Curriculum Vitae

Joshua A. Marshall, B.Sc. (Hons.), M.Sc., Ph.D., P.Eng., SMIEEE
Stephen J.R. Smith Faculty of Engineering & Applied Science
Queen's University at Kingston, Ontario, Canada

Professor in the Department of Electrical & Computer Engineering
Faculty Member (and former **Founding Director**) at the Ingenuity Labs Research Institute
Associate Editor for the International Journal of Robotics Research (IJRR)
Cluster Chair for Field Robotics at the IEEE Robotics & Automation Society (RAS)

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Contents

1 University Education

09/2005: Ph.D., Electrical & Computer Engineering, University of Toronto

Specialization in systems control and robotics
Thesis title: Coordinated Autonomy: Pursuit Formations of Multivehicle Systems
Research advisors: B. A. Francis and M. E. Broucke
External examiner: V. Kumar, University of Pennsylvania, Philadelphia, PA

08/2001: M.Sc., Mechanical Engineering, Queen's University

Specialization in dynamic systems and mechatronics
Thesis title: Towards Autonomous Excavation of Fragmented Rock: Experiments, Modelling, Identification, and Control

05/1999: B.Sc. (Hons.), Mine/Mechanical Engineering, Queen's University

Graduated with first-class honours
Awarded the University Medal for top academic standing

2 Industry, Research, and Academic Positions Held

07/2021–Present: Full Professor (tenured)

Department of Electrical & Computer Engineering, Stephen J. R. Smith Faculty of Engineering & Applied Science, Queen's University, Kingston, ON

07/2025–12/2025: Associate Head, Department of Electrical & Computer Engineering, Stephen J. R. Smith Faculty of Engineering & Applied Science

07/2021: Continued cross-appointment to the Department of Mechanical & Materials Engineering, Faculty of Engineering & Applied Science

07/2021: Continued cross-appointment to the Robert M. Buchan Department of Mining, Faculty of Engineering & Applied Science

06/2025–07/2025: Contract Instructor

Contracted by Colorado School of Mines (Golden, CO) to deliver professional education workshops on "The Mine of the Future: Robotics and Automation in Mining" on-site for the OCP Group, Ben Guerir, Marrakesh-Safi, Morocco

09/2018–12/2024: Founding Director

Ingenuity Labs Research Institute, a multi-disciplinary research institute focused on robotics and applied/physical AI at Queen's University, Kingston, ON

05/2019–06/2021: Associate Professor (tenured)

Department of Electrical & Computer Engineering, Faculty of Engineering & Applied Science, Queen's University, Kingston, ON

07/2019: Cross-appointed to the Robert M. Buchan Department of Mining, Faculty of Engineering & Applied Science

05/2019: Continued cross-appointment to the Department of Mechanical & Materials Engineering, Faculty of Engineering & Applied Science

08/2016–07/2017: KKS International Visiting Professor in Computer Science

Centre for Applied Autonomous Sensor Systems (AASS), School of Science & Technology, Örebro University, Örebro, Sweden, in collaboration with the Rocktec Automation division of Epiroc AB, Örebro, Sweden

07/2016–04/2019: Associate Professor (tenured)

The Robert M. Buchan Department of Mining, Faculty of Engineering & Applied Science, Queen's University, Kingston, ON

04/2018: Founded the multi-disciplinary Offroad Robotics research group

09/2017–03/2019: Associate Head, The Robert M. Buchan Department of Mining

07/2016: Renewed cross-appointment to the Department of Electrical & Computer Engineering, Faculty of Engineering & Applied Science

07/2016: Renewed cross-appointment to the Department of Mechanical & Materials Engineering, Faculty of Engineering & Applied Science

07/2010–06/2018: Adjunct Research Professor

Department of Mechanical & Aerospace Engineering, Faculty of Engineering & Design, Carleton University, Ottawa, ON

05/2010–06/2016: Assistant Professor (tenure-track)

The Robert M. Buchan Department of Mining, Faculty of Engineering & Applied Science, Queen's University, Kingston, ON

09/2011: Cross-appointed to the Department of Electrical & Computer Engineering, Faculty of Engineering & Applied Science

05/2010: Cross-appointed to the Department of Mechanical & Materials Engineering, Faculty of Engineering & Applied Science

05/2010: Founded the Mining Systems Laboratory (MSL)

11/2007–04/2010: Assistant Professor (tenure-track)

Department of Mechanical & Aerospace Engineering, Faculty of Engineering and Design, Carleton University, Ottawa, ON

01/2008: Founded the Carleton Robotic Vehicles Group and a Member of the Space Exploration Engineering Group (SEEG)

09/2005–10/2007: R&D/Control Systems Engineer IT

MacDonald, Dettwiler and Associates, Inc. (MDA), Space Missions Division (formerly MD Robotics and Spar Aerospace), Brampton, ON

09/2001–09/2005: Research and Teaching Assistant in Systems Control

Systems Control Group, The Edward S. Rogers Sr. Department of Electrical & Computer Engineering, University of Toronto, Toronto, ON

09/1999–08/2001: Research and Teaching Assistant in Mechatronics

Department of Mechanical Engineering, Queen's University

05/1999–08/1999: Research Associate in Robotics Applications

Department of Mining Engineering, Queen's University
On contract placement at Inco Ltd., Mines Research Department, Copper Cliff, ON

05/1998–08/1998: Research Associate in Instrumentation Systems

Department of Mining Engineering, Queen's University
On contract with Brunswick Mining and Smelting, Bathurst, NB

05/1997–08/1997 and 05/1996–08/1996: Engineering Assistant

McIntosh Redpath Engineering Ltd. (now Stantec), North Bay and Sudbury, ON

3 Honours and Awards

2025: Awarded the **Engineering Medal for Research & Development** from the Ontario Society of Professional Engineers (OSPE) for "exceptional achievements in research, technological development, and the successful commercialization of engineering innovations" (provincial)

2025: Selected and named in the *CIM Magazine*'s annual feature (June/July 2025 edition) as one of Canada's "**Names to Know**" in the mining sector (national)

2025: Nominated (third nomination) by graduate students for the **2024 Award for Excellence in Graduate Student Supervision** (AEGSS), Queen's University (institutional)

2024: Nominated (second nomination) by graduate students for the **2023 Award for Excellence in Graduate Student Supervision** (AEGSS), Queen's University (institutional)

2021: Research spin-off company RockMass Technologies Inc. awarded the **Ontario Centre of Innovation (OCI) Mind to Market Award (M2M)**; M2M is OCI's premier recognition of extraordinary achievements in next-generation technology commercialization and celebrates "best in class" R&D collaborations that drive the development of made-in-Ontario technologies (provincial)

2020: **Instructor of the Year Award** (as voted by graduate students) of the Graduate Electrical & Computer Engineering Student Council (GECE), Queen's University (institutional)

2018: Nominated by faculty colleagues/Department Head for the Faculty of Engineering & Applied Science (FEAS) **Excellence in Research Award**, Queen's University (institutional)

2017: Nominated for the **Royal Society of Canada (RSC) College of New Scholars** by the Faculty of Engineering & Applied Science, Queen's University (national)

2015: **Best Paper of the Conference Award** at the *10th Conference on Field & Service Robotics* (FSR) with co-authors A. A. Dobson and J. Larsson (international)

2015: **Best Vision Paper Award** at the *12th Conference on Computer & Robot Vision* (CRV) with co-authors M. T. Ahmed, M. Mohamad, and M. Greenspan (national)

2014: Nominated by graduate students and faculty for the **2013 Award for Excellence in Graduate Supervision** (AEGSS), Queen's University (institutional)

2013: Elected to the grade of **Senior Member** of the Institute for Electrical and Electronics Engineers (IEEE) (international)

2012: Nominated for the **Frank Knox Award for Excellence in Teaching** (nominated by the student body and awarded by the Queen's Alma Mater Society) (institutional)

2007: Winner of the **MDA Engineering Innovation Award** (selected by a technical committee of peers for the most innovative work of the year at MDA) with colleague T. D. Barfoot (institutional)

2006: **MDA Employee Recognition Award** for "outstanding performance" (institutional)

2004–2005: The Walter C. Sumner Memorial Fellowship (national)

2004: The Edward S. Rogers Sr. Department of Electrical & Computer Engineering's **Teaching Assistant Award** (selected by students and faculty) (institutional)

2003–2004: The Edward S. Rogers Sr. Graduate Scholarship (institutional)

2001–2003: NSERC PGS B Postgraduate Scholarship (national)

1999–2001: NSERC PGS A Postgraduate Scholarship (national)

1999-2001: Queen's Graduate Award (institutional)

1999: Queen's University **Medal for Academics** (for top standing in my academic program, Faculty of Applied Science)

1999: The WAMIC National Scholarship (national)

1998: The CIM Maintenance and Engineering Centennial Scholarship (national)

1997–1998: The Kostuik Scholarship (institutional)

1997–1998: CMIEF National Scholarship (national)

1996–1998: The Robert F. Segsworth Scholarship (national)

1996–1997: L. H. & N. A. Timmins Award (institutional)

4 Publications

All citation counts are based on what is available about me on Google Scholar:

scholar.google.ca/citations?user=2zOIvcUAAAAJ

Google Scholar also computes that I have an h-index of **27**, an i10-index of **53**, and **3498** citations as of February 1, 2026. Links to papers and associated media can be found at:

queensu.ca/offroad-robotics/publications

In what follows, co-authors that are underlined indicate past or current students. The corresponding authors for paper submissions are indicated by an asterisk.

Refereed Journal Articles

1. J. Wang*, M. T. H. Fader, and J. A. Marshall. Learning-based model predictive control for improved mobile robot path following using Gaussian processes and feedback linearization. In *Journal of Field Robotics*, vol. 40, no. 5, August 2023. **Ranked in top 10 most cited and top 10 most read papers in this journal in 2023!**

2. L. Khaleghi*, A. Sepas-Moghaddam, J. A. Marshall, and A. Etemad. Multi-view video-based 3D hand pose estimation. In *IEEE Transactions on Artificial Intelligence*, vol. 4, no. 4, pp. 896-909, August 2023.

3. L. Antonyshyn, J. Silveira, S. Givigi*, and J. A. Marshall. Multiple mobile robot task and motion planning: A survey. In *ACM Computing Surveys*, vol. 55, no. 10, February 2023.

4. A. Farley, J. Wang*, and J. A. Marshall. How to pick a mobile robot simulator: A quantitative comparison of CoppeliaSim, Gazebo, MORSE and Webots with a focus on the accuracy of motion simulations. In *Simulation Modelling Practice and Theory*, vol. 120, November 2022.

5. L. Khaleghi*, U. Artan, A. Etemad, and J. A. Marshall. Touchless control of heavy equipment using low-cost hand gesture recognition. In the Special Issue on An End-to-end Machine Learning Perspective on Industrial IoT of the *IEEE Internet of Things Magazine*, vol. 5, no. 1, March 2022.

6. M. T. Ahmed*, S. Ziauddin, J. A. Marshall, and M. Greenspan. Point cloud registration using virtual interest points from Macaulay's resultant of quadric surfaces. In the *Journal of Mathematical Imaging and Vision*, vol. 64, pp. 457-471, January 2021.

7. H. Fernando* and J. A. Marshall. What lies beneath: Material classification for autonomous excavators using proprioceptive force sensing and machine learning. In *Automation in Construction*, vol. 119, November 2020.

8. J. Mitchell* and J. A. Marshall. Towards a novel auto-rotating UAV platform for cavity surveying. In *Tunnelling and Underground Space Technology*, vol. 97, March 2020.

9. L. Dekker, J. A. Marshall*, and J. Larsson. Experiments in feedback linearized iterative learning-based path following for center-articulated industrial vehicles. In *Journal of Field Robotics*, vol. 36, no. 5, pp. 955–972, August 2019.

10. H. Fernando*, J. A. Marshall, and J. Larsson. Iterative learning-based admittance control for autonomous excavation. In *Journal of Intelligent and Robotic Systems*, vol. 96, no. 3-4, December 2019.

11. C. Watson and J. A. Marshall*. Estimating underground mine ventilation friction factors from low-density 3D data acquired by a moving LiDAR. In the *International Journal of Mining Science and Technology*, vol. 28, no. 4, pp. 657–662, July 2018.

12. R. A. Hewitt*, E. Boukas, M. Azkarate, M. Pagnamenta, J. A. Marshall, A. Gasteratos, and G. Visentin. The Katwijk beach planetary rover dataset. In *The International Journal of Robotics Research*, vol. 37, no. 1, pp. 3–12, January 2018.

13. A. A. Dobson* and J. A. Marshall. Admittance control for robotic loading: Design and experiments with a 1-tonne loader and a 14-tonne LHD. **Invited paper** in the Special Issue on Field & Service Robotics of the *Journal of Field Robotics*, vol. 34, no. 1, January 2017.

