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HIGHER EDUCATION

University of Toronto, Ontario, Canada
- Ph.D., Mechanical Engineering (1995)

University of Waterloo, Ontario, Canada
- M.A.Sc., Mechanical Engineering (1992)

University of British Columbia, Vancouver, Canada
- B.A.Sc, Mechanical Engineering (1988)

FACULTY APPOINTMENTS

University of Victoria, Faculty of Engineering and Computer Science, Victoria, Canada

- July 2022- Professor, Mechanical Engineering and Electrical and Computer Engineering.

Monash University, Faculty of Engineering, Melbourne, Australia
- 2018-2022 Professor, Mechanical and Aerospace Engineering & Electrical and Computer Systems Engineering

University of British Columbia, Department of Mechanical Engineering, Vancouver, Canada
- 2020-2023 Honorary Professor (Courtesy Appointment)
- 2008-2017 Professor (On leave 2018-2019)
- 2001-2007 Associate Professor
- 1995-2001 Assistant Professor

UNIVERSITY ADMINISTRATIVE / LEADERSHIP EXPERIENCE

July 2022-Present Provost, University of Victoria, Victoria, BC Canada

Jan 2018-June 2022 Dean of Engineering, Monash University, Melbourne, Australia

University of British Columbia, Faculty of Applied Science, Vancouver, Canada:
- 2017 Senior Associate Dean
- 2015-2017 Marshall Bauder Professor in Engineering Economics
- 2013-2017 Associate Dean Education and Professional Development
- 2010-2015 NSERC Chair for Women in Science and Engineering, BC/Yukon
- 2007-2010 Associate Head, Department of Mechanical Engineering

AFFILIATED APPOINTMENTS

- 2022-Present Adjunct Professor, Mechanical and Aerospace Engineering & Electrical and Computer Systems Engineering, Monash University
- 2009-2015 Professor, Status-Only, Department of Mechanical and Industrial Engineering, University of Toronto
- 2003-2009 Adjunct Associate Professor, Department of Mechanical and Industrial Engineering, University of Toronto.

INDUSTRY EXPERIENCE/QUALIFICATIONS

- 2018-2022 Registered and Chartered Engineer, Engineers Australia
- 1993-2018 Registered Professional Engineer in the Province of British Columbia
- 1988-1990 MacInnis Bigg Associates Ltd., Vancouver, Canada, Junior Engineer

HONOURS AND AWARDS

Career

- Fellow, Australian Academy of Technology and Engineering, 2021.
- Fellow, Institute of Engineers Australia, 2019.
- Engineers and Geoscientists British Columbia, RA McLachlan Award - peak career award for Professional Engineering in the Province of British Columbia, Canada, 2018.
- Fellow, Canadian Academy of Engineers, 2016.
- Fellow, American Society of Mechanical Engineers, 2009.
- Fellow, Engineers Canada, 2008.

Teaching

- Vancouver YWCA Women of Distinction Award, Education, Training and Development Category, 2013.
- Alan Blizzard Award, Society for Teaching and Learning in Higher Education, (MECH 2), 2008.
- UBC Alfred Scow Award for Outstanding Undergraduate Program, (MECH 2) 2007.
- ASME Curriculum Innovation Award, (MECH 2) 2005.
- UBC Alfred Scow award for Outstanding Undergraduate Program (Electro-Mechanical Engineering) 2002.
- UBC Peter Larkin award for Outstanding Graduate Program (Electro-Mechanical Engineering) 1998.

Research

- NSERC Accelerator Award, 2007-2010.
- Early Career UBC Scholar, Peter Wall Institute for Advanced Studies, 2001-2002.
- Margaret McWilliams Pre-Doctoral Scholarship, University of Toronto/ Canadian Federation of University Women, 1994.
- War Memorial Scholarship (Declined) International Order of the Daughters of the Empire, 1994.
- NSERC PGS-B, University of Toronto/NSERC, 1992-1994.
- NSERC PGS-A, University of Waterloo/NSERC, 1990-1992.
- Engineering Research Scholarship (received four times), University of Waterloo, 1991-1992.

Service

- Wendy MacDonald Award, Diversity Champion, Vancouver Board of Trade, 2016.
- Just Desserts Award, UBC Alma Mater Society, 2015.
- WXN Top 100 most powerful women in Canada, RBC Champions category, Women's Executive Network, 2014.
- Award for the Support of Women in the Engineering Profession, Canadian Council of Professional Engineers, 2006.
- Professional Service Award, Association of Professional Engineers and Geoscientists of British Columbia, 2005.

COURSES OFFERED

- Robotics: Kinematics, Dynamics and Control
- Technology in Society
- Rigid Body Dynamics
- Intelligent Robotic Systems
- Machine Shop Practice
- Engineering Case Studies
- Computer-Aided Engineering Graphics
- Engineering Science I
- Global Engineering Leadership
- Mechanical Engineering Design
- Mechatronics Design
- Introduction to Academic Research

LEADERSHIP CONTRIBUTIONS AND ACCOMPLISHMENTS

Monash

- Led broad consultation with Engineering staff operating across the Australian, Malaysian and China campuses to deliver the 2019-2024 Strategic Plan, Engineering Change.
- Successful 2018 accreditation of Monash Engineering Clayton (10 programs) and Malaysia (5 programs).
- Completed 2018/19 (18-month) hiring campaign, recruiting and commencing 20 new tenure track academics, 58% female. Introduced first joint appointments with the Faculty of Pharmacy.
- Developed a new research team and facility in Human Centred Robotics at Monash with 13 academics and

20 Postdocs and PhDs, 40 undergraduate students led by a recently recruited world leading robotics researcher as Director.

- Launched the Robotics Undergraduate Degree (2020) with two streams: Automation and AI with enrolments of over 350 students in the first two years.
- Launched joint Biomedical Engineering Undergraduate Degree (2021) in partnership with the Faculty of Medicine.
- Launched the Engineering Industry Doctoral Program, 2022, to increase industry engagement.
- Won $28M Victoria State and Monash University funding (2021) for the Monash Smart Manufacturing Hub for Industry engagement and entrepreneurship.
- Launched the cooperative education internship program (2018) with 100% satisfaction from employers (based on "would rehire") over the first two years.
- Delivered the Masters of Professional Engineering to reverse declining student demand in the professional masters space.
- Launched two new Engineering Masters programs at Monash Suzhou Campus in Chemical Engineering and Advanced Materials and Manufacturing.
- Introduced Engineering Minors to coordinate and extend elective offerings, resulting in an over threefold increase of students studying topics in environmental engineering, resources, and renewable energy.
- Created a joint PhD program with UBC.
- Increased commencing domestic enrolments in Engineering by over 30%.
- Doubled number of student design competition teams to 16, with an average of 40 students per team - including the Monash Motorsport team, the #1 Formula SAE team in the world (https://fs-world.org/C/). Consolidated team support and created the Student Team Dream Fund.
- Developed the new 1000 m^2 Monash Makerspace to vastly improve student access to co-curricular learning opportunities.
- Maintained 99.7% of planned student load through the 2020 COVID-19 lockdowns and border closures in Australia through a fast pivot to online, mentoring and advising support and delivery of hands-on at home laboratory experiences.
- Partnered in delivery of the Woodside-Monash Energy Partnership (Lead Dean), renewed the Woodside Future Lab agreement and recruited leadership for both programs ($40M AUD collaboration)
- Oversaw the engineering academic and educational programming for the delivery of the five-story Woodside Building for Technology and Design, which includes large engineering design-build labs and accessible building data for teaching and learning – including strain gauged of primary beams allowing our structures students to study the movement of the building, and instrumented solar and heat pump systems generating data for students studying energy systems.
- Increased research funding in the faculty by 18% over (2018-2020) with an 38% increase in Category 3 (industry) grant funding.

