# BRENNA D. ARGALL

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Professor of Computer Science, Mechanical Engineering, and Physical Medicine & Rehabilitation, *Northwestern University*

Faculty Research Scientist, *Shirley Ryan AbilityLab* (formerly the *Rehabilitation Institute of Chicago*)

Fellow, Segal Design Institute, *Northwestern University*

Director, **a**ssistive & **r**ehabilitation robotics **lab**oratory (**ar**gal**lab**)　　　　http://argallab.northwestern.edu

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> ***To advance human autonomy through robotics autonomy.***
> As need increases, access decreases. Often the *more* severe a person's motor impairment, the *less* able they are to operate the very machines created to assist them. My lab endows assistive machines with customized robotics autonomy and intelligence to address this confound. By offloading control burden, we aim to increase access, ability, and independence—to advance human autonomy through robotics autonomy.

## POSITIONS and EMPLOYMENT

**Professor**　　　　　　　　　　　　　　　　　　　　　　　　　　*Sep. 2024 – present*
Department of Computer Science (CS, formerly EECS), McCormick School of Engineering
Department of Mechanical Engineering (ME), McCormick School of Engineering
Department of Physical Medicine & Rehabilitation (PMR), Feinberg School of Medicine
*Northwestern University*, Evanston IL, USA

**Associate Professor**　　　　　　　　　　　　　　　　　　　　　*Sep. 2017 – Aug. 2024*
*Northwestern University*, Evanston IL, USA

**Assistant Professor**　　　　　　　　　　　　　　　　　　　　　*Sep. 2011 – Aug. 2017*
*Northwestern University*, Evanston IL, USA

**Faculty Research Scientist**　　　　　　　　　　　　　　　　　　*Sep. 2011 – present*
*Shirley Ryan AbilityLab* (formerly the *Rehabilitation Institute of Chicago*), Chicago IL, USA
Founder and director, **a**ssistive & **r**ehabilitation robotics **lab**oratory (**ar**gal**lab**).

**Visiting Research Fellow**　　　　　　　　　　　　　　　　　　　*Dec. 2018 – Aug. 2019*
*Wyss Center for Bio and Neuroengineering*, Geneva, Switzerland

**Postdoctoral Fellow**　　　　　　　　　　　　　　　　　　　　　*May 2009 – Jul. 2011*
Learning Algorithms & Systems Laboratory, *École Polytechnique Fédérale de Lausanne (EPFL)*, Lausanne, Switzerland

**Research Intern**　　　　　　　　　　　　　　　　　　　　　　　*Summer 2008*
Autonomous Systems Laboratory, ICT Centre, CSIRO, Brisbane, Australia

**Computational Biologist**　　　　　　　　　　　　　　　　　　　*Sep. 2003 – Jul. 2004*
Laboratory of Brain and Cognition, NIMH, *National Institutes of Health*, Bethesda MD, USA

**Post-Baccalaureate IRTA Fellow**　　　　　　　　　　　　　　　　*Aug. 2002 – Sep. 2003*
Laboratory of Brain and Cognition, NIMH, *National Institutes of Health*, Bethesda MD, USA

## EDUCATION

**Ph.D. in Robotics**, Robotics Institute, *Carnegie Mellon University*, Pittsburgh PA, USA, *Mar. 2009*
   Advisors     : Brett Browning, Ph.D. and Manuela Veloso, Ph.D.
   Thesis       : Learning Mobile Robot Motion Control from Demonstration and Corrective Feedback

**Visiting Graduate Student**, *Carnegie Mellon University Qatar Campus*, Doha, Qatar, *Spring 2007*

**M.S. in Robotics**, Robotics Institute, *Carnegie Mellon University*, Pittsburgh PA, USA, *Dec. 2006*

**B.S. in Mathematical Sciences**, College of Science, *Carnegie Mellon University*, Pittsburgh PA, USA, *May 2002*
   Concentration  : Computational & Applied Mathematics
   Minors       : Biological Sciences, Music

**Visiting Undergraduate Student**, *National University of Ireland Galway*, Galway, Ireland, *Fall 2000*

## SELECTED AWARDS and HONORS

**Fellow of the American Institute for Medical and Biological Engineering**, inducted into the 2023 Class of the AIMBE College of Fellows. (Washington DC, USA, *Mar. 2023*)

**IEEE Senior Member**, elevated to senior member of the Institute for Electrical and Electronics Engineers. (*Aug, 2023*)

**Annual Meeting of the National Academy of Medicine**, Symposium on Human Health and Equity in an Age of Robotics and Intelligent Machines. Invited panelist and speaker. (Virtual, *Oct. 2021*)

**International Conference on Machine Learning,** Plenary speaker. (Virtual, *Jul. 2020*)

**NSF FRR/NRI Keynote**, annual PI Meeting for the NSF FRR/NRI program. Keynote speaker. (Washington DC, USA, *May* 2023)

**National Academy of Engineering**, Frontiers of Engineering Symposium. 1 of 100 invited participants from industry, academia, and federal labs. (Charleston SC, USA, *Sep. 2019*)

**CAREER Award**, National Science Foundation. Faculty Early CAREER Award recipient. (*Feb. 2016)*

**40 under 40**, Crain's Chicago Business. Named one of the 2016 40 under 40 class. (Chicago IL, USA, *Dec. 2016)*

**Chicago Ideas Brain Trust**, subject-matter experts who help shape the Chicago Ideas Week program. Invited member. (Chicago IL, USA, *2017-2018*)

**Encyclopedia Article**, World Book Encyclopedia entry for "Robotics". Invited author. (*2019-current*)

**U.S. National Robotics Roadmap,** CCC-supported workshops to update the Roadmap provided to Congress in 2009. Invited participant and editor. (San Francisco CA, USA, *Mar. 2016,* and Atlanta GA, USA, *Sep. 2016*)

**The Robot Revolution**, Chicago Council on Foreign Affairs and Museum of Science and Industry. Invited panelist. (Chicago IL, USA, *Nov. 2015*)

**June and Donald Brewer Junior Professor Chair**, Northwestern University. (Evanston IL, USA, *Sep. 2011*)

## TEACHING

**Machine Learning & Artificial Intelligence for Robotics** (Northwestern University, *Fall 2023, 2021, 2019, 2016, 2014, Spring 2013, 2012*). Instructor. Course design and development. (New addition to the curriculum, CS/ME 469.)