14. M. J. Gallant* and J. A. Marshall. Automated rapid mapping of joint orientations with mobile LiDAR. In *International Journal of Rock Mechanics and Mining Sciences*, vol. 90, pp. 1–14, December 2016.

15. M. Pasternak and J. A. Marshall*. On the design and selection of vehicle coordination policies for underground mine production ramps. In *International Journal of Mining Science and Technology*, vol. 26, no. 5, September 2016.

16. M. J. Gallant* and J. A. Marshall. The LiDAR Compass: Extremely lightweight heading estimation with axis maps. In *Robotics and Autonomous Systems*, vol. 82, pp. 35–45, August 2016.

17. M. J. Gallant* and J. A. Marshall. Two-dimensional axis mapping using LiDAR. In *IEEE Transactions on Robotics*, vol. 32, no. 1, January 2016.

18. C. Ingram* and J. A. Marshall. Evaluation of a ToF camera for remote surveying of underground cavities excavated by jet boring. **Invited paper** in *Automation in Construction*, vol. 49, Part B, pp. 271–282, January 2015.

19. D. Haviland and J. A. Marshall*. Fundamental behaviours of production traffic in underground mine haulage ramps. In *International Journal of Mining Science and Technology*, vol. 25, no. 1, pp. 7–14, January 2015.

20. C. McKinnon and J. A. Marshall*. Automatic identification of large fragments in a pile of broken rock using a time-of-flight camera. In *IEEE Transactions on Automation Science and Engineering*, vol. 11, no. 3, pp. 935–942, July 2014.

21. M. Gallant*, A. Ellery, and J. A. Marshall. Rover-based autonomous science by probabilistic identification and evaluation. In *Journal of Intelligent & Robotic Systems*, vol. 73, no. 3-4, pp. 591–613, December 2013.

22. N. J. Lavigne* and J. A. Marshall. A landmark-bounded method for large-scale underground mine mapping. In *Journal of Field Robotics*, vol. 29, no. 6, pp. 861-879, November/December 2012.

23. J. A. Marshall* and D. Tsai. Periodic formations of multivehicle systems. In *IET Control Theory & Applications*, vol. 5, no. 2, pp. 389–396, March 2011.

24. U. Artan, J. A. Marshall* , and N. J. Lavigne. Robotic mapping of underground mine passageways. In *Transactions of the IMM (Part A): Mining Technology*, vol. 120, no. 1, pp. 18–24, January 2011.

25. J. A. Marshall* and M. E. Broucke. Symmetry invariance of multiagent formations in self-pursuit. *IEEE Transactions on Automatic Control*, vol. 3, no. 9, pp. 2022-2032, October 2008.

26. J. A. Marshall*, T. D. Barfoot, and J. Larsson. Autonomous underground tramming for center-articulated vehicles. **Invited paper** in the Special Issue on Field & Service Robotics of the *Journal of Field Robotics*, vol. 25, no. 6-7, pp. 400-421, June-July 2008.

27. J. A. Marshall*, P. F. Murphy, and L. K. Daneshmend. Toward autonomous excavation: Full-scale experiments. *IEEE Transactions on Automation Science and Engineering*, vol. 5, no. 3, pp. 562-566, July 2008.

28. J. A. Marshall*, T. Fung, M. E. Broucke, G. M. T. D'Eleuterio, and B. A. Francis. Experiments in multirobot coordination. *Robotics and Autonomous Systems*, vol. 54, no. 3, pp. 265-275, March 2006.

29. J. A. Marshall*, M. E. Broucke, and B. A. Francis. Pursuit formations of unicycles. *Automatica*, vol. 42, no. 1, pp. 3-12, January 2006.

30. J. A. Marshall*, M. E. Broucke, and B. A. Francis. Formations of vehicles in cyclic pursuit. *IEEE Transactions on Automatic Control*, vol. 49, no. 11, pp. 1963-1974, November 2004.

Journal Articles Submitted

1. U. Artan*, M. Magnusson, and J. A. Marshall. Experiments in autonomous rock pile characterization for wheel loaders using only proprioceptive sensing. Submitted to *IEEE Transactions on Field Robotics*, revision submitted on January 30, 2026.

2. H. Fernando, F. Sun, K. Wang, N. Hoult*, and J. A. Marshall. Case study: Robotic installation of distributed fiber optic sensors for linear infrastructure. Submitted to *Journal of Computing in Civil Engineering* on December 29, 2025.

3. J. Silveira*, J. A. Marshall, and S. Givigi. Learning cost-to-go and control policies for robot-agnostic real-time kinodynamic planning. Submitted to *IEEE Transactions on Robotics* on November 11, 2025.

Refereed Book Contributions

1. J. A. Marshall. Mining robotics. **Invited chapter** in the *Springer Encyclopedia of Robotics*, April 2020.

2. J. A. Marshall*, A. Bonchis, E. M. Nebot and S. Scheding. Robotics in mining. **Invited chapter** in the *Springer Handbook of Robotics*, 2nd edition, Chapter 59, Part F, pp. 1549–1576, 2016.

3. J. A. Marshall*, Z. Lin, M. E. Broucke, and B. A. Francis. Pursuit strategies for autonomous agents. **Invited chapter** in *Cooperative Control: A Post-workshop Volume: 2003 Block Island Workshop on Cooperative Control*, eds. V. Kumar, N. E. Leonard, and A. S. Morse. Springer Series: Lecture Notes in Control and Information Sciences, vol. 309, pp. 137-151, 2004.

Patents and Patent Applications

Note that most of the patents listed below—both filed and granted—have many associated patents filed/granted in multiple jurisdictions. I do not view/count these associated patents as distinct works (although some people do). Thus, for clarity's sake, only United States (US) patents are listed unless there is no equivalent patent in that jurisdiction.

1. U. Artan, H. Fernando, and J. A. Marshall. Automatic classification of excavation materials. International Patent Application No. PCT/CA2022/050520, filed on April 6, 2022.

    - US Patent Application No. US 2024/0369521 A1, filed on October 5, 2023 and published on November 7, 2024.

2. M. J. Gallant and J. A. Marshall. Automated mobile geotechnical mapping. US Patent No. US11226201B2, **granted** January 18, 2022.

    - Commercialized via the start-up company RockMass Technologies (Toronto, ON) as their AxisMapper product (rockmasstech.com)

3. S. Pyke, N. J. Lavigne, J. A. Marshall, J. Peck, and A. Scott. Dead-reckoning-augmented GPS for tracked vehicles. US Patent No. US10948607B2, **granted** March 16, 2021.

4. S. W. Pyke, J. A. Marshall, N. J. Lavigne, and U. Artan. Method and system for georeferencing underground data. US Patent No. US 10,838,106 B2, **granted** November 17, 2020.

5. J. Mitchell and J. A. Marshall. Autorotating unmanned aerial vehicle surveying platform. US Patent No. US10676190B2, **granted** June 9, 2020.

6. A. A. Dobson and J. A. Marshall. Autonomous loading vehicle controller. AU Patent No. AU2015208631B2, **granted** July 25, 2019.

    - Commercialized by Epiroc/Atlas Copco Rock Drills AB (Örebro, Sweden) as their underground LHD autonomous loading and load-assist packages

7. R. L. Vanderbeck and J. A. Marshall. Tunnel convergence monitoring apparatus and method. US Patent No. US 15/471,802, filed on March 28, 2017, **granted** on April 17, 2018.

8. J. A. Marshall and T. D. Barfoot. Global position and orientation estimation system for a vehicle in a passageway environment. European Patent No. EP2450763, **granted** January 3, 2017.

    - Commercialized by Peck Tech Consulting Ltd. (Montreal, QC) as the uGPS Rapid Mapper (ugpsrapidmapper.com)

9. T. D. Barfoot, J. A. Marshall, R. Mukherji, and R. Ward. Guidance, navigation and control system for a vehicle. US Patent No. US 8,090,491 B2, **granted** January 3, 2012, and US 8,260,483 B2, **granted** September 4, 2012.

    - Commercialized by Epiroc/Atlas Copco Rock Drills AB (Örebro, Sweden) as their LHD automation package (available on underground trucks and scoops)

10. J. A. Marshall and T. D. Barfoot. Traffic management system for a passageway environment. US Patent No. US 7,756,615 B2, **granted** July 13, 2010.

    - Commercialized by Peck Tech Consulting Ltd. (Montreal, QC) as their uGPS Rapid Mapper (ugpsrapidmapper.com)

Conference Papers (Fully Refereed)

1. A. Beca* and J. A. Marshall. Path-following controller designs for autonomous and semi-autonomous industrial motor graders. In *Proceedings of the 2025 Canadian Conference on Robots and Vision* (CRV2025), Calgary, AB, May 26-29, 2025.

2. J. Silveira, J. A. Marshall, and S. Givigi*. A simulation pipeline to facilitate real-world robotic reinforcement learning applications. In *Proceedings of the 2025 IEEE International Systems Conference* (SysCon), Montreal, QC, April 7-10, 2025.

3. D. Jenkins*, J. A. Marshall. This is the way: Mitigating the roll of an autonomous uncrewed surface vessel in wavy conditions using model predictive control. In *Proceedings of the 2024 IEEE/RSJ International Conference on Intelligent Robots & Systems* (IROS), Abu Dhabi, United Arab Emirates, October 2024.

4. S. Villemure, J. Silvera, and J. A. Marshall. Terrain classification for the Spot quadrupedal mobile robot using only proprioceptive sensing. In *Proceedings of the 2024 IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), Kingston, Canada, August 2024.

5. E. Taylor, T. M. C. Sears, and J. A. Marshall. Experiments in decentralized multivehicle localization using ultra-wideband transceivers. In *Proceedings of the 2024 IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), Kingston, Canada, August 2024.

6. K. Wang, S. Givigi*, and J. A. Marshall. Monkey see, Monkey do: Constant time delay leader following for wheeled mobile robots using uncertainty-tuned model predictive control). In *Proceedings of the 2024 IEEE International Systems Conference* (SysCon), Montreal, QC, April 2024.

7. T. M. C. Sears*, M. R. Cooper, and J. A. Marshall. Mapping waves with an uncrewed surface vessel via Gaussian process regression. In *Proceedings of the 2023 IEEE International Conference on Robotics & Automation* (ICRA), London, UK, May-June 2023.

8. D. Sacoransky*, K. Hashtrudi-Zaad, and J. A. Marshall. Towards unsupervised filtering of millimetre-wave radar returns for autonomous vehicle road following. In *Proceedings of the 2023 IEEE International Conference on Robotics & Automation* (ICRA), London, UK, May-June 2023.

9. J. Silveira*, K. Cabral, S. Givigi, and J. A. Marshall. Real-time fast marching tree for mobile robot motion planning in dynamic environments. In *Proceedings of the 2023 IEEE International Conference on Robotics & Automation* (ICRA), London, UK, May-June 2023.

10. T. M. C. Sears* and J. A. Marshall. Mapping of spatiotemporal scalar fields by mobile robots using Gaussian process regression. In *Proceedings of the 2022 IEEE/RSJ*

International Conference on Intelligent Robots and Systems (IROS), Kyoto, Japan, October 2022.

11. L. Khaleghi, J. A. Marshall, and A. Etemad*. Exploiting sequential contexts using transformers for 3D hand pose estimation. In *Proceedings of the 26th International Conference on Pattern Recognition* (ICPR), Montreal, QC, August 2022.

12. J. Caldwell* and J. A. Marshall. Towards efficient learning-based model predictive control via feedback linearization and Gaussian process regression. In *Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), Prague, Czech Republic, September 2021.

13. A. Greisman*, K. Hashtrudi-Zaad, and J. A. Marshall. Detection of conductive lane markers using mmWave FMCW automotive radar. In *Proceedings of the 2021 IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems* (MFI), Karlsruhe, Germany, September 2021.

14. U. Artan*, H. Fernando, and J. A. Marshall. Automatic material classification via proprioceptive sensing and wavelet analysis during excavation. In *Proceedings of the 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics* (AIM), Delft, The Netherlands, July 2021.

15. O. Mayuku*, B. F. Surgenor, and J. A. Marshall. A self-supervised near-to-far approach for terrain-adaptive off-road autonomous driving. In *Proceedings of the 2021 IEEE International Conference on Robotics and Automation* (ICRA), Xi'an, China, May 2021.

16. O. Mayuku*, B. F. Surgenor, and J. A. Marshall. Multi-resolution and multi-domain analysis of off-road datasets for autonomous driving. In *Proceedings of the 2021 Computer and Robot Vision Conference* (CRV), Vancouver, BC, May 2021.