UBC

- Marshall Bauder Professorship in Engineering Economics, Business and Management training 2015-2017, in recognition of leadership of the Master of Engineering Leadership and the Master of Health Leadership and Policy in the Faculty of Applied Science, and the 'Global Engineering Leadership' Course Series.
- Natural Science and Engineering Research Council of Canada Chair for Women in Science and Engineering (CWSE), BC/Yukon 2010-2015. Leader of CWSE Network 2011-2015.
- Lead PI, CHARM: Collaborative, Human-focused, Assistive Robotics for Manufacturing CRD with over $1M funding 2010-2015.
- Led the curriculum design and development of the Bachelor of Applied Science in Biomedical Engineering, approved by the UBC Board of Governors in December 2016 and co-led the creation of the School of Biomedical Engineering jointly held between the Faculty of Applied Science and Faculty of Medicine, launched on July 1, 2017.
- Led the curriculum design, development and implementation of eleven new 1-Year Professional Master programs with new degree designations. The Master of Engineering Leadership (MEL) (Advanced Materials Manufacturing, Clean Energy, Dependable Software Systems, Green Bioproducts, Integrated Water Management, Naval Architecture, Urban Systems) and the Master of Health Leadership and Policy (MHLP) in Seniors Care, launched January 2016. These professional programs were developed and are delivered in partnership with the UBC Sauder School of Business to provide all MEL and MHLP students with a common platform of management, business and leadership development. Each program is designed through consultation with industry leaders (CEOs, VPs and Directors of engineering and health organizations) to form the program along a specific industry value chain that is aligned with a cluster of research strength within the Faculty. Three further programs: the MEL in High Performance Buildings, the MEL in Natural Resource Engineering, and the MHLP in Clinical Education were approved in 2018 by the BC Ministry of Advanced Education.
- Introduced the Verna Kirkness program to UBC Applied Science to provide a pathway for indigenous high school students to experience university and be mentored in a research group.
- Developed and implemented the Coordinated International Experience program in Applied Science to

sharply increase the number of undergraduate students doing a study term abroad through a focused engineering curriculum mapping process with a select group of international partners: Technical University of Delft, Danish Technical University, Technical University of Munich, University of Glasgow, École Polytechnique Fédérale de Lausanne (EPFL), Swiss Federal Institute of Technology in Zurich (ETHZ),University of New South Wales, University of Melbourne, Monash University, University of Queensland, Griffith's University, Nanyang Technological University, National University of Singapore, Hong Kong University of Science and Technology, University of Hong Kong, City University of Hong Kong, National Taiwan University. Tripled annual student semester exchanges over a two-year period.

- Developed and delivered curriculum for APSC 461 and 462, Global Engineering Leadership to provide leadership training to engineering students in community service and international service-learning contexts, with a focus on participatory engagement with indigenous and disadvantaged communities.
- In 2013-14 worked with the leadership of the engineering undergraduate student society and key student leadership staff to develop the Engineering Inclusivity Initiative. A notable outcome was the development of the Iron Pin ceremony where all incoming students commit to a student-developed code of ethics. This ceremony is now a core part of the UBC first-year Engineering program, and has since been adopted at other Canadian Engineering schools from coast to coast - including Memorial University, the University of New Brunswick, Ryerson University, the University of Windsor, and the University of Regina. Other Canadian Engineering Schools have since initiated similar ethics, equity and inclusion ceremonies in their first-year program like the Gryphon Wing Ceremony at Guelph University. Following the implementation of this initiative, women engineering students at UBC were 20 percentage points more likely to say they feel a sense of community in engineering than female non-engineering students in their respective faculties.
- Mech2 – One of 4 faculty to jointly propose this award-winning program. Lead a team of 6 instructors to develop and deliver a new integrated second year Mechanical Engineering course that integrates the material from 5 previously separately taught courses covering Dynamics, Mathematics, Electrical Circuits, Solid Mechanics and Materials – Mech 221. This course was first delivered in the 2004/2005 academic year. MECH 2 received the ASME 2005 Curriculum Innovation Award and the UBC Alfred Scow Award for Outstanding Undergraduate Program (2006/7), and the Alan Blizzard Award (2008).
- Founding Co-coordinator of the Mechatronics program 2003. Part of a three-faculty team that proposed and developed the program curriculum.
- Leader of curriculum and laboratory development team for two mechatronics-core fourth year courses (Sensors and Actuators, and Mechatronic Systems Integration)
- Introduced a new undergraduate course, Mech 464, Industrial Robotics, which includes hands on labs for programming of a robotic system.
- Introduced a new Graduate course, Mech 524, Intelligent Robotic Systems, which includes a group project to design and build an insect-like robot based on one of the architectures discussed in class. I received repeated recognition from the Department Head for excellent teaching evaluations in this course and also for Mech 563, Robotics.
- Supervised Mech 551/552 project courses for the Electro-Mechanical Design Engineering Program (EMEC) since 1997 (with Y. Altintas). EMEC was the recipient of the Alfred Scow award for Outstanding Undergraduate Program (2002), Peter Larkin award for Outstanding Graduate Program (1998), and Teaching and Academic Learning Funding Award (1998) for the Student Resource Centre for Industrial Design Programs.
- Introduced substantial revisions to the EMEC program curriculum during 1999/2000 (with Y. Altintas).
- Founder and director of the Collaborative Advanced Robotics and Intelligent Systems Laboratory.
- Holder of the BC Packers Junior Chair in Industrial Automation, 1995-1997.

RESEARCH INTERESTS

- Human-Robot Interaction (HRI)
- Augmented reality in HRI
- Physical collaboration with robots
- Mobile robotics
- Robots in Society
- Industrial robotics, robot assistants
- Human in the loop control
- Motion planning
- Gender diversity in science and engineering

Contributions to the field

My main engineering contributions are concentrated in several specific areas in robotics and automation research. I also collaborate with social science researchers on increasing participation of Women in Science, Technology, Engineering and Mathematics:

i) **Human-Robot Interaction**. This research contributes to the development of knowledge, methods, and algorithms for natural, transparent HRI that enable humans and robots to interact effectively and cooperatively in unstructured, shared spaces. Motions, gestures, forces, and other cues are effectively used by dyads, as well as larger teams, working together to manage cooperative tasks – particularly in situations where noise, distance, or other barriers preclude verbal

communication. Other channels, such as physiological sensing, can provide cues around readiness and satisfaction. These cues signal transition-related information essential to the collaboration flow such as: turn taking/giving, role changes (e.g., leader/follower, instructor/trainee) and state changes (e.g., ready/waiting/busy, unsure/confident). Communication through natural cues facilitates common understanding of shared task goals, which in terms leads to increased productivity and safety in collaborative robotics. This work results in the development of intuitive, safety-based control strategies for human robot interaction utilizing input from kinematic, kinetic, vision-based and physiological-based data sources. We demonstrated the first reported closed-loop, affect-based, human robot control system. My team received the best paper award at the 2014 Human Robot Interaction Conference (widely recognized as the top international conference in the area), for our work on gaze cues for object handover between human and robot pairs. I am the co-author of the chapter on Physical Human Robot Interaction in the Robotics Handbook (Springer, 2016) and have completed another chapter on HRI for Springer.

I am the lead CI on a 2020 Australian Research Council Discovery Project, "Advancing Human–robot Interaction with Augmented Reality" and am collaborating with Japanese AI company, Cross Compass Ltd. to develop safe interaction methods for mobile robots operating in human populated warehouses. Prior to this, I worked with the German Aerospace Centre (DLR) to introduce human-robot interaction methods for collaborative manufacturing of large composite parts for the aerospace industry. I led a $1M NSERC Collaborative Research and Development Grant (2011-2015) with four Co-Principal Investigators at three institutions (UBC, McGill and Laval) and General Motors. This assembly-manufacturing focused project addressed the application of intelligent to collaborate both directly and physically with human co-workers in their assembly tasks as part of the production team. The project advanced methods for interacting with robotic assistants through developments in the perception, communication, control, and safe interaction technologies and techniques centred on supporting workers performing complex manufacturing tasks.

