*
- Warren, A.J. and M.J. Collins** (2000) Mapping biodiversity in boreal forest from space. *Proceedings of RSS2000*, September 12-14 2000, Leicester, UK.
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- Warren, A.J. and M.J. Collins** (2000) Mapping biological diversity in boreal forest from space using ecological models. *Proceedings of the International Geoscience and Remote Sensing Symposium*, July 24-28 2000, Honolulu, HA USA.
- Watts, D.C. and M.J. Collins** (2000) Improved landcover mapping using optimal combinations of neural networks. *Proceedings of GEOIDE 2000*, May 25-26 2000, Calgary AB Canada.
- Alton, D.M., M.J. Collins and J. Benson** (2000) Atmospheric effects in interferometric SAR. *Proceedings of GEOIDE 2000*, May 25-26 2000, Calgary AB Canada.
- Wiebe, J. , M.J. Collins and D. Clausi** (1998) Markov random field texture model estimates of operational properties of old-growth forest. *Proceedings of the Canadian Symposium of Remote Sensing*, Calgary AB
- Adam, S. A. Pietroniro and M.J. Collins** (1997) Recent flood mapping in the Peace Athabaska delta using multi-source data. *Proceedings of the Canadian Symposium of Remote Sensing*, Ottawa ON
- Wiebe, J. , and M.J. Collins** (1997) Texture analysis for forested scenes. *Proceedings of the Canadian Symposium of Remote Sensing*, Ottawa ON
- Huang, J. and M.J. Collins** (1996) Texture classification of SAR image data based on parameter estimation. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Lincoln NE USA
- Yang, G. , M.J. Collins and P. Gong** (1996) Application of Back-Propagation Neural Networks on Multi-Source Data for Geological Mapping. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Lincoln NE USA
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- Collins, M.J. and W.A. Mackaness** (1993) On the Abstraction of Cartographic Objects from Remotely Sensed Imagery. National Centre for Geographic Information and Analysis, Initiative 8: Formalising Cartographic Knowledge, Specialists Meeting, October 1993, Buffalo, NY, USA
- Collins, M.J., and C.E. Livingstone** (1992) Active/Passive microwave signatures of Springtime Labrador Sea ice. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Houston, TX.
- Collins, M.J., R.O. Ramseier and S.P. Gogineni** (1990) Active/Passive microwave signatures of Barents Sea ice. *Proceedings of the International Geoscience and Remote Sensing Symposium*, 1517-1520, Washington, DC.
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UNPUBLISHED TECHNICAL REPORTS

- Collins, M.J.** (1995) Radar polarimetry. From *Report of the IEEE Geoscience and Remote Sensing Technical Committee on Future Technologies*, Presented to the IEEE GRS AdCom June 1995.
- Collins, M.J.** (1991) The Radiometric and Geometric Characterization of the Airborne Imaging Microwave Radiometer. Technical Report, Earth Observation Laboratory, Institute for Space and Terrestrial Science.
- Ramseier, R.O., K.W. Asmus, M.J. Collins and C. Garrity** (1989) Microwave properties of ice and snow. In: *ARK-TIS VI 1-4 Cruise Report of the FS Polarstern*. H.J. Schwartz (Ed.), Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, FRG.
- Collins, M.J.** (1989) Calibration of KRMS data from LIMEX'87. Technical Report, Contract No. 23413-8-8282/01-SS, Institute for Space and Terrestrial Science, prepared for Canada Center for Remote Sensing, Radar Data Development Program, March 31 1989
- Collins, M.J.** (1989) Literature review of combined active-passive microwave image analysis of sea ice. Technical Report, Contract No. 23413-8-8282/01-SS, Institute for Space and Terrestrial Science, prepared for Canada Center for Remote Sensing, Radar Data Development Program, March 23 1989
- Collins, M.J.** (1988) Acquisition of remote sensing and surface verification data during the Labrador Ice Margin Experiment (LIMEX). Technical Report, Contract No. 23413-7-8249/01-SS, Institute for Space and Terrestrial Science, prepared for Canada Center for Remote Sensing, Radar Data Development Program, March 31 1988
- Collins, M.J.** (1987) The estimation of pack-ice motion in digital satellite imagery by matched filtering. M.Sc. Thesis, Department of Oceanography, University of British Columbia.
- Collins, M.J.** (1985) Review of ice physics. Technical Report. Department of Oceanography, University of British Columbia.
- Collins, M.J.** (1980) The least squares method in Hilbert spaces. Technical Report, Department of Survey Engineering, University of New Brunswick.