17. U. Artan* and J. A. Marshall. Towards automatic classification of fragmented rock piles via proprioceptive sensing and wavelet analysis. In *Proceedings of the 2020 IEEE Conference on Multisensor Fusion and Integration* (MFI), Karlsruhe, Germany, September 2020.

18. J. von Tiesenhausen*, U. Artan, J. A. Marshall, and Q. Li. Hand gesture-based control of a front-end loader. In *Proceedings of the 33rd IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), London, ON, May 2020.

19. M. T. Ahmed*, M. Greenspan, M. Asif, J. A. Marshall. Robust apple segmentation using fuzzy logic. In *Proceedings of the 5th IEEE International Multi-Topic ICT Conference* (IMTIC), Jamshoro, Pakistan, April 2018.

20. M. T. Ahmed*, J. A. Marshall, and M. Greenspan. Point cloud registration with virtual interest points from implicit quadric surface intersections. In *Proceedings of the 2017 International Conference on 3D Vision* (3DV), Qingdao, China, October 2017.

21. L. G. Dekker*, J. A. Marshall, and J. Larsson. Industrial-scale autonomous wheeled-vehicle path following by combining iterative learning control with feedback linearization. In *Proceedings of the 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), Vancouver, BC, September 2017.

22. H. Fernando*, J. A. Marshall, H. Ålmqvist, and J. Larsson. Towards controlling bucket fill factor in robotic excavation by learning admittance control setpoints. In *Proceedings of the 11th Conference on Field & Service Robotics* (FSR), Zürich, Switzerland, September 2017.

23. M. J. Gallant* and J. A. Marshall. Automated three-dimensional axis mapping with a mobile platform. In *Proceedings of the 2016 IEEE International Conference on Robotics and Automation* (ICRA), Stockholm, Sweden, May 2016.

24. E. Deretey*, M. T. Ahmed, J. A. Marshall, and M. Greenspan. Visual indoor positioning with a single camera using PnP. In *Proceedings of the 6th International Conference on Indoor Positioning and Indoor Navigation* (IPIN), pp. 1-9, Banff, AB, October 2015.

25. R. Hewitt* and J. A. Marshall. Towards intensity-augmented SLAM with LiDAR and ToF sensors. In *Proceedings of the 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), Hamburg, Germany, September 2015.

26. A. A. Dobson*, J. A. Marshall, and J. Larsson. Admittance control for robotic loading: Underground field trials with an LHD. In *Proceedings of the 10th Conference on Field & Service Robotics* (FSR), Toronto, ON, June 2015. **Winner of the conference best paper award.**

27. M. T. Ahmed*, M. Mohamad, J. A. Marshall, and M. Greenspan. Registration of noisy point clouds using virtual interest points. In *Proceedings of the 12th Conference on Computer and Robot Vision* (CRV), Halifax, NS, June 2015. **Winner of the best vision paper award.**

28. C. Watson* and J. A. Marshall. Towards extracting absolute roughness from underground mine drift profile data. In *Proceedings of the 37th International Symposium on the Application of Computers and Operations Research in the Mineral Industry* (APCOM), Fairbanks, AK, May 2015.

29. M. J. Gallant*, J. A. Marshall, and B. K. Lynch. Estimating the heading of a Husky mobile robot with a LiDAR compass based on direction maps. **Invited paper** in *Proceedings of the 2014 International Conference on Intelligent Unmanned Systems* (ICIUS), Montreal, QC, September 2014.

30. C. Ingram* and J. A. Marshall. 3D time-of-flight camera for surveying remote cavities mined with a jet boring system. In *Proceedings of the 30th International Symposium on Automation & Robotics in Construction and Mining* (ISARC), Montreal, QC, August 2013. **Winner of a student best paper award.**

31. J. V. Simela*, J. A. Marshall, and L. K. Daneshmend. Automated laser scanner 2D positioning and orienting by method of triangulateration for underground mine surveying. In *Proceedings of the 30th International Symposium on Automation & Robotics in Construction and Mining* (ISARC), Montreal, QC, August 2013.

32. D. Pike*, S. Givigi, J. A. Marshall, A. Taylor, and A. Beaulieu. Robust vehicle routing policies using local communications and sensing. In *Proceedings of the 2013 American Control Conference* (ACC), pp. 6351-6357, Washington, DC, June 2013.

33. S. Radacina Rusu*, J. A. Marshall, and M. J. D. Hayes. Localization in large-scale underground environments with RFID. In *Proceedings of the 24th IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), Niagara Falls, ON, May 2011.

34. M. Gallant*, J. A. Marshall, and A. Ellery. Science-influenced mobile robot guidance using Bayesian networks. In *Proceedings of the 24th IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), Niagara Falls, ON, May 2011.

35. N. J. Lavigne*, J. A. Marshall, and U. Artan. Towards underground mine drift mapping with RFID. In *Proceedings of the 23rd IEEE Canadian Conference on Electrical & Computer Engineering*, Calgary, AB, May 2010.

36. U. Artan, N. J. Lavigne, and J. A. Marshall*. Robotic mapping of underground drift networks. In *Proceedings of the 34th Conference on Applications of Computers and Operations Research in the Minerals Industry* (APCOM), Vancouver, BC, October 2009. (Cited by 14)

37. U. Artan*, N. J. Lavigne, and J. A. Marshall . Globally consistent mapping of large-scale passageway environments. In *Proceedings of the 22nd IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), pp. 656-659, St. John's, NL, May 2009.

38. J. Larsson*, J. Appelgren, J. A. Marshall , and T. D. Barfoot. Atlas Copco infrastructureless guidance system for high-speed autonomous underground tramming. In *Proceedings of the 5th International Conference and Exhibition on Mass Mining* (MassMin), pp. 585-594, Luleå, Sweden, June 2008.

39. J. A. Marshall and T. D. Barfoot*. Design and field testing of an autonomous underground tramming system. In *Proceedings of the 6th International Conference on Field & Service Robotics* (FSR), pp. 393-402, Chamonix, France, July 2007.

40. J. A. Marshall* and M. E. Broucke. On invariance of cyclic group symmetries in multiagent formations. In *Proceedings of the Joint 44th IEEE Conference on Decision & Control and European Control Conference* (CDC/ECC), pp. 746-751, Seville, Spain, December 2005.

41. J. A. Marshall*, T. Fung, M. E. Broucke, G. M. T. D'Eleuterio and B. A. Francis. Experimental validation of multi-vehicle coordination strategies. In *Proceedings of the 2005 American Control Conference* (ACC), pp. 1090-1095, Portland, OR, June 2005.

42. J. A. Marshall*, M. E. Broucke, and B. A. Francis. Unicycles in cyclic pursuit. In *Proceedings of the 2004 American Control Conference* (ACC), pp. 5344-5349, Boston, MA, July 2004.

43. J. A. Marshall*, M. E. Broucke, and B. A. Francis. A pursuit strategy for wheeled-vehicle formations. In *Proceedings of the 42nd IEEE Conference on Decision & Control* (CDC), pp. 2555-2560, Maui, HI, December 2003.

Conference Papers and Posters (Refereed Abstracts)

1. T. M. C. Sears, M. R. Cooper, S. Button, and J. A. Marshall. OtterROS: Picking and programming an uncrewed surface vessel for experimental field robotics research with ROS 2. In *Proceedings of the Workshop on Field Robotics at the 2024 IEEE International Conference on Robotics & Automation* (ICRA), Yokohama, Japan, May 13, 2024.

2. F. Marrato and J. A. Marshall. Sound source tracking as a heuristic for frontier exploration in search and rescue using a quadrupedal mobile robot. Poster presented at the *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), Detroit, MI, October 2023.

3. P. C. Hungler*, J. A. Marshall, J. S. Parent, E. A. Tremblay, M. Karan, and D. Clarke. Utilization of virtual reality for engineering discipline selection. In *Proceedings of the 2019 Canadian Engineering Education Association Conference* (CEEA-ACEG), Ottawa, ON, June 2019.

4. J. Mitchell* and J. A. Marshall. Design of a novel auto-rotating UAV platform for underground mine cavity surveying. In *Proceedings of the 2017 SME Annual Conference & Exposition*, Denver, CO, February 2017.

5. E. Boukas*, R. A. Hewitt, M. Pagnamenta, R. Nelen, M. Azkarate, J. A. Marshall, A. Gasteratos, and G. Visentin. HDPR: A mobile testbed for current and future rover technologies. In *Proceedings of the 14th International Symposium on Artificial Intelligence, Robotics and Automation in Space* (i-SAIRAS), Beijing, China, June 2016.

6. A. A. Dobson* and J. A. Marshall. Autonomous digging: Reducing the impact of communications delay for planetary mining. Presented at the *Planetary and Terrestrial Mining Sciences Symposium* (PTMSS), Montreal, QC, May 2015.

7. D. Haviland* and J. A. Marshall. Simulation of traffic flow in underground mine ramps. Presented at the *CIM Conference & Exhibition*, Edmonton, AB, May 2012.

8. S. Radacina Rusu, J. A. Marshall*, and M. J. D. Hayes. Experiments in real-time map-based underground global positioning. In *Proceedings of the CIM Conference & Exhibition*, Montreal, QC, May 2011.

9. M. Gallant*, A. Ellery, and J. A. Marshall. Exploring salience as an approach to rover-based planetary exploration. In *Proceedings of the ASTRO 2010 Conference*, Toronto, ON, May 2010.

10. J. Larsson*, J. Appelgren, and J. A. Marshall. Next-generation system for unmanned LHD operation in underground mines. In *Proceedings of the SME 100 Years of Mining Research Symposium*, Phoenix, AZ, February 2010.

11. M. A. Swartz*, A. Ellery, and J. A. Marshall. Towards adaptive localization for rover navigation using multilayer feedforward neural networks. In *Proceedings of the ASTRO 2008 Conference*, Montréal, QC, May 2008.

12. P. F. Murphy*, J. A. Marshall , R. A. Hall, L. K. Daneshmend, and P. M. Wild. Advanced technologies for mobile underground equipment. In *Proceedings of the 2002 CIM Mining Millennium Conference*, Vancouver, BC, May 2002.

13. A. Dellah, P. M. Wild*, B. W. Surgenor, and J. A. Marshall. A laboratory on the microprocessor control of a floating ping-pong ball. Poster given at the *2000 ASEE Annual Conference and Exposition*, St. Louis, MO, June 2000.

Periodical and Magazine Articles

1. J. A. Marshall. The robot revolution is here: How it's changing jobs and businesses in Canada. In *The Conversation*, February 23, 2021, https://theconversation.com/the-robot-revolution-is-here-how-its-changing-jobs-and-businesses-in-canada-155267.

2. J. A. Marshall. Navigating the advances in underground navigation: Straight talk on mobile equipment positioning and robotic mapping. In *CIM Magazine*, pp. 20-21, June-July 2010.

Selected Scholarly Reports for Industry

1. H. Fernando, F. Sun, K. Wang, J. A. Marshall, and N. Hoult. Design and field testing of a prototype mobile robot for the automatic installation of fibre on rail. Technical report issued to the National Research Council of Canada (NRC) under Collaborative Research & Development grant SC-AI4L-118-1, October 20, 2023 (32 pages).

2. J. Caldwell, R. Kealey, H. Fernando, and J. A. Marshall. Design requirements and operational concepts for a robotic underground scissor bolter. Technical report issued to Maclean Engineering under NSERC Engage project EGP 523529-18, October 30, 2018 (35 pages).

3. R. Hewitt and J. A. Marshall. LiDAR based navigation system prototype description and test report. Technical report issued to the European Space Agency (ESA) under contract 4000108490/13/NL/PA, January 21, 2015 (45 pages).

4. J. Mitchell, B. K. Lynch, and J. A. Marshall. Operational concepts and design requirements for an underground UAV platform. Technical report issued to Sprung-Brett RDI under NSERC Engage project EGP 462075-13, August 29, 2014 (69 pages).

5. A. A. Dobson, J. A. Marshall. Test results and recommendations from ST14 autoloading experiments at Kvarntorp. Technical report issued to Atlas Cocpo Rock Drills AB, July 10, 2014 (154 pages).

6. R. Hewitt and J. A. Marshall. State of the Art on SLAM, vehicle dynamics and feature detectors for LiDAR sensors. Technical report issued to the European Space Agency (ESA) under contract 4000108490/13/NL/PA, December 6, 2013 (43 pages).

7. T. D. Barfoot and J. A. Marshall. GN&C Strategies for Manned Lunar Mission Scenarios. Technical report issued to MacDonald, Dettwiler and Associates, Inc. (MDA), Space Missions Division, July 2009.

8. J. A. Marshall, K. L. Moore, and L. K. Daneshmend. Scoping Study: Application of Automation Technologies for P&H's IPCC (In-Pit Crushing and Conveying). Technical report issued to P&H Mining Equipment, Inc. (in collaboration with Peck Tech Consulting), April 2009.