I have also applied my expertise to develop and build in my lab a unique balance robot for investigating the human vestibular system and have utilized this system with colleagues in kinesiology for assessing and training human balance. I have also worked in haptics and teleoperation where dynamic modelling of interaction compliance is key for interactive tasks in applications like surgical robotics. This research has led to novel methods for improving the kinaesthetic realism and stability of haptic rendering of serial link devices.

ii) **Trajectory Planning and Jerk limited motion**. I have designed a suite of on-line jerk-limited trajectory motion planning algorithms, for both joint and Cartesian space motion, that have been successfully implemented on commercial robots. These algorithms allow industrial robots to run at high speeds without overtaxing the robot controllers and actuators. The smooth motion improves industrial controller tracking accuracy and is critical for certain material handling tasks, such as moving liquids in laboratory robotics applications. Thermo-CRS Robotics Ltd (Burlington Ontario), the leading Canadian supplier of robotic work cells for laboratory automation, licensed this technology from UBC and provided it with their C500 robot controller. Further work in this area has been applied to 5-Axis machining trajectory generation, and optimized trajectory pre-shaping and vibration-suppression methods were combined with full state tracking control for the controller systems at Hyundai Heavy Industries (HHI) a world leader in industrial robotics. Other work has demonstrated optimized motion planning for redundant, two-armed robot machining systems and other dual-arm manipulation tasks.

iii) **Vision-guided motion planning and visual servoing**. This work created novel methods for selecting rendezvous-points for robotic interception of moving objects, resulting in a significant improvement over previous approaches. Extensions of this work have led to new methods for identifying surveillance locations for target interception and vision-based robot motion training. The methodology provides a framework by which any optimal, or sub-optimal, robot trajectory planner can be used to its best advantage. The work is targeted for researchers and developers of flexible automation work cells. For example, working with Braintech Canada Inc. we developed a vision guided bin picking system in partnerships with ABB (the world's largest producer of industrial robots) and Toyota USA for automobile parts. This effort including dynamic collision avoidance, visibility computation, visual servoing and grasp planning. Work supported by Hyundai Heavy Industries, allows model-free interception and tracking of moving targets in complex, unstructured environments, with minimal setup time. The work includes fast methods for reacquiring lost targets due to visual occlusions.

iv) **Recruitment and Retention of Women in Science and Engineering**. As NSERC Chair for women in science and engineering for the BC/Yukon region I developed and implemented best practices and programs for increasing the participation of women in science and engineering. I have developed validated tools for measuring the efficacy of interventions to support women in science and engineering and to increase gender diversity awareness. A significant outcome of this work is that 30% of the UBC first year engineering class is female (a 60% increase over 5 years), and 40% of the Engineering Assistant Professors are women (up from 20% over 3 years). This work has been recognized with awards from Engineers Canada, the Vancouver YWCA, the Women's Executive Network (WXN), and the Vancouver Board of Trade. I am a PI in a 7 year (2017-2014) $CAD2.7 M grant funded by the Social Science and Human Research Council of Canada, 'Engendering Stem Success' which aims to translate this success across Canada and internationally through the entire Science, Technology, Engineering and Mathematics pipeline. More recently, I am co-founder and current Deputy Chair of the Engineering for Australia Task Force that brings together Universities, Government Advisors, Industry Associations and Educational Experts, to bring an evidence-based strategic approach to increasing the awareness and participation of girls in engineering starting from early education.

INTERNATIONAL CONFERENCE ORGANIZATIONAL ACTIVITIES

- Honorary Chair, 2021, Australian Conference on Robotics and Automation.
- Program Committee, 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems.

- Program Committee, 2020 We Robot Conference.
- Video Session Chair, 2019, IEEE International Conference on Robotics and Automation
- Program Committee, 2019 We Robot Conference.
- Forum co-organizer, Social Robotics, 2018 IEEE International Conference on Robotics and Automation
- Organizing Committee, 2017 RosCon Conference.
- Local Arrangements Committee, 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems.
- Workshop co-organizer, Best practices in designing effective roadmaps for robotics innovation, 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems.
- Workshop co-organizer, Human-Robot Interaction in Collaborative Manufacturing Environments (HRI-CME), 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems.
- Session Chair, "Enabling Organisational Systems and Processes, Gender Summit 3, Washington DC, 2013.
- Program Committee (in person meeting), 2013 IEEE/ACM Conference on Human Robot Interaction.
- Program Committee (in person meeting), 2012 IEEE/ACM Conference on Human Robot Interaction.
- Local Organization Committee, 2010 ASME International Mechanical Engineering Conference and Exposition.
- Session co-organizer – Emotional Cues in Human-Robot Interaction– RO-MAN 06: The 15th IEEE International Symposium on Robot and Human Interactive Communication, 6-8 September 2006 University of Hertfordshire, Hatfield, United Kingdom.
- Session co-organizer – Networked Control systems – American Control Conference, June 4-6, 2003, Denver, Colorado.
- Session co-organizer – Networked Control Systems – American Control Conference, May 8-10, 2002, Anchorage, Alaska.
- Session organizer - Active Sensors and Control with Data Uncertainties - American Control Conference, June 25-27, 2001, Washington, D.C.
- Program Committee Member (America), 2001 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM'01) Como, Italy.
- Local Chair, Design Engineering and Education (DEEd 2000) Symposium, January 7-8, 2000, Vancouver, B.C.
- Local Arrangements Chair, National Science Foundation Manufacturing and Design Conference, January 3-6, 2000, Vancouver, BC.
- Conference Co-chair and Director of Academic and Research track for the "Women in the Workplace: Achieving Harmony", The 1998 "More Than Just Numbers Update Conference" and the 1998 "Canadian Coalition for Women in Engineering in Science and Technology Conference", May 21-23rd, 1998, Vancouver, BC.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Memberships in scholarly societies

- American Society for Engineering Education, Engineering Deans Council, Member of International Committee, 2020-Present
- Canadian Academy of Engineers (2016), Member of International Committee, 2018-present.
- American Society of Mechanical Engineers (ASME), Member, 1995-Present, Fellow 2009. Panel Chair, Computer, Communications and Control Panel, Dynamic Systems and Control Division, 1999-2001. Co-Chair 2001-2002.
- Institute of Electrical and Electronics Engineers (IEEE), 1995-Present, Senior Member 2016.

Memberships in other societies, including offices held and dates

- Registered member of the Association of Professional Engineers and Geoscientist of British Columbia (APEGBC), since 1993. Division for Advancement of Women in Engineering and Geoscience (DAWEG) Advisory Committee Member (2003-2015)- Past Chair (99/00), Co-Chair (98/99), Vice-Chair (97/98), School Interaction Coordinator (95/96, 96/97).

Memberships in other committees, including offices held and dates

- Founding Member, Engineering for Australia Task force, 2019-2022, Chair 2019-2020, Deputy Chair 2021-2022.
- Member, Australian Council of Engineering Deans 2018- 2022, Deputy Chair, 2019-2020, Executive member 2021-present.
- Member, Go8 Engineering Deans Council, 2018 - 2022, Deputy Chair 2020-2021, Chair 2021-2022.
- Member, Global Engineering Deans Council, 2018- 2022, Elected to Executive Committee, 2019-2022.
- Member, Australasian Institute of Mining and Metallurgy Education Task Force, 2018-2019.
- Member, Task force on Women in Engineering, APEGBC Council Subcommittee, 2013-2014.
- Member, Engineers Canada Women in Engineering Committee (Board Committee), 2011-2015.
- Member, Engineers Canada Women in Engineering Advisory Group, 2010-2011.

- Steering Committee, Provincial Action Network for SWIFT –Supporting Women in InFormation Technology (Sponsored by the NSERC Chair for Women in Science and Engineering BC/Yukon), February 1999.