Undergraduate Teaching

ENGG 200: Engineering Design and Communication

Audience: first year engineering students

Lecturer/Coordinator

Taught: F'09, F'10, F'12, F'13, F'17

2 90 minute lectures /wk + 1 three hour laboratory /wk

Description: An interdisciplinary course involving the application of engineering principles, design, communications, leadership and project management concepts through a sequence of team-based design projects.

ENGG 233: Computing for Engineers I

Audience: first year engineering students

Lecturer/Coordinator

Taught: F'95, P'96, W'97, W'99, W'00

3 one hour lectures /wk + 1 two hour laboratory /wk

Description: Overview of computer hardware and computer systems; functions of software components; operating systems, editors, compilers, high-level language concepts including constants, variables, expressions, assignment, input/output, selection and loop structures, subprograms, modular design, arrays, text file operations; use of a high level language to solve engineering problems; programming style and documentation standards; structured analysis and design; testing and debugging strategies.

ENGO 433/559: Digital Imaging

Audience: third/fourth year engineering students

Lecturer/Coordinator

Taught: W'96, W'97, F'99, F'07, F'14, F'16

3 one hour lectures /wk + 1 two hour laboratory /wk

Description: An introduction to digital imaging from remote platforms. Course includes a brief review of optical, infrared and microwave imaging systems. Introduction to digital image data. Introduction to image processing and analysis, including radiometric and geometric corrections, radiometric and geometric enhancements, multispectral transformations, and classification. Evaluation is through assignments, laboratories and two examinations.

ENGO 555/435: Remote Sensing

Audience: fourth year engineering students

Lecturer/Coordinator

Taught: F'94, F'95, F'96, F'97, W'99, W'00, W'01, W'02, W'03, W'08, W'09, W'10, W'11, W'13, W'14, W'15

3 one hour lectures /wk + 1 three hour laboratory /wk

Description: A survey of modern remote sensing including sensor systems, geometry and radiometric corrections, image enhancements, spatial filtering and information extraction, multispectral transforms, clustering and supervised classification

ENGO 500: Geomatics Engineering Project

Audience: fourth year engineering students

Lecturer/Coordinator

Taught: F'09, F'10, F'12, F'13, F'16/W'17

1 50 minute lecture /wk

Description: Principles of project management and applications in geomatics projects. Group project, under the supervision of a faculty member, on an assigned Geomatics Engineering topic. The project will normally involve a literature review, theoretical work, and laboratory or field work.

SE 3303: Introduction to Photogrammetry

Audience: fourth year engineering students

Lecturer/Coordinator

Taught: F'97

3 one hour lectures /wk + 1 three hour laboratory /wk

Description: Covers the concept of determining spatial positions by photogrammetric means (only analytical methods are covered) rigorous and approximate solutions of space resection; space intersection; formation of spatial models; spatial simi-

larity transformation; model connection.

Graduate Teaching

ENGO 655: Advanced Remote Sensing

Taught: F'99; W'01, W07, W09, W'10, W'11, W'13, W'14

Lecturer/Coordinator

1 three hour lecture /wk + 1-2 seminars + \approx 5 three hour laboratories

Description: A survey of modern quantitative remote sensing using optical, infrared and microwave radiation. Physical principles of the interaction between the radiation and terrestrial materials as well as the atmosphere. Principles and operation of major sensor systems. Introduction to analysis techniques.

ENGO 699.28: Introduction to Synthetic Aperture Radar

Taught: W'95, W'96, W'06, W'09, W,15

Lecturer/Coordinator

1 three hour lecture + 2-3 seminars /week

Description: This course is designed for students with little or no exposure to imaging radar. It includes two components: (i) a series of presentations and discussions by the students based on selected topics; and (ii) a written report and a presentation on a topic chosen by the student in consultation with the instructor.

ENGO 699.29: Seminars in Digital Mapping

Taught: W'95, W'96, W'98

Lecturer/Coordinator

1 three hour seminar series /week

Description: A seminar series which will look at current research in digital mapping. Students must choose a particular application area which may include any application of remote sensing, photogrammetry, geospatial information systems, or other integrated questions which involves a combination of the above. The course entails the preparation and delivery of four seminars ranging in duration from 20 to 50 minutes and the preparation of a written literature review. Students from outside of geomatics engineering are encouraged to enroll.