9. U. Artan, N. J. Lavigne, and J. A. Marshall. Globally Consistent Mapping of Underground Environments: Concept Designs and Implementation. Technical report issued to MacDonald, Dettwiler and Associates Inc. (MDA), Space Missions, December 2008. Research funded in part by the Ontario Centres of Excellence (OCE) under project CA-IA-I50965-08.

10. J. Peck, J. A. Marshall, and R. A. Hall. Overview of Automation in the Mining Industry and Recommendations for Orica's Future Technology Focus. Report issued (in cooperation with LNH Technologies) to Orica Limited, November 2008.

11. A. Ellery and J. A. Marshall. Traction Design Options for the Lunar Exploration Manned Utility Rover (LEMUR). Technical report issued to MacDonald, Dettwiler and Associates, Inc. (MDA), Space Missions (under subcontract to the Canadian Space Agency), May 2008.

12. J. A. Marshall and A. Ellery. Scalable Autonomy Options for the Lunar Exploration Manned Utility Rover (LEMUR). Technical report issued to MacDonald, Dettwiler and Associates, Inc. (MDA), Space Missions (under subcontract to the Canadian Space Agency), May 2008.

13. R. A. Hall, L. K. Daneshmend, and J. A. Marshall. Final Report: Follow-on Reliability Analysis and Production Simulation of Diamond Drills. Technical report issued to the Mines Research Department, Inco Ltd., Copper Cliff, ON, May 2000.

14. R. A. Hall, L. K. Daneshmend, and J. A. Marshall. Progress Report: Follow-on Reliability Analysis and Production Simulation of Diamond Drills. Technical report issued to the Mines Research Department, Inco Ltd., Copper Cliff, ON, July 1999.

Academic Theses

1. *Coordinated Autonomy: Pursuit Formations of Multivehicle Systems*. Ph.D. Thesis, Department of Electrical & Computer Engineering, University of Toronto, Toronto, ON, September 2005.

2. *Towards Autonomous Excavation of Fragmented Rock: Experiments, Modelling, Identification and Control*. M.Sc.(Eng.) Thesis, Department of Mechanical Engineering, Queen's University, Kingston, ON, August 2001.

3. *Development of an Instrumentation and Data Acquisition System for Rock and Mine Backfill Testing*. B.Sc.(Hons.) Thesis, Department of Mining Engineering, Queen's University, Kingston, ON, May 1999.

5 Selected Scholarly and Industry Talks

1. "Digging Deep: Why Mining Needs More Field Roboticists" **Invited keynote** given at the Workshop on Field Robotics, *2025 IEEE International Conference on Robotics & Automation* (ICRA), Atlanta, GA, May 19, 2025.

2. "Mastering the Terrain: Learning-Enhanced Controller Designs for Off-Road Robotic Vehicles" **Invited lecture** for the *School of Science & Technology Seminar Series* at Örebro University, delivered as an open lecture at the manufacturing facility of Epiroc Rock Drills AB, Norra Bro, Sweden, April 3, 2025.

3. "How Robotics is Shaping the Future of Mining: Challenges and Opportunities for Workers and Society" **Invited keynote** given at the *CIFAR Innovation, Equity & The Future of Prosperity* (IEP) program meeting, Banff, AB, February 6, 2025.

4. "Engineer to Make an Impact" **Invited keynote** give at the 2024 IEEE Canada Kingston Section Annual General Meeting, Kingston, ON, November 19, 2024.

5. "In the Future, Will Everything that Moves be Robotic?" **Invited** to give then annual Queen's Royal Legacy Society Tea Talk 2024, Kingston, ON, June 18, 2024.

6. "Robots in Rocky Situations" **Invited talk** given at the University of Toronto's ENSC 301 Robotics Seminar Series, Toronto, ON, November 23, 2022.

7. "Fear Not the Robots" **Invited talk** given at the NEXT Leaders Forum of the Business Council of British Columbia, Vancouver, BC, September 15, 2021.

8. "Robots in Rocky Situations" **Invited talk** given at the University of Toronto's ENSC 301 Robotics Seminar Series, Toronto, ON, January 13, 2021.

9. "Rocks, robots, and applied AI" **Invited talk** given at the October 2020 *Queensland Robotics Cluster* Muster, Brisbane, Australia, October 21, 2020.

10. "The robots are coming but will Canada be fine?" **Invited talk** given at the *Canada Science and Policy Conference* (CSPC2019), Ottawa, ON, November 14, 2019, as part of an **Expert Panel Discussion** about "Artificial Intelligence and Natural Resources Management".

11. **Invited** and delivered the opening keynote/remarks at the public grand opening of Amazon.ca's new fully-robotic distribution centre, Hamilton, ON, April 19, 2022.

12. "Advancing mobile autonomy in mining" **Invited talk** given at the *NRCan Sector-Strong Artificial Intelligence Forum*, Ottawa, ON, February 28, 2019. Also participated as member of the **Expert Panel Discussion** about "AI in Natural Resources" at this Government of Canada conference.

13. "The future of things" **Invited talk** given at the *Principal's Symposium: Imagining our Digital Future*, The Isabel Bader Theatre for the Performing Arts, Kingston, ON, November 26, 2018. Available online at https://youtu.be/dssBbfQvRKw.

14. "Automation for underground: Example technologies from the Mining Systems Laboratory" **Invited talk** given at the *Barrick Robotics Seminar*, hosted by Barrick Gold Corporation, Toronto, ON, September 19, 2017.

15. "Mobile robots in the field: Examples from mining" **Invited talk** given at Kollmorgen AB, Gothenburg, Sweden, May 15, 2017.

16. "Mobile autonomy for underground and other rocky situations" **Invited talk** given at Scania AB, Södertälje, Sweden, October 5, 2016.

17. "Experiential learning at the graduate level: Examples from the Queen's Mining Systems Laboratory" **Invited keynote** given at the *Seminario Tendencias tecnológicas en minería subterránea*, hosted by the Univiversidad del Desarrollo, Santiago, Chile, November 26, 2015.

18. "Bridging the gaps in underground machine positioning and automation technologies" **Invited talk** given to the Centre for Applied Autonomous Sensor Systems (AASS), Örebro University, Örebro, Sweden, November 13, 2013.

19. "Experiments in real-time map-based underground positioning" Given at the *CIM Conference & Exhibition*, Palais de Congrès de Montréal, QC, May 25, 2011.

20. "How to tame a 40-tonne mobile robot" **Invited talk** given to the Department of Electrical & Computer Engineering, Queen's University, Kingston, ON, February 10, 2011 (open research talk, as part of the cross-appointment process).

21. "Robotic mapping of underground drift networks" Given at the *34th Conference on Applications of Computers and Operations Research in the Minerals Industry* (APCOM 2009), Sheraton Wall Centre, Vancouver, BC, October 7, 2009.

22. "Of rocks and robots" **Invited talk** given to the Department of Mining Engineering, Queen's University, Kingston, ON, July 21, 2009.

23. "Autonomy for underground" **Invited talk** given to the Department of Mining & Materials Engineering, McGill University, Montréal, QC, June 19, 2009.

24. "Engineering autonomy for Earth and Space" **Invited talk** given to the Department of Mechanical & Aerospace Engineering, Carleton University, Ottawa, ON, July 6, 2007.

25. "Development of a real-time underground global positioning system" **Invited talk**, given at the *Mass Mining Technology (MMT): Technology Transfer Meeting* (hosted by Orica Mining Services and the University of Queensland), Sydney, Australia, September 14, 2006.

26. "Experimental validation of multivehicle coordination strategies" Given at the *2005 American Control Conference*, Portland, OR, June 30, 2005.

27. "Coordinated control of multivehicle systems" **Invited talk**, given at *ECE Connections 2005*, University of Toronto, Toronto, ON, June 24, 2005.

28. "Symmetry invariance in multiagent formations" **Invited talk**, given at the *Northeast Nonlinear and Hybrid Control Workshop* (organized by M. Arcak and G. Pappas), Rensselaer Polytechnic Institute, Troy, NY, April 1, 2005.

29. "Autonomous yet coordinated: Pursuit strategies for multivehicle formations" **Invited talk**, given to the Department of Mechanical Engineering, The University of British Columbia, Vancouver, BC, March 16, 2005.

30. "Unicycles in cyclic pursuit" Given at the *2004 American Control Conference*, Boston, MA, July 2, 2004.

31. "Exploring the collective behaviour of wheeled vehicles in cyclic pursuit" **Invited talk**, given at the *Meeting on Nonlinear Control and its Applications* (hosted by A. Lewis and R. Hirschorn), Department of Mathematics and Statistics, Queen's University, Kingston, ON, May 5, 2004.

32. "A pursuit strategy for wheeled-vehicle formations" Given at the *42nd IEEE Conference on Decision & Control*, Maui, HI, December 9, 2003.

6 Selected Media Attention

1. Featured as "The Field Roboticist" in the 2025 Names to Know special issue of the *CIM Magazine* for contributions to advances in mining robotics, June/July 2025.
2. Quoted in "Toronto's pink delivery robots have been pulled off the streets and may be banned next week—but is that the right move?" by Sean Frankling, *Toronto Star*, December 11, 2021.
3. Live radio interviewed by Angela Kokott on *Afternoons with Rob Breakenridge* about robotics in Canada and Amazon's announcement of a new robotics facility in Alberta, as reported by *The Globe & Mail*, 770 CHQR Global News Radio in Calgary, AB, June 29, 2021.
4. Panel speaker at the *Collision 2021* conference for the "Masterclass: The technological transformation of mining", Toronto, ON, April 21, 2021.
5. Interviewed by Amber Mac for the podcast *This is Mining* in Season 2, Episode 1, entitled "Robotics, automation, and the 21st century miner", released April 8, 2021.
6. Live radio interviewed on *The Morning News with Sue Deyell and Andrew Schultz* about my article "The robot revolution is here: How it's changing jobs and businesses in Canada", 770 CHQR Global News Radio in Calgary, AB, February 25, 2021.
7. Live radio interviewed on *Kitchener Today with Brian Bourke* about my article "The robot revolution is here: How it's changing jobs and businesses in Canada", 570 News Radio, Rogers Sports & Media in Kitchener, ON, February 24, 2021.
8. Interviewed for the Faculty of Engineering & Applied Science's podcast "In conversation with Dr. Joshua Marshall", published July 20, 2020.
9. Quoted in "Connecting science, policy, and society" by Melinda Knox, *Queen's Gazette*, published bi-weekly by Queen's University, November 19, 2019.
10. Quoted in "Institutional innovation: How universities are trying to reinvent mining education to meet tomorrow's needs" by Alexandra Lopez-Pacheco, *CIM Magazine*, May 13, 2019.
11. Research and prototype system for mobile underground positioning (a.k.a., uGPS) on permanent display in the "From Earth to Us" exhibit at the *Canada Science and Technology Museum*, Ottawa, ON, opened November 2017.
12. Quoted in "Drone maps mines to explore unsafe caverns and seek out minerals" by David Hambling, *New Scientist*, April 11, 2017.
13. Quoted in "Fully loaded: Atlas Copco feels its way into autonomous loading for LHDs" by Alexandra Lopez-Pacheco, *CIM Magazine*, vol. 11, no. 8, December 2016/January 2017.

14. Quoted in "The evolution of autonomy" by Kate Sheridan, *CIM Magazine*, vol. 11, no 6, September/October, 2016.

15. Mentioned in "Mining venture strikes gold in pitch contest", by Mark Kerr, *Queen's Gazette*, published bi-weekly by Queen's University, August 18, 2016.

16. Video interview appeared in "Self driving cars headed for Ontario", *Station 14*, Kingston, ON, October 19, 2015.

17. Quoted in "Researchers rock with robots" by Anne Craig, *Queen's Gazette*, published bi-weekly by Queen's University, May 12, 2015.

18. Quoted in "The industrial internet has arrived" by Simon Richardson, *Achieve: The Annual Magazine of the Atlas Copco Group*, published annually by Atlas Copco AB, Stockholm, Sweden, 2015.

19. Quoted in "Mining: Extreme prospects" by Brian Owens, *Nature*, no. 495, published weekly by Macmillan Publishers Ltd., March 14, 2013.