SELECTED SERVICE ACTIVITIES

Monash

- Vice-Chancellor's Executive Implementation and Oversight (VCEIO) Committee, 2022
- Vice-Chancellor's Executive Committee, 2018-2022
- Board Member, Monash-IITB Academy, 2021-2022.
- Search Committee, Dean Faculty of Information Technology, 2021.
- Review Committee, Monash Sustainable Development Institute, 2021.
- Search Committee, Vice President Research, Monash Suzhou, 2021.
- Search Committee, Associate Dean Education, Monash Suzhou, 2020.
- Search Committee, Director and Chair, Woodside Future Lab, 2019.
- Search Committee, Director, Woodside Energy Transitions Partnership, 2019.
- Search Committee, Director, Monash Food Innovation 2019.
- Search Committee, Director, Monash Sustainable Development Institute, 2018-2019.
- Athena Swan Advisory Committee, 2018-2020.
- Student Academic Services Review, 2018-2019.
- Scale and Focus Steering Committee, 2018.
- Search Committee, Director of Business Development, DVC Enterprise Office, 2018.
- Search Committee, Vice-President (Campus Infrastructure and Services), 2018.

UBC

- Organizing Committee, 100 Years Wise, UBC Centennial Event, September 2015-March 2016.
- Student Academic System Initiative Steering Committee, 2015-2017.
- Graduate Records and Admission Software Program Steering Committee, 2014-2017.
- Enrolment Executive Committee, 2013-2017.
- Search Committee, Dean of Applied Science (Elected) 2012-2013.
- Faculty Association Nomination Committee 2011, 2012.
- Faculty Association, Status of Women Committee, 2010-2013.
- Rising Stars of Research Advisory Committee 2010.
- ICICS Strategic Planning Committee, November 2007-February 2008.
- ICICS Advisory Committee, November 2007-2009 (two-year term).
- University Faculty Research Awards Committee member, 2006-2009.
- Advisory Committee, A Report On The Working Climate Of The Faculty Of Science, Jan 2005- June 2007.
- Evaluator/Advisor, December 6th Memorial Committee Design Competition, 2005-2006.
- Member of the Business, Resource and Industry Panel for PIMS, June 1996 - August 1997.
- Local Advisory Committee for the Pacific Institute of Mathematical Sciences, May 1996 - August 1997.

Journal Reviewer

Editorial Board: Current Robotics Reports (Springer) 2020-Present.

Reviewer: Adaptive Control and Signal Processing, Autonomous Robots, Control Engineering Practice, Engineering Applications of Artificial intelligence, IEEE Robotics and Automation Letters, IEEE Transactions on Haptics, IEEE Transactions on Affective Computing, IEEE Transactions on Control Systems Technology, IEEE Transactions on Fuzzy Systems, IEEE Transactions on Automation Science and Engineering, IEEE Transactions on Robotics, IEEE Transactions on Systems - Man and Cybernetics, IEEE/ASME Transactions on Mechatronics, International Journal - Control and Intelligent Systems, International Journal of Production Research, International Journal of Robotics Research, International Journal of Social Robotics, Journal of Mechatronics, Robotics and Computer Integrated Manufacturing, Proceedings of the Institution of Mechanical Engineers Part I - Journal of Systems and Control Engineering, Transactions of the American Society of Mechanical Engineers (ASME) - Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME - Journal of Manufacturing Science and Engineering, Transactions of the ASME - Journal of Mechanical Design

Conference Reviewer

IEEE International Conference on Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE-RAS International Conference on Humanoid Robots (Humanoids), ACM/IEEE International Conference on Human Robot Interaction (HRI), IEEE International Symposium on Robot and Human Interactive Communication (RoMan), International Federation of Automatic Control World Congress, IEEE/ASME Advanced Intelligent Mechatronics Conference (AIM), IEEE Conference on Decision and Control (CDC), ASME International Mechanical Engineering Congress (IMECE), American Control Conference (ACC).

Selected Agency Reviews

- Australian Research Council (ARC) Excellence in Research for Australia (ERA) Peer Reviewer, Artificial Intelligence and Robotics, 2018, Laureate Fellow reviews 2022.
- Review Panel, Natural Science and Engineering Research Council of Canada (NSERC) Vanier Scholar Awards (national competition for top Ph.D. Students in Science and Engineering), 2015-2017.
- NSERC Design Chair (site visit), November, 2016.
- European Union 7th Framework Programme, Integrating Project Review – SAPHARI - Safe and Autonomous Physical Human-Aware Robot Interaction: one of three annual reviewers for this four-year, 10M Euro project. Each review includes a site visit to one of the project partners: Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Oberpfaffenhofen, Germany, February 5-6, 2013, CNRS-LAAS, Toulouse, France, February 6-7, 2014, La Sapienz, Rome, Italy, February 26-27, 2015, Augsburg and Oberpfaffenhofen, Germany, December 11-12, 2015.
- European Union 6th Framework Programme - First and second annual reviews of the research project PHRIENDS, Physical Human-Robot Interaction: DepENDability and Safety. I was one of two reviewers on this three-year, 3.5M Euro project. Each review includes a site visit to one of the project partners: KUKA Robotics, Augsburg, Germany, November 19, 2007, University of Pisa, Italy, January 23, 2009.
- NSERC Chairs for Women in Science and Engineering: 5 Year Review (Ontario Chair), June 2008, 3 Year Review (Prairie Chair), December 2008.
- NSERC/Canada Council for the Arts New Media Initiative Panel Member (Strategic Grant Competition), 2007-2010.
- National Science Foundation (US) Interdisciplinary Graduate Education and Research Training (IGERT) Review Panel, Washington DC, July 15/16 2004.
- National Science Foundation (US) 6th Year Site Visit Team and Review Panel for the Engineering Research Centre on Reconfigurable Manufacturing at the University of Michigan, Ann Arbor, MI, USA, May 2002.
- IWT (Vlaams Instituut voor de bevordering van het Wetenschappelijk-Technologische onderzoek in de industrie) Flemish Government (Belgium). ITA-II panel member on Visualization and Photonics, January 21-22, 1999, in Brussels, Belgium.
- BC-Advanced Systems Institute Forestry Innovation Development Fund Proposal Review, May 1998.

External Reviews for Promotion and Tenure

- University of Minnesota, 2021
- University of Western Sydney, 2021
- National University of Singapore, 2019
- University of Toronto 2007, 2012, 2018
- Queen's University Belfast, 2018
- Deakin University, 2017
- Technical University of Munich, 2016, 2017
- Queen's University, 2014
- Johns Hopkins, 2014, 2018
- University of Waterloo, 2014
- University of Calgary, 2013
- University of Alberta, 2012
- Memorial University of Newfoundland, 2011, 2021
- University of Wisconsin, 2010
- Vanderbilt University, 2010

External examiner

- Margaret Tonkin, Socially responsible design for social robots in public spaces, Ph.D., University of Technology Sydney, 2021.
- Costanza Messeri, Enhancing the Quality of Human-Robot Cooperation through the Optimization of Human Well-being, Safety and Productivity, Ph.D. Politecnico Milano, 2021.
- Katheryn Lockhorst, Dispelling stereotypes and building capacity: repairing the leaky pipeline between high school and post-secondary engineering education through participatory action research, Ph.D., Royal Roads University, 2018.
- Camilo Quintero, Pointing gestures for Cooperative Human-Robot Manipulation Tasks in Unstructured Environments, Ph.D., University of Alberta, 2017.
- Oscar Bentotage, Design and implementation of a Relative Localization System for Ground and Aerial Robotic Teams, Ph.D., Memorial University, 2015.
- Mohammed Rokonuzzaman, Discrete Event Development Framework for Highly Reliable Sensor Fusion Systems, Ph.D, Memorial University, 1999.
- Yuqiang Zhang, Real-Time Multi-Tasking Control System for a Dexterous Robot Hand, M.A.Sc., Simon

Fraser University, 1998.

Consultant

- Creo Products Ltd., July-September, 2004.
- Insurance Corporation of British Columbia, Road Safety Brake Model, Simulator Design Phase I and II, May 1998 - February 1999.
- Insurance Corporation of British Columbia, Bailey vs. ICBC, (Accepted by the Supreme Court of British Columbia as an expert in Mechanical Engineering) June 2-5, 1992.