Graduate Supervision

- Grace Yang:** M.Sc. Programme,
Application of Back-Propagation Neural Networks on Multi-Source Data for Geological Mapping.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 1995.
- Jin Huang** M.Sc. Programme, The Effect of SAR System Parameters on Image Texture.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 1996.
- Jonathan Wiebe:** M.Sc. Programme, Analysis of the Discrimination of Forests with Polarimetric SAR Image Texture.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 1997.
- Anthony Warren:** M.Sc. Programme, Mapping Species Diversity in the Boreal Forest.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 1999.
- DonnaLouise Watts:** M.Sc. Programme, Combining Classifiers in Remote Sensing.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 2001.
- David Alton:** M.Eng. Programme,
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 2002.
- Lynn Raaflaub:** M.Sc. Programme, On the Use of Remote Sensing in Ecological Modelling.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 2002.
- Michael de Jong:** M.Sc. Programme, Super-resolution Algorithms for Hyperspectral Remote Sensing.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 2002.
- Jayanti Sharma:** M.Sc. Programme, Simulation algorithms for Detection and Estimation of Ground Moving Targets in Radar Imagery.
Department of Geomatics Engineering, University of Calgary. Graduated: Fall 2004.
- Yong Hu:** Ph.D. Programme, Automated Extraction of Digital Terrain Models, Roads and Buildings using Airborne LIDAR Data.
Department of Geomatics Engineering, University of Calgary. Graduated: December 2003
- Jeremy Allan:** M.Sc. Programme, Object Oriented SAR Signal Simulation.
Department of Electrical and Computer Engineering, University of Calgary. Graduated: Fall 2006.
- Michael Wollersheim:** M.Sc. Programme, Extraction of Forest Biophysical Parameters with using Polarimetric SAR.
Department of Electrical and Computer Engineering, University of Calgary. Graduated: Fall 2008.
- Carina Butterworth:** M.Sc. Programme, Measuring Permafrost Deformation with Differential Interferometric Synthetic Aperture Radar.
Department of Geomatics Engineering, University of Calgary. Graduated: Winter 2008.
- Holly Zhang:** M.Eng. Programme,
Department of Geomatics Engineering, University of Calgary. Graduated: Spring 2008.
- Mohammed Daboor:** Ph.D. Programme, Improved Wishart Classification of Polarimetric SAR.
Department of Geomatics Engineering, University of Calgary. Graduated: December 2010
- Eric Kopp:** M.Sc. Programme, Analysis of target information in airborne POLinSAR data.
Department of Electrical and Computer Engineering, University of Calgary. Graduated: April 2009.
- John Richard Otukei:** Ph.D. Programme, Object Oriented Analysis of Land Use in Bwindi Impenetrable National Park.
Department of Geoinformatics, University of Salzburg, Austria. Graduated: May 2011
- Yasser Maghsoudi:** Ph.D. Programme, Estimation of Boreal Forest Parameters from Satellite-Borne Multi-Temporal Polarimetric SAR.
Department of Geomatics Engineering, University of Calgary. Graduated: December 2011
- Sina Taghvakish:** Ph.D. Programme, Crop Harvest Detection with Polarimetric SAR.
Department of Geomatics Engineering, University of Calgary. Graduated: September 2012
- Habib Mazaheri:** Ph.D. Programme, Multisensor Estimation of Soil Moisture.
Department of Geomatics Engineering, University of Calgary. Graduated: December 2013

Michael Denbina: Ph.D Programme, Iceberg Detection with Compact Polarity Synthetic Aperture Radar.
Department of Geomatics Engineering, University of Calgary. Graduated: November 2014

Ghada Atteia Allah: Ph.D. Programme, Ship Detection with Compact Polarity Synthetic Aperture Radar.
Department of Geomatics Engineering, University of Calgary. Graduated: December 2014

Victoria Mantey: M.Sc. Programme, Numerical Modelling of Ship Detection with Compact Polarity Synthetic Aperture Radar.
Department of Geomatics Engineering, University of Calgary. Expected completion date: Fall 2017

Meng Ma: M.Sc. Programme, Modelling of Ocean Backscatter with Compact Polarity Synthetic Aperture Radar.
Department of Geomatics Engineering, University of Calgary. Expected completion date: Fall 2018

Bahareh Yekkehkhany: Ph.D. Programme, Mathematical Modelling of Ocean Backscatter with Coherent Dual-Pol Synthetic Aperture Radar.
Department of Geomatics Engineering, University of Calgary. Expected completion date: Fall 2020