7 Research Support

As Principal Investigator

09/2025-08/2028: Mitacs Accelerate

Title	Interactive Autonomy: Data-Driven Control for Industrial Vehicles in Dynamic, Unstructured Environments
Co-I	K. Hashtrudi-Zaad (Queen's)
Grant	$213,333 over three years
Partner	MacLean Engineering (Collingwood, ON)

04/2023-04/2028: NSERC Discovery Grant — Individual

Title	Mobile-Robot Navigation, Control, and Mapping in Spatiotemporal Worlds
Grant	$42,000 per annum for five years

03/2021-03/2024: Research Contract under FedDev Southern Ontario

Title	Collaboration Agreement Between City of Kingston and Development Hub (Ingenuity Labs)
Contract	$210,000
Client	City of Kingston

02/2019-05/2024 (extended): NSERC/DND Collaborative R&D Grant (CRD)

Title	Off-Road Multi-Vehicle Autonomy for Challenging Outdoor Environments
Grant	\$100,000 + \$50,000 (industry cash) per annum × four years
Co-Is	B. Surgenor (MME), K. Rudie (ECE), S. Givigi (Computing)
Partners	General Dynamics Land Systems Canada (London, ON) and Defence Research & Development Canada (DRDC) (Suffield, AB)

05/2018-09/2019: NSERC Engage Grant

Title	Design Requirements and Operational Concepts for a Robotic Underground Scissor Bolter
Grant	\$24,700
Partner	MacLean Engineering (Collingwood, ON)

05/2018-05/2019: FEAS Dean's Research Fund (DRF)

Title	Off-Road Mobile Robotics Research Initiative
Grant	\$107,000 (2018), \$50,000 (2019)
Co-I	B. Surgenor, Q. Li, K. Hastrudi-Zaad, S. Givigi (RMC), and L. Daneshmend

04/2015-04/2022 (deferred twice): NSERC Discovery Grant — Individual

Title	Multi-Robot Tools and Techniques for Exploration and Mobile Surveying
Grant	\$25,000 per annum for five years

03/2014-09/2014: NSERC Engage Grant

Title	Operational Concepts and Design Requirements for a Novel Underground UAV-Based Exploration Platform
Grant	\$24,980
Partner	Sprung-brett RDI (Waterloo, ON)

01/2014-04/2014: Research Contract

Title	Robotic Loading Experiments
Contract	182,000 SEK
Client	Atlas Copco Rock Drills AB (Örebro, Sweden)

02/2014-05/2014: Research Contract

Title	Underground Communications Infrastructure Implementation Survey
Contract	\$8,000
Client	Global Mining Standards and Guidelines Group (Montreal, QC)

04/2013–04/2016: ESA Networking/Partnering Initiative (NPI)

Title	Robust and Continuous Localisation and Mapping for Mars Sample Return using LiDAR
Contract	€30,000 (2014), €30,000 (2015), €30,000 (2016)
Client	European Space Agency (ESA), The Netherlands

03/2013–03/2016: NSERC Collaborative R&D Grant

Title	uGPS: 3D Mapping, Real-Time Localization, and Machine Coordination in Underground Mines
Budget	$121,300 (2013), $126,600 (2014), $124,600 (2015)
Co-I	M. Greenspan (Queen's)
Partners	Barrick Gold Corporation (Toronto, ON) and Peck Tech Consulting Ltd. (Montreal, QC)

2011: CFI Leaders Opportunity Fund (LOF) — Infrastructure

Title	Cooperative Mining Machines Research Testbed
Grant	$150,000
Partner	Clearpath Robotics, Inc. (Waterloo, ON)

2011: Ontario Ministry of Research & Innovation's Ontario Research Fund (ORF) — Small Infrastructure Funds (matching funds for CFI)

Title	Cooperative Mining Machines Research Testbed
Grant	$150,000
Partner	Clearpath Robotics, Inc. (Waterloo, ON)

05/2010: Queen's University Research Initiation Grant

Award	$100,000 lump sum

10/2009: CFI Leaders Opportunity Fund — Infrastructure

Title	Robotic Vehicles Research Testbed
Grant	$170,342
Status	Awarded but declined due to applicant's move to Queen's

06/2009–05/2011: NSERC Collaborative R&D Grant (CRD)

Title	Concept and Experiments for an Underground GPS Technology
Budget	$65,800 (2009), $63,500 (2010)
Partner	MacDonald, Dettwiler and Associates (MDA), Inc. (Brampton, ON)

05/2009–04/2015: NSERC Discovery Grant — Individual

Title	Theory and Applications of Cooperative Navigation
Grant	$31,150 per annum for five years (deferred one instalment in 2010)

05/2008–12/2008: OCE Interact Project

Title	Mapping Concept for an Underground GPS Technology
Budget	$33,400
Partner	MacDonald, Dettwiler and Associates (MDA), Inc. (Brampton, ON)

11/2007: Carleton University Start-Up Grant

Award	$30,000 lump sum

As Co-Investigator

10/2024-06/2025: Vinnova Impact Innovation

Title	Styckefallsövervakning för gruvbrytning underjord (Integrated fragmentation monitoring for underground mining operations)
Budget	1,450,000 SEK
PI	M. Magnussun (Örebro University)
Co-I	U. Artan (Örebro), J. A. Marshall (Queen's), O. Lundberg (Epiroc AB), K. Öquist (Epiroc AB)

09/2024-08/2030: NSERC Collaborative Research & Training Experience (CREATE)

Title	ADVENTOR: Advanced Engineering and Training in Next-Generation Mobile Robotics for Human Spaces
Budget	$150,000 (2024), $300,000 (2025), $300,000 (2026), $300,000 (2027), $300,000 (2028), $300,000 (2029)
PI	A. Wu (Queen's)
Co-I	J. A. Marshall (Queen's, Co-Director), K. Hashtrudi-Zaad (Queen's), M. Pan (Queen's), M. Robertson (Queen's), V. Kuhlmeir (Queen's), G. Nejat (Toronto), J. Millar (Ottawa), Y. Hu (Waterloo), J. Forbes (McGill),,H.-C. Lin (McGill)
Partners	Quanser, ARA Robotique, Haply Robotics, Clearpath Robotics, Avidbots, Mosaic, Kinova, MDA, Aurrigo

09/2020-08/2026: NSERC Collaborative Research & Training Experience (CREATE)

Title	Building Trust in Connected Autonomous Vehicles
Budget	$147,000 (2020), $268,000 (2021), $346,000 (2022), $338,000 (2023), $301,000 (2024), $250,000 (2025)
PI	F. Yu (Carleton)
Co-I	J. A. Marshall (Queen's), M. Ahmadi (Carleton), E. Frances Judge (Ottawa), J. Wu (Windsor), Y. Zabolotnyuk (Carleton), Y. Guo (Carleton), A. Khan (Carleton), O. Shafiq (Carleton), H. Yanikomeroglu (Carleton), W. Zhuang (Waterloo)
Partners	Transport Canada, Public Safety Canada, DND Canada, City of Ottawa, SmartCone, Remotronic, Identos, Solana Networks, Interset, Blackberry, Ericsson, Nokia, Ciena, Ford

04/2020–03/2023: National Research Council of Canada (NRC) Collaborative Science, Technology & Innovation Program (CSTIP)

Title	AI for Rail Infrastructure Thermal Stress Condition Assessment
Budget	$99,549 (Year 1), $87,450 (Year 2), $98,450 (Year 3)
PI	N. Hoult
Co-I	J. A. Marshall

06/2018–12/2024 (extended): NSERC Strategic Network

Title	NSERC Canadian Robotics Network (NCRN)
Budget	$1,000,000 (2018), $1,125,000 (per year 2019–2022)
PI	G. Dudek (McGill)
Co-I	J. Marshall (Queen's), M. Jenkin (York), R. T. Vaughan (SFU), S. L Waslander (Waterloo), I. Sharf (McGill), J. Pineau (McGill), H. Zhang (Alberta), J. K .Tsotsos (York), D. P. Meger (McGill), A. P. Schoellig (Toronto), R. Urtasun (Toronto), D. Kulic (Waterloo), A. Lussier-Desbiens (Sherbrooke)
Partners	CrossWing, Clearpath Robotics, Huawei Technologies Canada, Kinova Robotics, General Dynamics Land Systems, Canadian Space Agency, ElementAI, FPInnovations, Barrick Gold Corporation

04/2022-09/2022: Canadian Space Agency (CSA) Space Exploration Topical Team

Title	Planetary prosepecting for resources
Budget	$20,000
PI	G. Osinsky (Western)
Co-I	J. A. Marshall and 13 other experts from across Canada

06/2021-09/2021: MITACS Globalink Research Internship (GRI)

Title	Highway self-driving
Budget	$7,500
PI	K. Hashtrudi-Zaad
Co-I	J. A. Marshall

01/2020–12/2020: Ingenuity Labs Research Opportunity Seed Fund (ROSF)

Title	Gesture-Based Semi-Autonomous Vehicle Control
Budget	$25,000 (2020)
PI	A. Etemad
Co-I	J. A. Marshall

08/2016–07-2017: KK-stiftelsen "Strategic knowledge enhancement 15"

Title	International Visiting Professorship funding for project "Fully autonomous operation of haul-load-dump machines"
Budget	1,426,023 SEK
PI	J. Schollin (ORU), D. Driankov (ORU), and J. A. Marshall (Queen's)
Partner	Atlas Copco Rock Drills AB (Örebro, Sweden)

07/2012–07/2017: NSERC Strategic Network

Title	NSERC Canadian Field Robotics Network (NCFRN)
Budget	$1,336,936 (2012), $1,313,436 (per year 2013–2016)
PI	G. Dudek (McGill)
Co-I	R. Bachmayer (MUN), T. D. Barfoot (Toronto), R. M. Jenkin (York), J. Pineau (McGill), H. Zhang (Alberta), J. A. Marshall (Queen's), R. T. Vaughan (SFU)
Partners	Clearpath Robotics, CrossWing Inc., Aeryon Labs, DRDC-Suffield, Canadian Space Agency, MDA Inc., Neptec Design Group, BGC Engineering, Quanser Consulting, WillowGarage, DRDC-Valcartier, Kinsol Research, Institut de Recherche d'Hydro-Québec, and Newmont Mining Corporation

04/2011–04/2017: NSERC Collaborative Research & Training Experience (CREATE)

Title	Technologies and Techniques for Earth and Space Exploration
Budget	$318,800 (2011), $502,450 (per year 2012–2017)
PI	G. R. Osinski (Western)
Co-I	M. Daly (York), Z.-H. Zhu (York), T. D. Barfoot (Toronto), J. A. Marshall (Queen's), P. Sylvester (Memorial), B. Rivard (Alberta), C. Johnson (UBC), K. McIsaac (Western), M. Naish (Western), R. Patel (Western)
Partners	MDA Inc., Canadian Space Agency, Barrick Gold Corporation, NASA Ames Research Center, Gedex Inc., Optec Inc., CNT Mineral Consulting Inc., Quansar Inc., Clearpath Robotics, NASA Lunar Science Institute, Smithsonian Institution

06/2010–05/2012: MITACS Accelerate Cluster

Title	Mine Traffic Optimization
Budget	$26,667 (33% of project, 2010), $26,667 (33% of project, 2011)
PI	L. K. Daneshmend (Queen's)
Co-I	J. A. Marshall (Queen's), G. Jamieson (Toronto), B. Donmez (Toronto)
Partner	Barrick Gold Corporation (Toronto, ON)

01/2010–04/2011: Research Subcontract

Title	KAPVIK: Smart Reconfigurable All-Terrain Multi-Mission Microrover
Contract	$200,000
PI	A. Ellery (Carleton)
Co-I	J. A. Marshall (Queen's/Carleton), A. de Ruiter (Carleton), M. Ahmadi (Carleton)
Client	MPB Communications Inc. (Montreal, QC) and the Canadian Space Agency (St. Hubert, QC)

8 University Teaching

Teaching Support Awarded

04/2021: eCampusOntario Virtual Learning Strategy (VLS) Grant

Title	Ethics module for artificial intelligence engineering
Grant	$47,219
PI	T. Dean (Queen's)
Co-Is	N. Zhang (Windsor), D. Zhao (McMaster), J. Ni (Queen's), J. A. Marshall (Queen's)

08/2016: Queen's University Teaching & Learning Enhancement Grant

Title	Just-in-time tutorials: Anytime, anywhere
Grant	$4,600
Co-I	H. Fernando (Queen's), S. Nokleby (UOIT)

01/2015-12/2015: COU Online Course and Module Development Project

Title	Mining systems, automation & robotics course
Grant	$75,000
Co-I	S. Nokleby (UOIT)

University Courses Taught

Dates of instruction are given by term (F for fall, W for winter) together with the year.