PHD STUDENTS

Student Name	Program Type	Year		Principal Supervisor	Co-Supervisor(s)
		Start	Finish		
Ph.D.					
Daniela Constantinescu	Ph.D.	1998	2004	S. Salcudean	E. Croft
Michael Naish[3,6]	Ph.D.	1999	2004	B. Benhabib (UT)	E. Croft
William Owen[3,6]	Ph.D.	2001	2005	B. Benhabib (UT)	E. Croft
Dana Kulic[3]	Ph.D.	2002	2005	E. Croft	
Burak Sencer	Ph.D.	2005	2009	Y. Altintas	E. Croft
Ambrose Chan[3,9]	Ph.D.	2009	Withdr	E. Croft	Jim Little
Sina Radmard	Ph.D.	2009	2016	E. Croft	Jim Little
AJung Moon[9,10]	Ph.D.	2012	2017	E. Croft	H.M.F. Van der Loos
Tiantian Shen	Ph.D. (visiting)	2012	2012	G. Chesi (Univ. of Hong Kong)	E. Croft
Matthew Pan[3]	Ph.D.	2012	2018	E. Croft	
Minhua Zhang	Ph.D. (visiting)	2013	2014	M. Meng (Chinese Univ. of HongKong	E. Croft
JoonYoung Kim	Ph.D.	2013	2017	E. Croft	
Sara Sheikholeslami[11]	Ph.D.	2017		E. Croft	H.M.F. Van der Loos
Maram Gamal[3,12]	Ph.D.	2017		E. Croft	H.M.F. Van der Loos, D. Kulic
Liam Roy	Ph.D.	2022		D. Kulic	E. Croft
Richard Attfield	Ph.D.	2022		E. Croft	D. Kulic
Morris Gu	Ph.D.	2022		D. Kulic	E. Croft
Haoyang Jiang	Ph.D.	2022		E. Croft	M. Burke

MASTERS STUDENTS

Student Name	Program Type	Year		Principal Supervisor	Co-Supervisor(s)
		Start	Finish		
M.A.Sc./M.Sc.					
Geoff Liggins	M.A.Sc.	1993	1998	S. M. Calisal	R. Gosine
Gurjeet Singh	M.A.Sc.	1994	1996	C. W. de Silva	E. A. Croft
Setiawan Kurnianto	M.A.Sc.	1994	1997	C.W. de Silva	E.A. Croft
Boyd Allin	M.A.Sc.	1995	1997	E. A. Croft	C. W. de Silva
Matthew O'Dor[1]	M.A.Sc.	1995	1998	E. A. Croft	C. W. de Silva
Michael Naish[2,3]	M.A.Sc.	1996	1998	E.A. Croft	
Daniela Constantinescu	M.A.Sc.	1996	1998	E.A. Croft	
Dejan Miljanovic	M.A.Sc.	1997	1999	E.A. Croft	
Jason Elliot[3]	M.A.Sc.	1999	2001	E. Croft	
Damien Clapa[3]	M.A.Sc.	1999	2004	E. Croft	A. Hodgson
David Langlois[3]	M.A.Sc.	1999	2001	E. Croft	
Sonja Macfarlane[3]	M.A.Sc.	1999	2001	E. Croft	
Greg Forrest[3]	M.A.Sc.	2000	2004	A. Hodgson	E. Croft
William Owen[4]	M.A.Sc.	1999	2001	E. Croft	
Tao Sang[1]	M.A.Sc.	2002	2005	E. Croft	
Jonathan Levesque	M.A.Sc.	2004	Withdrew	A. Hodgson	E. Croft
Kati Radkhah[6]	M.Sc. (visiting)	2006	2007	O. von Stryk (Darmstadt)	E. Croft
Ambrose Chan[2,3]	M.A.Sc.	2006	2009	E. Croft	J. Little

Donna Dupuis[3]	M.A.Sc.	2006	2009	S.Fels (departmental only)	E. Croft, J. Little
Matthew Baumann	M.Sc.	2006	2009	J. Little	E. Croft
Jeswin Jeyasurya[3]	M.A.Sc.	2008	2011	E. Croft	H.M.F. Van der Loos, A. Hodgson
Joseph Hall	M.A.Sc.	2008	2011	E. Croft	H.M.F. Van der Loos, Karon Maclean
Tom Huryn[3]	M.A.Sc.	2009	2012	H.M.F. Van der Loos	E. Croft, J.S. Blouin
Davide de Carli[6] (Thesis only)	M.A.Sc. (visiting)	2009	2009	Antonio Bicchi (University of Pisa)	E. Croft
Matthew Pan[3]	M.A.Sc.	2009	2012	E. Croft	K. Maclean
AJung Moon	M.A.Sc.	2009	2012	H.M.F. Van der Loos	E. Croft
Wesley Chan	M.A.Sc.	2010	2012	E. Croft	H.M.F. Van der Loos
Eric Pospisil[3]	M.A.Sc.	2010	2014	E. Croft	H.M.F. Van der Loos, J. S Blouin
Jenny Sullivan	M.A.Sc.	2011	2015	E. Croft	H.M.F. Van der Loos, A. Hodgson
Benjamin Blumer[3]	M.A.Sc	2012	2016	E. Croft	H.M.F. Van der Loos
Tina Hung	M.A.Sc	2012	2015	H.M.F. Van der Loos	E. Croft
Philip Wang[3]	M.A.Sc	2012	2016	E. Croft	H.M.F. Van der Loos, J. S Blouin
Sara Sheikholeslami	M.A.Sc.	2014	2017	E. Croft	
Vidar Skjervoy, (thesis only)	M.Sc. (visiting)	2015	2015	E. Croft	
Jaehyun Shim	M.A.Sc.	2015	2017	E. Croft	
Noah Kramer (thesis only)	M.E. (visiting)	2016	2017	E. Croft	
Nicholas Hetherington	M.A.Sc.	2018	2020	E. Croft	H.M.F. Van der Loos
M.Eng.					
Frank Fung	M.Eng.	1999	2001	E. Croft	
Erwin Tang	M.Eng.	2002	2005	E. Croft	
Susana Zoghbi	M.Eng.	2008	2011	E. Croft	H.M.F. Van der Loos
Aidin Mirsaeidi (coursework advising only)	M.Eng.	2011	2012	E. Croft	
Ergun Calisgan	M.Eng.	2010	2014	E. Croft	H.M.F. Van der Loos
Electro Mechanical Design Engineering[5] Graduate Students Supervised:				**Industrial/Primary Supervisor**	**Co-Supervisor(s)**
Dana Kulic	M.Eng.	1997	1998	Henry Voss (Ballard)	E.A. Croft, Y. Altintas
Rey Lim	M. Eng.	1998	1999	J. A. McEwen (Western Clinical)	E. A. Croft, T. Hodgson
Christopher Lane	M. Eng.	1998	1999	J. A. McEwen (Western Clinical)	E. A. Croft, T. Hodgson
Jonathan Kuo	M. Eng.	1998	1999	R. Green (Neptune Dynamics)	E. A. Croft
Kurt Kolb	M. Eng.	1998	1999	R. Green (Neptune Dynamics)	E. A. Croft
Alfred Wong	M. Eng.	1999	2000	Z. Gelbert (TRIUMF)	S. N. Rogak, E. A. Croft
Ray Wong	M. Eng.	1999	2000	Z. Gelbert (TRIUMF)	S. N. Rogak, E. A. Croft
Tung Moe Chan	M.Eng.	1999	2000	R. Bailey (Ballard)	E. A. Croft
Mark Saunders	M.Eng.	1999	2000	R. Bailey (Ballard)	E. A. Croft
Gavin Ho	M. Eng.	2000	2001	S. Pelton (Pelton)	F. Sassani, E. A. Croft
Geoff Crocker	M. Eng.	2000	2001	S. Pelton (Pelton)	F. Sassani, E. A. Croft

Lee Madruga	M. Eng.	2000	2001	R. Bahraty (RMR)	E. A. Croft, G. North
Thomas Lawy	M. Eng.	2000	2001	R. Bahraty (RMR)	E. Croft. G. North
Christopher Liu	M. Eng.	2001	2002	R. Bahraty (RMR)	E. A. Croft
Thomas Martin	M. Eng.	2001	2002	R. Bahraty (RMR)	E. A. Croft
Neil Allyn	M. Eng.	2001	2002	M. Ellens (Teleflex)	E. A. Croft
Cecilia Tang	M. Eng.	2001	2002	M. Ellens (Teleflex)	E. A. Croft
Duran Cheung	M. Eng.	2004	2005	R. Ancimer (Westport)	E. A. Croft
Navid Boostani	M.Eng.	2004	2005	Chris Mytting (Teleflex)	E. A. Croft
Brian Dowling	M.Eng.	2004	2005	Chris Mytting (Teleflex)	E. A. Croft
Mark Leusink	M.Eng.	2005	2006	E. A. Croft	X. Lu, B. Stoeber
David Lonneberg	M.Eng.	2005	2006	E. A. Croft	X. Lu, B. Stoeber
Nima Nibavi	M.Eng.	2005	2006	Shahram Tafazoli	E. A. Croft
Edmond Cheung	M.Eng.	2005	2006	Shahram Tafazoli	E. A. Croft

[1] Supported by an NSERC Postgraduate Industrial Fellowship.
[2] Winner of the Gordon McNabb Fellowship for students working in the area of Intelligent and Robotic systems, NSERC PGSA and PGSB Holder.
[3] NSERC PGS/CGS Holder.
[4] BC Science Council GREAT Scholarship Holder.
[5] Students in Electro-Mechanical Design Engineering (EMEC) complete 12 credits of supervised graduate level project work (MECH 551/552) in collaboration with an industrial supervisor. Students must present and defend a dissertation on this work before their M.Eng. Examination committee.
[6]Although students were registered at another university, they spent a substantial time doing research in my laboratory under my supervision (Owen spent majority time in my laboratory). These students all published their work with me in conference or journal publications.
[7]Transfered from M.A.Sc. to Ph.D. in Fall 08.
[8]Pacific Century Graduate Fellowship Winner
[9]UBC 4-Year Fellowship Holder.
[10]Vanier Award Winner.
[11]Two year extension: internship and leave of absence.
[12]One year extension: parental leave.

POSTDOCTORAL ASSOCIATES

- Akansel Cosgun, July 2020–2022.
- Wesley Chan, July 2017–June 2022.
- Camilo Perez Quintero June 2017–December 2018.
- Justin Hart, September 2013–December 2016.
- Brian Gleeson, May 2011–February 2014.
- Amir Haddadi, October 2011–Feb 2013.
- Chris Parker, June 2009–July 2012.
- Simon Leonard, January 2007–May 2009.
- Dana Kulic, January–July 2006.

FUNDED RESEARCH PROJECTS

Granting Agency	Subject	$ Per Year	Year	Lead Investigator	Co-Investigator(s)
Foundation for Australia-Japan Studies	Socially Conformant Behaviours for Autonomous Robots Navigating in Dynamic, Human-Populated Environments,	89000	2021	W. Chan	E. Croft, D. Kulic, A. Pasquali, O. Witkowsi.
Australian Research Council (ARC)	Discovery Project Advancing Human–robot Interaction with Augmented Reality	$120,000	2020-2022	E. Croft	T. Drummond M. Van der Loos

Granting Agency	Subject	$ Per Year	Year	Lead Investigator	Co-Investigator(s)
ARC	Centre of Excellence for Robotic Vision	$332,360	2014-2020	P. Corke	Drummond, T., Carneiro, G., Gould, S., Hartley, R., Li, H., Mahony, R., Milford, M., Reid, I. D., Shen, C., Upcroft, B., Wyeth, G. F., van den Hengel, A., Chaumette, F., Dellaert, F., Newman, P., Pollefeys, M., Torr, P., Davison, A. & Croft, E.
MITACS	The Future of Robots in Factories	60,000	2017-2018	E Croft	M. Van der Loos
UBC-APSC	Research Support for Administrators	80,000	2017-2018	E. Croft	
Natural Sciences and Engineering Research Council (NSERC) of Canada CREATE	NSERC CREATE in Designing for People (DFP): Crossdisciplinary Program in Interactive Computational Technology	300,000	2017-2022	K. Maclean	E. Croft and 9 others
UBC-RFSG	Research Faculty Support for Assistive Technology and Human Sensorimotor Systems in ICICS	50,000	2017	E. Croft and D. Pai	M. Van der Loos, J.S. Blouin, Miriam Spering
SSHRC Social Sciences and Humanities Research Council (SSHRC) of Canada Partnership Grant	Engendering success in STEM: a research consortium for gender equality in science and technology	350,000	2017-2024	T. Schmader	E. Croft and 11 others
NSERC Discovery	Building Blocks for Human Robot Interaction	25,000	2017-2022	E. Croft	
NSERC	National Network of Chairs for Women in Science and Engineering	80,000	2014-2019	E. Croft (2014-2015) C. Mavriplis (2016-2019)	Annemieke Fahrenhorst (Manitoba), Catherine Mavriplis (Ottawa), Tamara Franz-Odendall (Mt. St. Vincent)
UBC-APSC	Research Support for Administrators	40,000	2014-2017	E. Croft	
SSHRC Partnership Development Grant with Engineers Canada and others	Engendering Engineering Success	78,000	2013-2016	E. Croft	T. Schmader (UBC), M. Innes (Alberta), V. Davidson (Guelph)
Peter Wall Institute for Advanced Studies	FEATHERS: Functional Engagement in Assisted Therapy through Exercise Robotics	115,000	2012-2015	H.F.Machiel Van der Loos	Elizabeth Croft, Lara Boyd Naznin Virji-Babul Nicola Hodges Heather Branscombe Judit Spence
NSERC Discovery	Building Blocks for Human Robot Interaction	26,000	2012-2017	E. Croft	

Granting Agency	Subject	$ Per Year	Year	Lead Investigator	Co-Investigator(s)
NSERC	National Network of Chairs for Women in Science and Engineering	50,000	2011-2013	E. Croft	Annemieke Fahrenhorst (Manitoba), Catherine Mavriplis (Ottawa), Nadia Ghazzali (Laval), Tamara Franz-Odendall (Mt. St. Vincent)
NSERC CRD with GM Canada Ltd.	CHARM, Collaborative, Human-focused, Assistive Robotics for Manufacturing, with GM Canada Ltd.	300,000/yr Grant 25,000/yr Overhead	2011-2015	E. Croft	F. Ferrie (McGill) C. Gosselin (Laval) D. Laurendeau (Laval) K. Maclean R. Menassa (GM) J. Alacazar (GM)
NSERC	Chair for Women in Science and Engineering BC/Yukon	140,000 (70,000 NSERC 70,000 Industry)	2010-2015	E. Croft	
NSERC/UBC	Postdoctoral Students Support for NSERC CWSE Program	45,000	2010-2015	E. Croft	
NSERC Pacific	Creating Connections Symposium for BC Women in Engineering	6000	2009	E. Croft	Kerry Black, Erin Biddlecombe, Anja Lanz, Jennifer Pelletier,
CFI/BCKDF Leading Edge Fund	Expansion of ICICS Facilities in Biomedical Technologies, Emergency Decision-Support, and Global Communications Systems	12,943,900 (over 7 years)	2009-2016	N. Rajapakse	9 other principal users including Croft (1.8M attributable to Croft)
CFI-IOF	Lightweight Manipulator for Human-Robot Interaction	24,000	2010-2015	E. Croft	H.F.M. Van der Loos, J. Little
CFI/BCKDF Leaders opportunity Fund	Lightweight Manipulator for Human-Robot Interaction	162,102	2009	E. Croft	H.F.M. Van der Loos, J. Little
NSERC Strategic Grant	HALO: Transparent Guidance of Networked Interactions through a Haptic-Affect Loop	160,000	2009-2012	K. Maclean	E. Croft, J. McGrenere
NSERC Accelerator Grant	Robotic Partnerships: Multi-Modal Human Robot Interaction	40,000	2007-2010	E. Croft	
NSERC Discovery	Robotic Partnerships: Multi-Modal Human Robot Interaction	32,500	2007-2012	E. Croft	
NSERC RTI	Tools for Characterization of Human Robot Interaction	31,401	2007-2008	E. Croft	
NSERC-CRD	Evidence Collection by Real-Time Feature Tracking for Bin-Picking Applications	39,143	2007-2010	E. Croft	J. Little
Braintech Ltd. (matching with CRD)	Evidence Collection by Real-Time Feature Tracking for Bin-Picking Applications	48,894 Cash (including overhead) $10000 in kind	2006-2009	E. Croft	J. Little
ICICS	Robot Bin Picking	10,000	2007	E. Croft	J. Little