09/2010–Present: Faculty of Engineering & Applied Science, Queen's University

Course	Title	Term(s)	Enrolment
MREN 403 (core)	Mechatronics and Robotics Design IV †Co-instructed with M. Robertson (Mechanical & Materials Engineering)	FW2025-26†	54
ELEC 446 (elective)	Autonomous Mobile Robotics †Built this new course for its inaugural offering in F2024	F2025 F2024†	83 58
ELEC 497 (thesis)	Research Project †Co-supervised with K. Hashtrudi-Zaad	FW2025-26 FW2021-22† FW2019-20†	3 1 1
MTHE 499 (thesis)	Undergraduate Research in Mathematics and Engineering	FW2025-26	1

Course	Title	Term(s)	Enrolment
ENPH 454/455 (thesis)	Advanced Engineering Physics Design Project (enrolment indicates number of thesis projects supervised) †Co-supervsied with A. Wu	FW2025-26 FW2019-20† FW2018-19 FW2017-18	1 1 1 1
ELEC 845 (graduate)	Autonomous Vehicle Control and Navigation †Offered online (synchronously)	F2023 W2023 W2022 F2020† W2020	20 18 22 19 14
ELEC 390/49X (capstone)	Electrical Engineering Project (enrolment indicates number of students supervised) †Some co-supervised with other faculty (K. Rudie, K. Hashtrudi-Zaad, G. Chan, M. Greenspan, M. Pan, M. Greeff)	FW2024-25 FW2023-24† FW2022-23† FW2021-22† FW2020-21† FW2019-20† FW2018-19† FW2017-18† FW2016-17† FW2014-15†	1 group $\times$ 4 2 groups $\times$ 5 2 groups $\times$ 4 8 groups $\times$ 4 4 groups $\times$ 3.5 1 group $\times$ 4 1 group $\times$ 3 3 + 4 1 group $\times$ 3 2 groups $\times$ 3
MREN 203 (core)	Mechatronics and Robotics Design II †Built this new course for its inaugural offering in W2023	W2024 W2023†	64 65
MTHE 493 (capstone)	Engineering Math Project (enrolment indicates number of thesis projects supervised) †Co-supervsied with M. Greeff	FW2023-24†	1 group $\times$ 5
ELEC 299 (core)	Mechatronics Project †Completely redeveloped with new hardware and co-taught with E. Morin	W2022†	301
ELEC 443 (elective)	Linear Control Systems †Received the **highest student evaluation** of all courses, in all USAT categories, in ECE in F2019	F2019†	55
MINE 855 (graduate)	Autonomous Ground Vehicles Engineering (generalized version of MINE 853)	W2019 W2018	5 6

Course	Title	Term(s)	Enrolment
MINE 472 (elective)	Mining Systems, Automation, and Robotics (offered online) – Funded by Ontario Online and co-taught with S. Nokleby (UOIT)	W2019 W2018 W2017 W2016	23 33 19 13
MINE 471 (capstone)	Mine-Mechanical Design Project (enrolment indicates number of students supervised)	W2019 W2018 W2016 W2015 W2014 FW2012-13 W2012	6 8 14 11 10 3 6
MINE 202 (core)	Computer Applications and Instrumentation in Mining	F2018 F2017 F2013 F2012 F2011 F2010	21 15 72 78 69 41
APSC 200 (core)	Engineering Design and Practice II – Served as design project instructor (weeks 7-12, Mining)	F2018 F2013 F2012 F2011	18 69 78 69
MINE 434 (thesis)	Project Report (enrolment indicates number of thesis projects supervised)	W2018 W2017 W2016 W2015 W2014 W2013 W2012 W2011	5 5 8 6 8 4 6 2
MINE 853 (graduate)	Mining Robotics ‡Built this new course from scratch †Offered as a distance education course to students from across Canada at multiple universities (RMC, UOIT, Laurentian, Queen's)	W2016† W2015† W2014† W2013† W2012‡	4 6 12 6 5
MINE 459 (core)	Maintenance, Reliability, and Risk Assessment	F2015 F2014	66 68

Course	Title	Term(s)	Enrolment
MINE 201 (core)	Introduction to Mining and Mineral Processing – Served as course coordinator and co-taught with J. Peacey (2011, 2012), C. Pickles (2013, 2015), A. Ghahremaninezhad (2014)	F2015 F2014 F2013 F2012 F2011	33 68 73 77 73
APSC 100 (core)	Module 3: Design Project	W2015	15
MINE 800 (graduate)	Mining Systems and Processes – Served as instructor for Module 1 (of 6); offered as a distance education (online) course	F2014	15
MINE 852 (graduate)	Mine Mechanization and Automation	W2011	7

01/2008–04/2010: Faculty of Engineering and Design, Carleton University

Course	Title	Term(s)	Enrolment
MECH 5504 (graduate)	Guidance, Navigation and Control †Received the **highest student evaluation** of all courses in the Department of Mechanical & Aerospace Engineering at Carleton University	W2010 W2009† W2008	12 15 18
AERO 4907 (capstone)	S-CO_2 Gas Turbine Design Project NORSAT Microsatellite Project	FW2009-10 FW2008-09 W2008	2 3 2
ECOR 1010 (core)	Introduction to Engineering †Taught two sections	F2009 F2008†	332 698
MAAE 4500 (core)	Feedback Control Systems	F2008	59

Teaching Assistantships

09/2001–04/2005: The Edward S. Rogers Sr. Department of Electrical & Computer Engineering, University of Toronto

Course	Title	Term(s)	Role
ECE 311	Dynamic Systems and Control	4	Tutorials

Course	Title	Term(s)	Role
MAT 298	Linear Algebra and Differential Equations	1	Tutorials
MAT 290	Advanced Engineering Mathematics	3	Lead TA Tutorials
ECE 1635	Distributed Control of Autonomous Mobile Robots	1	Guest lecturer
ECE 557	Systems Control	1	Guest lecturer

09/1999–04/2001: Department of Mechanical Engineering, Queen's University

Course	Title	Term(s)	Role
MECH 452	Mechatronic Systems	2	Labs
MECH 323	Machine Design	2	Tutorials

09/1999–04/2001: Department of Mining Engineering, Queen's University

Course	Title	Term(s)	Role
APSC 100	Practical Engineering Design	2	Project Manager
MINE 459	Maintenance Engienering	2	Tutorials

9 Research Supervisions

Unless specified otherwise, supervisions listed here were/are at Queen's University.

Postdoctoral Supervisions

Name	Period	Department	Co-Supervisor
T. Teatro	09/2024–08/2026	Ingenuity Labs RI	K. Birch (York)
H. Fernando Research Engineer, FP Innovations (Montréal, QC)	01/2021–02/2023	Ingenuity Labs RI	N. Hoult

Name	Period	Department	Co-Supervisor
J. Wang Assistant Professor, Dept. of Mechanical Engineering, University of Manitoba	02/2020–09/2022	Ingenuity Labs RI	
B. K. Lynch Director of Horticulture Technology Systems, Vineland Research Centre (Vineland Station, ON)	09/2013–06/2016	ECE/Mining	

Doctoral Supervisions

Name	Period	Program	Co-Supervisor
N. Mertin	05/2025–present	ECE	S. Kauffman
D. Jenkins	09/2024–present	ECE	
K. Wang	05/2024–present	ECE	S. Givigi
S. Qahremani	09/2023–present	ECE	K. Hashtrudi-Zaad
J. Silveira	05/2020–present	ECE	S. Givigi
T. Sears	09/2019–present	ECE	
U. Artan Postdoctoral Fellow, School of Science & Technology, Örebro Univesity (Sweden)	09/2018–09/2023	Mining	
O. Mayuku Member of Technical Staff, MDA (Brampton, ON) Former Lecturer, Dept. of Mechanical Engineering, University of Port Harcourt (Nigeria)	01/2018–02/2022	Mechanical	B. Surgenor
H. Fernando Research Engineer, FP Innovations (Montréal, QC)	09/2014–01/2021	Mechanical	
R. Hewitt Torc Robotics (Los Angeles, CA) Formerly: Research Scientist, NASA JPL (Pasadena, CA)	05/2012–03/2018	ECE	

Name	Period	Program	Co-Supervisor
T. Ahmed Research Scientist, Epson Canada (Markham, ON)	05/2013–05/2017	ECE	M. Greenspan
M. Gallant Senior Software Developer, Avidbots (Kitchener, ON) Formerly: Systems Engineer, Quanergy Systems (Ottawa, ON)	09/2012–09/2016	ECE	
J. Simela Mine Systems Engineering Consultant (Kingston, ON)	01/2011–12/2015	Mining	L. Daneshmend
A. Dobson Autonomy Engineer, Clearpath Robotics (Kitchener, ON)	09-2010–01/2015	Mining	

Master's Supervisions

Name	Period	Program	Co-Supervisor
D. Jenkins Promoted to the PhD program	09/2023-09/2024	ECE	
E. Taylor Research Engineer, School of Environmental Studies, Queen's University	09/2020–05/2024	ECE	
M. R. Cooper Research Associate, Ingenuity Labs (Kingston, ON)	09/2021–03/2024	ECE	
K. Wang PhD Student, Queen's ECE (Kingston, ON)	05/2022–02/2024	ECE	S. Givigi
F. Marrato Software Engineer, Calian Group Ltd. (Toronto, ON)	09/2021–01/2024	ECE	
D. Sacoransky (4+1) Generative AI Data Scientist, IBM watsonx (Toronto, ON)	09/2021–09/2023	ECE	K. Hashtrudi-Zaad

Name	Period	Program	Co-Supervisor
J. Baker Mechanical Engineer, MacLean Engineering (Collingwood, ON)	09/2020–11/2022	Mechanical	B. Surgenor
D. Khalatyan Mechanical Engineer, MacLean Engineering (Collingwood, ON)	09/2019–04/2022	Mechanical	
L. Khaleghi AI Sofware Developer, Ross Video (Ottawa, ON)	01/2020–03/2022	ECE	A. Etemad
J. Caldwell Member of Technical Staff, MDA (Brampton, ON)	09/2019–12/2021	ECE	
A. Greisman (4+1) Robotics Engineer, InDro Robotics (Ottawa, ON)	09/2019–11/2021	ECE	K. Hashtrudi-Zaad
J. Ruan (MEng) PhD Student, Westlake University (China)	05/2021–09/2021	ECE	
J. Roy Robotics Engineer, MacLean Engineering (Collingwood, ON)	09/2018–07/2021	ECE	
J. Kulchyk Data Consultant, Validere (Calgary, AB)	10/2019–01/2021	ECE	K. Rudie
M. Fader Engineer, Calian Group Ltd. (Toronto, ON)	09/2018–12/2020	Mechanical	
N. Pandillapally Vehicle Autonomy Specialist, General Dynamics (London, ON)	09/2018–09/2020	Mechanical	B. Surgenor
L. Dekker Robotics Engineer, MacLean Engineering (Collingwood, ON)	05/2016–04/2018	Mechanical	
A. Wiseman Software Developer, League (Toronto, ON)	09/2016–09/2018	ECE	M. Greenspan

Name	Period	Program	Co-Supervisor
J. Mitchell Consultant, Bain & Company (Toronto, ON)	05/2015–07/2017	Mining	
G. Turner Systems Engineer, Motion Metrics Int'l (Vancouver, BC)	09/2014–10/2016	ECE	
R. L. Vanderbeck Autonomy Engineer, MacLean Engineering (Collingwood, ON)	09/2014–04/2016	Mining	
C. Watson Applications Specialist, Peck Tech Consulting (Montreal, QC)	09/2013–04/2016	Mining	
E. Deretey Engineer, Grantek Systems Integration (Burlington, ON)	09/2013–12/2015	ECE	M. Greenspan
C. Ingram Major Projects Engineer, Cameco (Saskatoon, SK)	09/2011–09/2014	Mining	
V. Vukovich Engineer, Shell Canada (Fort McMurray, AB)	09/2011–09/2013	Mining	
B. Owens Applications Engineer, Neptec Technologies (Ottawa, ON)	09/2010–01/2013	Mining	
D. Pike Systems Engineer, Neptec Design Group (Ottawa, ON)	09/2010-09/2012	ECE (RMC)	S. Givigi (RMC)
A. Chapman Manager of Mining Solutions, Peck Tech Consulting (Montreal, QC)	09/2010–08/2012	Mining	
M. Gallant Systems Engineer, Quanergy Systems (Ottawa, ON)	09/2009–08/2011	Aerospace (Carleton)	A. Ellery (Carleton)
S. Radacina Rusu Owner, MineView Systems Inc. (Ottawa, ON)	09/2009–08/2011	Mechanical (Carleton)	

Name	Period	Program	Co-Supervisor
N. J. Lavigne Software Engineer, Amazon Web Services (Seattle, WA)	09/2008–09/2010	Aerospace (Carleton)	
U. Artan President & CEO, Artech Technologies (Toronto, ON)	05/2008–01/2010	Mechanical (Carleton)	
M. Swartz Simulation Engineer, CAE Inc. (Ottawa, ON)	01/2007–01/2009	Aerospace (Carleton)	A. Ellery (Carleton)
J. d'Engelbronner Equipment Engineer, ASML (The Netherlands)	01/2008–05/2008 (on exchange from TU Delft)	Aerospace (Carleton)	

Undergraduate Supervisions

Only salaried research supervisions are listed here; numbers for thesis project supervisions are provided in Section 8 (e.g., see MINE 434, ELEC 490/7, EPHY 455, and AERO 4907).

Name	Term	Funding	Co-Supervisor
A. Beca	S2024	NSERC USRA	
E. Herbert	S2024	C. A. Thompson	
S. Button	S2023	Queen's USSRF	
S. Villemure	S2023	NSERC USRA	
K. Edwards	S2022	Queen's MRE	B. Surgenor
G. Puthumanaillam	S2021	Mitacs Globalink	K. Hashtrudi-Zaad
D. Sacoransky	S2021	NSERC USRA	
E. Bugeja	S2021	NRC Contract	N. Hoult
A. Greisman	S2020	NSERC Discovery	K. Hashtrudi-Zaad
A. Farley	S2020	NSERC Discovery	
J. Baker	S2020	NSERC CRD	B. Surgenor
H. Corley	W2020	NSERC CRD	
H. Corley	S2019	NSERC CRD	B. Surgenor
F. Schier	S2019	IAESTE	B. Surgenor
M. Fader	S2018	NSERC Discovery	
D. Khalatyan	S2018	NSERC Discovery	
R. Kealey	S2018	NSERC Engage	
J. Caldwell	S2018	NSERC Engage	
L. Dekker	S2015	C. A. Thompson	
J. Procopio	S2015	NSERC CRD	
Q. Ripley	S2015	NSERC IUSRA	J. Peck
J. Marr	S2014	NSERC USRA	M. Greenspan

Name	Term	Funding	Co-Supervisor
J. Mitchell	S2014	NSERC USRA	
C. Stewart	S2014	NSERC USRA	M. Greenspan
A. Wiseman	S2014	NSERC CRD	M. Greenspan
C. McKinnon	S2013	NSERC Discovery	
M. Pasternak	S2013	NSERC USRA	
C. McKinnon	S2012	NSERC USRA	
D. Haviland	S2011	NSERC USRA	
A. Richards (at RMC)	S2010	DRDC Contract	S. Givigi (RMC)
D. Tsai	S2009	NSERC Discovery	

10 Professional and Academic Service

Service as Invited External Examiner

08/09/2025: Arash Abarghooei, Ph.D. Thesis Defence, Department of Mechanical & Aerospace Engineering, Carleton University
Thesis title: Driving Accident Risk Assessment and Reduction Through Machine Learning, Optimal Planning and Shared Control

08/11/2024: Christopher Baird, Ph.D. Thesis Defence, Department of Mechanical & Manufacturing Engineering, Ontario Tech University
Thesis title: Development of Advanced Industrial Applications for Quadruped Robots

30/08/2024: Dominic Baril, Ph.D. Thesis Defence, Department of Computer Science and Software Engineering Université Laval
Thesis title: Improving the Robustness of Motion Modeling, Control and Localization for Mobile Robots in Harsh Conditions

17/04/2024: Elfituri Lahemer, Ph.D. Thesis Defence, Department of Mechatronic Systems Engineering, Simon Fraser University
Thesis title: Landmark-Based Robotics Navigation for Indoor Environments - An Extended Reality Perspective

22/08/2023: Kayvan Mahmoodifar, Ph.D. Thesis Defence, Department of Electrical & Computer Engineering, Western University
Thesis title: Development and Comparison of Control and Path Planning Methods for Center Articulated Steering Mobile Robot Module

09/07/2021: Thomas Bamford, Ph.D. Thesis Defence, Department of Civil & Mineral Engineering, University of Toronto
Thesis title: Application of Unmanned Aerial Systems to Blast Optimization in Open Pit Mines

12/04/2021: Hemanth Reddy Alla, Ph.D. Thesis Defence, Department of Civil & Environmental Engineering, University of Alberta
Thesis title: Investigation into the use of Data Mining Techniques for Fault Diagnosis and Prognosis of Haul Trucks

28/07/2020: Ian Greyvensteyn, Master's Thesis Examination, School of Electrical Engineering and Robotics, Queensland University of Technology, Australia
Thesis title: Evaluating the Effect of Illumination on the Performance of Visual Odometry in Underground Mining Environments

29/06/2020: Kamal Othman, Ph.D. Thesis Defence, School of Mechatronic Systems Engineering, Simon Fraser University
Thesis title: Towards the Vision of a Social Robot in every Home: A Navigation Strategy via Enhanced Subsumption Architecture

23/03/2020: Nicolas Olmedo, Ph.D. Thesis Defence, Department of Mechanical Engineering, University of Alberta
Thesis title: Robotic Systems for Environmental Monitoring and Terrain Classification

15/05/2018: Daniel Lucifora, Ph.D. Thesis Defence, Department of Mining & Materials Engineering, McGill University
Thesis title: Autonomous Surface Rotary Blasthole Drilling

28/01/2018: Haoquan Liu, Ph.D. Thesis Examination, School of Mechanical and Mining Engineering, The University of Queensland, Australia
Thesis title: Strategic Planning for Dragline Excavation Sequencing

26/04/2016: Raheleh Rasimarzabadi, Ph.D. Thesis Defence, Department of Civil & Environmental Engineering, University of Alberta
Thesis title: Particle Flow Into Cable Shovel Dippers

22/02/2012: Rolf Reimar Kohlmeyer, Master's Thesis Defence, Department of Electronic Engineering, University of Pretoria, South Africa
Thesis title: Modelling and Control of an Articulated Underground Mining Vehicle

17/05/2012: James Robinson, Ph.D. Thesis Defence, Mechanical & Aerospace Engineering, Carleton University and the University of Ottawa
Thesis title: Algebraic Screw Pairs

Editorial Roles and Conference Organization

2025–Present: Nominated and appointed as **Cluster Chair** of the *Field Robotics Cluster* within the IEEE Robotics and Automation Society (RAS) Technical Activities Board

2023–Present: Appointed as **Associate Editor** (AE) for the *International Journal of Robotics Research* (IJRR)

2020–2022: Appointed as **Technical Editor** (TE) for the *IEEE/ASME Transactions on Mechatronics* (T-MECH)

2022: Invited Session Chair, Recognition at the *IEEE/RSJ International Conference on Robots & Systems* (IROS), Kyoto, Japan, October 23, 2022

2021: Invited Session Chair, Sensors 1 at the *IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Delft, The Netherlands, July 14, 2021

2021: Invited Session Chair, Vision and Perception: Self-Supervised Learning at the *IEEE International Conference on Robotics & Automation* (ICRA), X'ian, China, June 3, 2021

2019–2021: Appointed as **Senior Editor** of the IROS Conference Paper Review Board (CPRB) of the IEEE Robotics and Automation Society

- Senior Editor and Member of the Awards Committee for IROS 2021 (Prague, Czech Republic)
- Senior Editor for IROS 2020 (Las Vegas, NV)
- Senior Editor for IROS 2019 (Macau, China)

2017–2021: Nominated and elected as **Associate Editor** to the Conference Editorial Board (CEB) of the IEEE Control Systems Society, which "coordinates the receiving, logging, acknowledging, distributing, collecting and collating reviews, and evaluating Regular papers submitted to the Society (co-)sponsored conferences: the *IEEE Conference on Decision & Control* (CDC), the *American Control Conference* (ACC), and the *IEEE Multi Conference on Systems and Control* (MSC)"

- Associate Editor for CDC 2020 (Jeju Island, Republic of Korea)
- Associate Editor for ACC 2020 (Denver, CO)
- Associate Editor for CDC 2019 (Nice, France)
- Associate Editor for ACC 2019 (Philadelphia, PA)
- Associate Editor for CDC 2018 (Miami Beach, FL)
- Associate Editor for ACC 2018 (Milwaukee, USA)

2019: International Program Committee Member, *12th Conference on Field & Service Robotics* (FSR), Tokyo, Japan

2017: International Program Committee Member, *11th Conference on Field & Service Robotics* (FSR), Zürich, Switzerland

2017: Scientific Committee Member, *The 34th International Symposium on Automation & Robotics in Construction* (ISARC), Taipai, Taiwan

2016–2017: Sponsorship & Exhibitions Chair, *2017 IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), Vancouver, BC

2016–2017: Session Chair, Case Studies & Application of Robotics and Automation at Operating Mines, *2017 SME Conference & Exhibition*, Denver, CO

2015: Program Committee Member and Session Chair, *10th Conference on Field & Service Robotics* (FSR), Toronto, ON

2013–2014: Symposium Co-Chair (with Soosan Beheshti, Ryerson), *Control and Robotics Symposium* of the *27th IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), Toronto, ON

2011–2013: Co-Chair for Mining, *The 30th International Symposium on Automation & Robotics in Construction, Mining & Petroleum* (ISARC), Montreal, QC

2011–2012: Symposium Co-Chair (with Stephen Smith, Waterloo), *Control and Robotics Symposium* of the *25th IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), Montreal, QC

2011–2012: Technical Program Committee Member, *Robotics Science & Systems Conference* (RSS), Sidney, NSW, Australia

2009–2010: Technical Program Committee Member, *Control and Robotics Symposium* of the *23rd IEEE Canadian Conference on Electrical & Computer Engineering* (CCECE), Calgary, AB

2008–2009: Technical Program Committee Member and Session Chair, *34th Conference on Applications of Computers and Operations Research in the Minerals Industry* (APCOM), Vancouver, BC

2005: Co-Chair and awarded Best Talk of the "Cooperative Control Methods and Applications" session at the *2005 American Control Conference* (ACC), Portland, OR

2003: Co-Chair of the "Multiple Agent Systems" session and Conference Volunteer at the *42nd IEEE Conference on Decision & Control* (CDC), Maui, HI

Other Academic, Technical Society, and Professional Service

19/11/2025–Present: Nominated, selected, and appointed as **Cluster Chair** of the Field Robotics Cluster, Technical Activities Board (TAB), IEEE Robotics and Automation Society (RAS), Institute for Electrical & Electronic Engineers (IEEE)

2025: Engineers Canada, **Program Visitor** (invited) of the Canadian Engineering Accreditation Board (CEAB) 2025 Accreditation Site Visit to the University of Toronto (evaluated two programs in Engineering Science: Robotics Engineering Option, Machine Intelligence Option)

09/10/2025: Panelist (invited) for the debate "National Robotics Strategy: Canada's Leap Forward or Futile Pursuit?" at the Ingenuity Labs Research Institute's *2025 Robotics and AI Symposium (RAIS2025)*, Kingston, ON

08/10/2025: Panel Moderator (invited) for the national discussion panel on "From Pilots to Lead Customers: Empowering Municipalities in the Age of AI-Robotics" at the *Canadian Robotics Council (CRC): 2025 Symposium*, Kingston, ON

2025–present: Member of the Program Committee (PC) for the NSERC CREATE program Building Trust in Connected and Autonomous Vehicles (TrustCAV)

Fall 2022: Engineers Canada, **Expert Panelist** (invited) for the review of Mechatronics syllabus of the Canadian Engineering Qualifications Board (CEQB)

09/2022: External Referee for one promotion to full professor application, School of Mechatronic Systems Engineering, Simon Fraser University

07/2022: External Referee for one tenure and promotion application, Département d'informatique et de recherche opérationnelle, Université de Montréal

03/2022: Book Proposal Reviewer (Electrical & Computer Engineering Books Division) for John Wiley & Sons Ltd., West Sussex, United Kingdom

11/2021: External Referee for one tenure and promotion application, Department of Electrical & Computer Engineering, University of Windsor

09/2021: External Referee for one tenure and promotion application, Faculté des sciences et de génie, Département d'informatique et de génie logiciel, Université Laval

09/2021: External Referee for one tenure and promotion application, Faculty of Engineering, Department of Mechanical Engineering, University of Alberta

07/2021: External Referee for one tenure and promotion application, Faculty of Engineering, Department of Computing & Software, McMaster University

09/2020: External Referee for one tenure and promotion application, Faculty of Engineering & Applied Science, University of Ontario Institute of Technology

10/2018–09/2020: IEEE Awards Committee Member (by nomination), 2018, 2019, 2020 IEEE Medal for Environmental & Safety Technologies Committee

2019: Engineers Canada, Program Visitor (invited) of the Canadian Engineering Accreditation Board (CEAB) 2019 Accreditation Site Visit to Simon Fraser University (Mechatronic Systems Engineering)

2019: Engineers Canada, Vice-Chair (invited) of the Canadian Engineering Accreditation Board's (CEAB) 2019 Accreditation Site Visit to Dalhousie University (all programs)

2018: Engineers Canada, Program Visitor (invited) of the Canadian Engineering Accreditation Board (CEAB) 2018 Accreditation Site Visit to the University of Alberta (Minearal Resource Engineering)