Granting Agency	Subject	$ Per Year	Year	Lead Investigator	Co-Investigator(s)
NSERC Pacific	Building Communities Symposium for BC Women in Engineering	7000	2007	E. Croft	
Jade Bridges Program/PAF	Networking Engineering Women/Building communities Symposium	9,100	2006/7	E. Croft	M. Dannon-Schaffer, A. Lanz
Professional Activities Fund (UBC)	Tri-Mentoring Program	8,000	2003-2006	E. Croft	D. Dykeman
Jade Bridges Program	Networking Engineering Women and Salary Seminar Expansion	6,000	2005/6	E. Croft	M. Wojtarowicz, D. Dykeman
NSERC Research (Operating) Grant	Integrated Methods for Safety in Advanced Robotics	27,450	2002-2007	E. Croft	
NSERC – Strategic	Virtual Machining	100,000	2001-2005	Y. Altintas	E. Croft, D. Kirkpatrick
CRS Robotics	Smooth Motion Planning	41,000 (in kind - A465 Robot) 6000 Cash	2001	E. Croft	
CFI	Institute for Computing Information and Cognitive Systems: Project - Canada-Singapore Collaborative Research in Intelligent Machines and Control	8.8 M (CFI), 22.1 M total over 4 Years	2000-2004	R. Ward	130 researchers including E. Croft
ISE (Funding paid directly to student researcher)	Investigation into the Reduction of Stick-Slip Friction in Hydraulic Actuated Machinery and Robots	12,400	1999-2000	E.A. Croft	J. McFarlane (ISE)
NSERC Research (Operating) Grant	Active Multi-Sensor Integration	24,038	1998-2002	E.A. Croft	
NSERC Equipment Grant	Sensor Integration Work-cell components	32,500	1999	E.A. Croft	
UBC	Faculty Workstation Initiative	500	1999	E.A. Croft	
BC Health Research Foundation	3D Optoelectronic Measuring System	22,890	1998	A. Hodgson	S. Salcudean, J. McEwen, D. Romilly, E. Croft
BC ASI	Visiting Fellowship, Professor B. Benhabib	7,500	1998	B. Benhabib	E.A. Croft
DAWEG/ APEGBC	Women in Engineering Research and Communication Project	2,900 (avg.)	1997-2000	E.A. Croft	
Neptune Dynamics Ltd.	Sensory Based System Module for the Inspection of Sealed Can Defects	15,000	1997	C. W. de Silva	E. A. Croft
Garfield Weston Foundation	Industrial Automation Chair in the Fish Processing Industry	120,000	1994-96	C. W. de Silva	E. A. Croft
Science Council of BC	Sensor Technology Development for the Herring Processing Industry	100,000	1994/5	C. W. de Silva	R. Gosine E. A. Croft
BC ASI	Quality Assurance Work-cell for Can-Filling Automation	10,000	1996	E.A. Croft	
UBC-NSERC	Can Filling Automation (Equipment)	11,000	1995	E. A. Croft	
NSERC	Hierarchical Workcell	12,000	1995-98	E. A. Croft	

Granting Agency	Subject	$ Per Year	Year	Lead Investigator	Co-Investigator(s)
NSERC	New Faculty Award In Industrial Automation	25,000	1995-98	E. A. Croft	

Research or equivalent contracts (indicated under COMP whether grants were obtained competitively (C) or non-competitively (NC))

Granting Agency	Subject	$ Per Year	Year	Lead Investigator	Co-Investigator(s)
Shanghai Aircraft Company	Development of a Continuum Robotic System Design for Inspection and Sealant Application within the Confined Workspace of an aircraft fuel tank	$AUD 395,589 (Total)	2021-2022	C. Chen	D. Kulic E. Croft
Hyundai Heavy Industries (Korea)	Planning and Control for Path-Invariant Time-Optimal Motions for Robots	22,000 (Direct support of Ph.D student)	2013-2017	E. Croft	
Hyundai Heavy Industries (Korea)	Speed Independent Path Control	US 45,000	2013-2014	E. Croft	
Hyundai Heavy Industries (Korea)	Vision Guided Motion Control	Y1 US 47,000 Y2 US 50,000	2012-2014	E. Croft	

INVITED SEMINARS AND KEY-NOTE TALKS

- February 4, 2022, Keynote Speaker, AJCAI 2021:The 34th Australasian Joint Conference on Artificial Intelligence (postponed due to COVID19), Why Human-Robot Interaction provides real, hard problems, Sydney, Australia.
- March 8, 2021, Keynote Speaker, Closing Ceremony, Virtual Conference on Women in STEM in the Time of the Pandemic – Facing Challenges, Finding Resilience, sponsored by The United Nations Institute for Training and Research (UNITAR), the International Federation of Engineering Education Societies (IFEES), and the Global Engineering Deans Council (GEDC).
- February 12, 2021, "Exaptec/Lets talk Robotics" (Podcast), Melbourne, Australia.
- August 23, 2020, Invited Panellist, Royal Society of Victoria "Possible Impossibles - unlocking how the role of science can shape our society" (online) Melbourne, Australia.
- August 14, 2020, Invited Panellist, “Rising to the Top” (Webinar), Global Engineering Deans Council.
- December 12, 2019, Invited Panellist, Re-Humanizing Automated Decision Making, co-hosted by the Monash Emerging Technologies Research Lab and the Data Futures Institute, Melbourne, Australia.
- December 11, 2019, Invited Speaker, Exaptec/Melbourne Robotics Group meetup, Social Work: Collaborative Human-robot Interaction, Melbourne, Australia.
- November 14, 2019, Invited Speaker, Pearcey Centenary Celebration, Future Work – Human Robot Interaction, Melbourne Australia.
- October 31, 2019, Invited Speaker, IMARC, Creating Transformative Change in the Future Engineering Workforce, Melbourne, Australia.
- October 23, 2019, Invited Panellist, Women in Engineering and STEM, Global Engineering Deans Council 2019 Conference, Santiago, Chile.
- October 3, 2019, Keynote Speaker, AusIMM Resources Education Collaboration Summit, The Future Engineering Workforce Landscape, Melbourne Australia
- September 2, 2019, Invited Speaker, COMAC Science Week, Human Robot Collaboration: Challenges and Opportunities in Advanced Manufacturing, Pudong, China.
- July 30, 2019, Invited Speaker, Hopper X, Social Work: Collaborative Human-robot Interaction, Brisbane, Australia.
- July 25, 2019 Invited Speaker, Royal Society of Victoria, Social Work: Collaborative Human-robot Interaction, Melbourne, Australia.
- May 23, 2019, Invited Speaker, ICRA 2019 Workshop on Human Movement Science for Physical Human Robot Collaboration, “Generating Meaningful Movements”, Montreal, Canada.
- December 12, 2018, SUSTech Robotic Science and Engineering Innovation Summit, “Social Work, Collaborative Behaviours that Measurably Improve Human Robot Interaction, Shenzhen, China.
- October 31, 2018, IMARC Panel Discussion: Collaborating for Change - how industry can work together to

positively promote the sector, Melbourne, Australia.