2014: Quality Assurance External Reviewer for the University of Ontario Institute of Technology (UOIT) proposed new program in Mechatronics Engineering, which included a two-day site visit and follow-up written report

2009: Exam Reviewer ($\times 2$) for Canadian Council of Professional Engineers (CCPE) Technical Exam 98-Comp-B6 *Computer Control and Robotics* (for individuals seeking professional engineering licensure)

Grant Competition Reviews

2025: Invited International Reviewer for seven (7) grant applications (each valued at approximately 24,000,00 SEK or $3.4M CAD) for the Wallenberg AI, Autonomous Systems, and Software Program (WASP) funding call WASP-WISE NEST (Novelty, Excellence, Synergy, and Teams) in Sweden

2009–present: Invited Reviewer for multiple NSERC Discovery Grant applications (2 in 2009; 3 in 2010, 3 in 2011, 2 in 2012, 2 in 2013, 2 in 2014, 1 in 2015, 1 in 2019, 3 in 2021, 2 in 2023)

2016, 2018: Invited Reviewer for multiple NSERC Collaborative Research & Development (CRD) project applications

2016: Reviewer for one (1) MITACS Elevate project application

2008: Reviewer for one (1) Ontario Centres of Excellence (OCE) Collaborative project

Technical Paper Reviews

2001–Present: Reviewer for many international journals: IEEE Transactions on Vehicular Technology; Journal of Field Robotics; IEEE Robotics & Automation Letters, IEEE Transactions on Robotics; Industrial Robot; Systems & Control Letters; IEEE Transactions on Automatic Control; Automatica; IEEE Robotics & Automation Magazine; IEEE Transactions on Control Systems Technology; the International Journal of Control; IET Control Theory & Applications; International Journal of Mining Science & Technology; ASME Journal of Dynamic Systems, Measurement, & Control; International Journal of Robotics & Automation; SIAM Journal of Control and Optimization, Control Engineering Practice; AIAA Journal of Guidance, Control, & Dynamics; Autonomous Robots; IEEE Transactions on Systems, Man, & Cybernetics; Robotics & Autonomous Systems; Canadian Aeronautics & Space Journal; Robotics & Computer Integrated Manufacturing

2001–Present: Reviewer for countless conferences (far too many to keep track) ... (e.g., see conference board Editor and Associate Editor service, above)

11 University Service

Department Service

2025-2026: Member (elected) and Chair (appointed by Head), Workload Standard Committee, Department of Electrical & Computer Engineering, Queen's University

2025-2026: Member (elected) and Chair (appointed by Head), Renewal, Tenure & Promotion (RTP) Committee, Department of Electrical & Computer Engineering, Queen's University

2025: Chair (appointed by Head), Appointments Committee, Department of Electrical & Computer Engineering, Queen's University

2022-2025: Chair (appointed by Head), Appointments Committee (Mitchell Chair), Department of Electrical & Computer Engineering, Queen's University

2022-2023: Member (elected), Appointments Committee (thee junior positions + CRC Tier 1), Department of Electrical & Computer Engineering, Queen's University

2021-2024: Graduate Admissions Coordinator (appointed), Graduate Affairs Subcommittee, Department of Electrical & Computer Engineering, Queen's University

2020-2021: Member (elected), Appointments Committee, Department of Electrical & Computer Engineering, Queen's University

- Served as Acting Chair for one term-faculty hire during Summer 2020

2019–2020: Chair (appointed by Head), Appointments Committee, Department of Electrical & Computer Engineering, Queen's University

2018–2019: Member (appointed by Head), Appointments Committee (Mitchell Chair), Department of Electrical & Computer Engineering, Queen's University

2018: Chair (appointed by Head), Appointments Committee (Mechatronics), Department of Mechanical & Materials Engineering, Queen's University

2018: Chair (appointed by Head), Curriculum Committee, The Robert M. Buchan Department of Mining, Queen's University

2018: Member (appointed by Head), Queen's Mining 125 Anniversary Committee, The Robert M. Buchan Department of Mining, Queen's University

2011–2016, 2017–2018: Member (appointed by Head), Curriculum Committee, The Robert M. Buchan Department of Mining, Queen's University

2013–2014: Member (elected), Appointments Committee, The Robert M. Buchan Department of Mining, Queen's University

2011–2012: Member (elected), Term Adjunct Appointments Committee, The Robert M. Buchan Department of Mining, Queen's University

2010: Faculty Coordinator of the Mechanical & Aerospace Engineering Graduate Seminar Series, Carleton University

2009–2010: Member (appointed by Chair), Faculty Promotion Committee, Department of Mechanical & Aerospace Engineering, Carleton University

2009: Member (appointed by Chair), Ad-hoc Committee on Academic Integrity, Department of Mechanical & Aerospace Engineering, Carleton University

2009: Chair (appointed), Ad-hoc Committee on Graduate Program Seminars, Department of Mechanical & Aerospace Engineering, Carleton University

2008–2009: Departmental Library Representative, Department of Mechanical & Aerospace Engineering, Carleton University

Faculty and University Service

2025-present: Member (appointed by the Associate Dean of Interdisciplinary Programs), Reimagining Engineering Education KPI Working Group, Smith Engineering, Queen's University

2025: Member (appointed by the Vice-Provost, Academic Affairs), Queen's National Scholar (QNS) Selection Committee, Queen's University

2023–present: Faculty Advisor, aQuatonomous interdisciplinary design team, Smith Engineering, Queen's University

2021–present: Faculty Lead (with B. Surgenor and K. Hashtrudi-Zaad), SAE AutoDrive Challenge II Team, Faculty of Engineering & Applied Science, Queen's University

2018–present: Member (as Director), Ingenuity Labs Research Institute Advisory Board, Faculty of Engineering & Applied Science, Queen's University

2018–present: Chair (as Director), Ingenuity Labs Research Institute Steering Committee, Faculty of Engineering & Applied Science, Queen's University

06/2024: Expert Panelist (invited), Panel on Entrepreneurship in Academia, Rose Event Commons, Dunin-Deshpande Queen's Innovation Centre (DDQIC), Queen's University

04/2024: Expert Panelist (invited), Early Career Researcher (ECR) Panel on Graduate Student Recruitment, Smith Engineering, Queen's University

11/2023: Invited Speaker, Resources for Research at Queen's (R4RQ) talk about Science Rendezvous, Vice Principal (Research) Office, Queen's University

2021–2023: Member (appointed), Centre for Advanced Computing (CAC) Strategic Advisory Committee, Office of the Vice Principal (Research), Queen's University

2021: Volunteer Member, Organizing Committee of the *2021 Ingenuity Labs Robotics & AI Symposium* (RAIS2021), Ingenuity Labs Research Institute, Queen's University

2021: Member (appointed), Principal's Working Group on Teaching and Research Interdependence, Queen's University

2010–2021: Faculty Advisor, Queen's Space Engineering Team (QSET), Faculty of Engineering & Applied Science, Queen's University

2020–2021: Member (appointed), Principal's Advisory Committee: Vice-Principal (Research), Queen's University

2020: Member (appointed), 2020 Catalyst Fund Adjudication Panel, Office of the Vice-Principal (Research), Queen's University

2020: Member (appointed), Health Data Platform Advisory Group, Office of the Vice-Principal (Research), Queen's University

2019–2020: Member (appointed), Vice-Principal (Research) Working Group on AI, Queen's University

2019–2020: ECE Representative (appointed by Head), Faculty Board, Faculty of Engineering & Applied Science, Queen's University

2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020: Member (volunteer), Major Admissions Awards Panel, Queen's University

2019: Member (appointed by Dean), "Curiosity Creates" FEAS Vision Working Group, Faculty of Engineering & Applied Science, Queen's University

2018: Chair (appointed by Dean), New "HME" Centre Working Group, Faculty of Engineering & Applied Science, Queen's University

2018: Member (appointed by ADR), Dean's Graduate Research Assistant Awards Committee, Faculty of Engineering & Applied Science, Queen's University

2018: Member (appointed by Dean), FEAS 125 Anniversary Committee, Faculty of Engineering & Applied Science, Queen's University

2017: Member (appointed by Dean) of the Dean's Excellence in Education Adjudication Committee, Faculty of Engineering & Applied Science, Queen's University

2016–2017: Member (appointed by Dean) of the Dean's Ad-Hoc Committee on Student Teams, Faculty of Engineering & Applied Science, Queen's University

2016: Member (appointed by Dean) of the Dean's Advisory Committee on the Appointment of a New Associate Dean (Research and Graduate Studies), Faculty of Engineering & Applied Science, Queen's University

2013–2016: QUFA Representative (appointed by Dean) to the Joint Health and Safety Committee, Faculty of Engineering & Applied Science, Queen's University

2014–2015: Member (appointed by Head), ONCAT Queen's-Northern College Haileybury School of Mines (NCHSM) Bachelor of Technology Project Committee, Faculty of Engineering & Applied Science, Queen's University

2014: Adjudicator for the Prizes for Excellence in Research Nominations, Office of the Vice-Principal (Research), Queen's University

2011–2014: Member (appointed by Dean), Senate Advisory Research Committee (SARC): Subcommittee III (Engineering and Applied Science), Queen's University

2014: Member (appointed by Dean), ONCAT Project Manager Search Committee, Faculty of Engineering & Applied Science, Queen's University

2013: Member (appointed by Dean), Educational Developer Search Committee, Faculty of Engineering & Applied Science, Queen's University

2011: Member (elected by Dean), Mining Headship Selection Committee, Faculty of Engineering & Applied Science, Queen's University

2008–2009: Member, First-Year Instructors' Committee, Faculty of Engineering and Design, Carleton University

2005: Interview Committee Member, served as advisor to the Dean of the School of Graduate Studies in search for a Director of Student Services, University of Toronto

2003–2005: Graduate Student Member (elected), Council of the School of Graduate Studies (SGS) and the Executive Committee of SGS Division III, University of Toronto

2000–2001: Chair, Graduate Student Standing Committee of the Society of Graduate and Professional Students, School of Graduate Studies and Research (SGSR), Queen's University

1999–2001: Graduate Student Member (elected),Graduate Council of the SGSR and the SGSR Division III Council, Queen's University

Other Selected University Service

21/06/2021: Member (invited), SDG Room 11: Sustainable Cities and Communities, 17 Rooms Event, Queen's University

10/12/2020: Panelist for the workshop called "How to Use the Early Years Effectively" for Early Career Researchers at Queen's University

12 Professional Development

21/02/2024-23/02/2024: *CASE: Development for Deans and Academic Leaders: Winter Session* (San Francisco, CA), Council for Advancement and Support of Education

29/06/2021: *Insights Into Philanthropy: Advancement Training*, Faculty of Engineering & Applied Science, Queen's University

12/2020–06/2021: *Building Leadership Capacity @ Queen's* program (senior leadership stream), Queen's University, including the 3×4 *Coaching* program by Third Factor

02/05/2019: *More than a Website: Increasing Research Impact Workshop*, Research Development Day 2019, Queen's University

25/05/2018: *Showing Up for Equity and Inclusion* (invited workshop for Queen's senior administrators), The Equity Office, Queen's University

01/12/2014: *Workshop on Graduate Supervision*, Centre for Teaching and Learning Queen's University

18/10/2012–19/10/2012: *Queen's University Leadership Skills Workshop* (invited), Centre for Higher Education Research and Development (CHERD), The University of Manitoba

05/06/2012: *Occupational Health & Safety for Supervisors*, Department of Environmental Health and Safety, Queen's University

22/06/2011: *Preparing a Teaching Dossier*, Centre for Teaching and Learning, Queen's University

12/04/2011: *Advancing your Research and Scholarship Career: A Session on Leadership and Stategic Advice*, Office of Research Services, Donald Gordon Centre, Queen's University

11/02/2011: *Developing Complex Problem Solving Skills*, Centre for Teaching and Learning, Queen's University

27/05/2009–29/05/2009: *Engineering a Successful Teaching Experience* (invited) for new faculty in engineering disciplines (province-wide attendance), University of Toronto

04/2001: *Team-Based Project Management for Graduate Students*, NSERC, OCE, and the Queen's University School of Business

13 Professional Affiliations

2026–Present: Member of the Ontario Society of Professional Engineers (OSPE)

2007–Present: Professional Engineer (Licence No. 100118247) and Member of the Association of Professional Engineers of Ontario (PEO)

2001–Present: Senior Member (S'01–M'05–SM'13) of the Institute for Electrical and Electronics Engineers (IEEE); Control Systems Society (CSS); Robotics & Automation Society (RAS)

1997–2001, 2006–2019, 2025–Present: Member of the Canadian Institute for Mining, Metallurgy, and Petroleum (CIM); Society for Innovative Mining Technology (SIMT)

1998–2001, 2011–2016: Professional Member of the Society for Mining, Metallurgy, & Exploration (SME)