- October 31, 2018, IMARC Panel Debate: Young Leaders Forum - Making mining relevant, Melbourne, Australia.
- September 17, 2018, Panel Discussion Australian Engineering Conference, Engineers as part of the great leap forward, Sydney, Australia.
- August 15, 2018 Panel Member @ Railway Technical Society of Australasia - 20th Anniversary, Melbourne, Australia.
- Aug 1, 2018, CEDA Panel Discussion - Women in Leadership & Digital Transformation, Melbourne, Australia
- May 22, 2018, ICRA 2018, Social robotics forum keynote, Brisbane, Australia.
- March 21, 2018, Creating transformative change in engineering: goal setting, policies, and actions, University of Alberta, Edmonton AB, Canada.
- February 7, 2018, "Shared Vision - Looking at things together in Human Robot Interaction", Robotic Vision Summer School, Kioloa, NSW, Australia.
- November 6, 2017, "Towards gender diversity in Engineering: goal setting, policies, and actions" Gender Summit 11 (GS11), Montreal, QC, Canada.
- June 8, 2017, "The road less travelled" Women's Executive Network, Vancouver, BC, Canada
- March 8, 2017, "Transformative Change", Thompson Rivers University, Kamloops, BC, Canada.
- February 3, 2017, "Panel on Women in STEM", Conference Board of Canada's Quality Network for Universities, Vancouver, BC, Canada
- November 22, 2016, UBC Presidential Installation. Celebrating Discovery: Four Visionary Thinkers: A Forum hosted by Professor Santa J. Ono "Discovering what it means not to be human", http://president.ubc.ca/installation/.
- May 28, 2016, UBC 100 – What's Next, "The Future of Robotics", http://www.alumni.ubc.ca/events/whatsnext/elizabeth-croft-future-of-robotics/.
- March 8, 2016, International Women's Day – Breaking Boundaries Conference, "A Real STEM Makeover", Kelowna, BC, Canada.
- March 7, 2016, Science World Keynote Speaker, "A Real STEM Makeover", Vancouver, BC, Canada.
- February 23, 2016, Café Scientifique, "Human-Robot Interaction", Vancouver, BC, Canada.
- November 6, 2015, Keynote Speaker, Trust, Autonomy and Computational Intelligence Open Challenges Workshop, University of New South Wales, Canberra Campus, "Human-Robot Interaction", Canberra, Australia
- October 14, 2015, Panelist, STEM Talks at Science World, Vancouver, Canada.
- June 8, 2015, Panelist, Celebrating Women in Science and Engineering Event, NSERC, Ottawa, ON, Canada.
- June 2, 2015, Keynote Speaker, "The Next Generation of Women in STEM", Yukon College.
- April 16, 2015, Cyber Physical Systems Conferences (CPS Week) Keynote, "Up close and personal with human-robot collaboration", Seattle, WA, USA.
- March 2, 2015, HRI Conference – Workshop on Human Robot Teaming – Invited Speaker – "Collaborative Human-focused Assistants for Robotic Manufacturing", Portland, OR, USA.
- July 15, 2014, Keynote Speaker, STEM 2014 Conference, "Making Transformative Change", Vancouver, BC, Canada.
- June 13, 2013, HR Macmillan Space Centre, "Transforming Human-Robot Interaction", Vancouver, BC. Canada.
- April 30, 2013, BCNET 2013 Conference, Invited Panelist – "Women in IT", Vancouver, Canada.
- February 19, 2013, Aviation Leadership Forum Keynote Speaker on Diversity, Richmond, BC, Canada.
- January 17, 2013, SFU WEG, Panel Moderator, Burnaby, BC, Canada
- November 1, 2012, University of Alberta, Women In Scholarship, Engineering, Science and Technology Annual Gala and Lectureship, Keynote Speaker, Edmonton, AB, Canada.
- November 1, 2012, University of Alberta, Women In Scholarship, Engineering, Science and Technology, Panelist, Edmonton, AB, Canada.
- October 26, 2012, Diversity Workshop for Managers, University of Victoria, Victoria, BC, Canada.
- October 25, 2012, Diversity Workshop Stream (3 presentations), Association of Professional Engineers and Geoscientists of BC AGM, Victoria, BC, Canada.
- October 14, 2012, Association of Canadian Chairs of Chemical Engineering, Invited Speaker on Recruiting and Retaining Women Faculty, Vancouver, BC, Canada.
- August 3, 2012, Women in Physics Conference, Panelist, Vancouver, BC, Canada.
- April 12, 2012, EWB/DAWEG Panelist, Vancouver, BC, Canada.
- February 8, 2012, BCIT WIE, Invited Speaker, Burnaby, BC, Canada.
- January 19, 2012, SFU WEG – Panelist, Burnaby, BC, Canada.
- January 12, 2012, Women in Mining (Hosted by Fasken Martineau), Invited Speaker, Vancouver, BC, Canada.
- September 8 & December 8, 2011, Goldcorp, Women in Engineering Leadership Forum, Presenter and discussion leader, Vancouver, BC, Canada.

- November 4, 2012, SCWIST Gala, Keynote Speaker, Vancouver, BC, Canada.
- September 30, 2011, APEGGA 6th Annual Mentoring Conference, Keynote Speaker, Calgary, AB, Canada
- September 1, 2011, Teck Resources, "Human Robot Interaction – Applications to Mining", Highland Valley Copper Mill, BC, Canada.
- July 29, 2011, PACE Conference, Panelist - "Why should we care about Women in Engineering anyways?", Vancouver, BC, Canada
- June 3, 2011, Northwest Biomechanics Symposium, Panelist - "Women in Biomechanics", Vancouver, BC, Canada.
- May 5, 2011, Governor General's Innovation Roundtable at UBC, "Community Service Learning in Engineering", Vancouver, BC, Canada.
- April 29, 2011, Canadian Conference on Women in Engineering +20, "NSERC CWSE Regional Update".
- April 19, 2011, Worley Parsons Canada Board of Directors Strategy Session, "Engendering Change", Vancouver, BC, Canada.
- April 5, 2011, UBC Okanagan Campus, "Programs for Women in Science and Engineering, BC/Yukon", Kelowna, BC, Canada.
- March 3, 2011, SCWIST XX Evening panelist, Telus Science World,Vancouver, BC, Canada.
- February 28, 2011, University of Victoria, "Status of Women in Science and Engineering in Canada", Victoria, BC, Canada.
- February 1, 2011, Langara College, "Careers in Science", Vancouver, BC, Canada.
- January 19, 2011. SFU WEG Industry Panel Moderator, Burnaby, BC, Canada.
- December 4, 2009, CAURA West Regional Meeting, Panelist: "Increasing Partnerships Between Academics and Industry".
- November 8, 2007, Mechatronics Forum for the PACE (Partners for the Advancement of CAD/CAM/CAE Education) Executive Sponsor Council Meeting, with GM, EDS, Hewlett Packard, Siemens UGS PLM Software, and Sun Microsystems.
- May 16, 2005, 3rd CSME Forum on Mechatronics Education in Canada, University of Victoria: "Mechatronics at UBC: a 10 Year Report".
- November 4, 2004, Creo Products Inc: "Influencing Robot-Control Performance through Data Tuning".
- December 6, 2002, University of Michigan, College of Engineering, Control Seminar Series.
- January 21, 2002, Institute of Applied Mathematics, UBC, "Applied Mathematics in Industrial Robotics".
- May 18, 2001, 1st CSME Forum on Mechatronics Education in Canada, University of Waterloo: "Electro-Mechanical Design Engineering at UBC".
- March 22, 1996, Mathematics and Computer Science Department, UNBC, Winter 1996 Colloquium Series.

PUBLICATIONS

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Supervised students listed in bold font.

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