**Introductory Robotics Laboratory** (Northwestern University, *Winter 2025-2022, Fall 2017-2014, Winter 2014, 2013*). Instructor. Course design and development. (New addition to the curriculum, CS/ME 301.)

## SELECTED PUBLICATIONS

### BOOK CHAPTERS

[B1] B. D. Argall, B. Browning and M. M. Veloso. Mobile Robot Motion Control from Demonstration and Corrective Feedback. In *From Motor to Interaction Learning in Robots.* J. Peters and O. Sigaud, editors. Springer, New York, NY, 2009.

### JOURNAL ARTICLES

[J25] L. Y.C. Loke, D. R. Barsoum, T. D. Murphey and B. D. Argall. Characterizing Eye Gaze and Mental Workload for Assistive Device Control. *Wearable Technologies,* in press.

[J24] J. M. Lee, T. Gebrekristos, D. De Santis, M. Nejati-Javaremi, D. Gopinath, B. Parikh, F. A. Mussa-Ivaldi and B. Argall. Learning to Control Complex Robots Using High-Dimensional Body-Machine Interfaces. *ACM Transactions on Human-Robot Interaction*, 13(3), 1-20, 2024.

[J23] A. Pinosky, I. Abraham, A. Broad, B. Argall, T. D. Murphey. Hybrid Control for Combining Model-based and Model-free Reinforcement Learning. *International Journal of Robotics Research*, 2022.

[J22] H. Kress-Gazit, K. Eder, G. Hoffman, H. Admoni, B. Argall, R. Ehlers, C. Heckman, N. Jansen, R. Knepper, J. Křetínský, S. Levy-Tzedek, J. Li, T. Murphey, L. Riek and D. Sadigh. Formalizing and Guaranteeing* Human-Robot Interaction. *Communications of the ACM,* 64(9), 78-84, 2021.

[J21] A. Broad, I. Abraham, T. Murphey and B. Argall. Data-driven Koopman Operators for Model-based Shared Control of Human-Machine Systems. *International Journal of Robotics Research,* 2020.

[J20] D. Gopinath and B. Argall. Active Intent Disambiguation for Shared-Control Robots. *IEEE Transactions on Neural Systems and Rehabilitation Engineering,* 28(6),1497-1506, 2020.

[J19] S. Jain and B. Argall. Probabilistic Human Intent Recognition for Shared Autonomy in Assistive Robotics. *Transactions on Human-Robot Interaction,* 9(1), 2019.

[J18] B. D. Argall. Autonomy in Rehabilitation Robotics: An Intersection. *Annual Review of Control, Robotics, and Autonomous Systems,* 1, 441-463, 2018.

[J17] A. Erdogan and B. Argall. The Effect Robotic Wheelchair Control Paradigm and Interface on User Performance, Effort and Preference: An Experimental Assessment. *Robotics and Autonomous Systems,* 94, 282-297, 2017.

[J16] A. Broad, J. Arkin, N. Ratliff, T. Howard and B. Argall. Real-Time Natural Language Corrections for Assistive Manipulation Tasks. *International Journal of Robotics Research,* 36(5-7), 684-698, 2017.

[J15] P. Beckerle, G. Salvietti, R. Ünal, D. Prattichizzo, S. Rossi, C. Castellini, S. Hirche, S. Endo, H. Ben Amor, M. Ciocarlie, F. Mastrogiovanni, B. D. Argall and M. Bianchi. A Human-Robot Interaction Perspective on Assistive and Rehabilitation Robotics. *Frontiers in Neurorobotics,* 2017.

[J14]  S. Mohammed, H. W. Park, C. H. Park, Y. Amirat and B. Argall. Special Issue on Assistive and Rehabilitation Robotics. *Autonomous Robots*. 41(3), 513-517, 2017.

[J13] A. Broad, J. Schultz, M. Derry, T. Murphey and B. Argall. Trust Adaptation Leads to Lower Control Effort in Shared Control of Crane Automation. *IEEE Robotics and Automation Letters,* 2(1), 239-246, 2017.
*(*Also presented at *IEEE Conference on Automation Science and Engineering (CASE)*, Fort Worth, Texas, USA, Aug, 2016.)

[J12] D. Gopinath, S. Jain and B. Argall. Human-in-the-Loop Customization of Shared Autonomy in Assistive Robotics. *IEEE Robotics and Automation Letters,* 2(1), 247-254, 2017.
*(*Also presented at *IEEE Conference on Automation Science and Engineering (CASE)*, Fort Worth, Texas, USA, Aug. 2016.)

[J11] A. L. Pais, B. D. Argall and A. G. Billard. Assessing Interaction Dynamics in the Context of Robot Programming by Demonstration. *International Journal of Social Robotics,* 5(4): 3477-490, 2013.

[J10] B. D. Argall, B. Browning and M. Veloso. Policy Feedback for the Refinement of Learned Motion Control on a Mobile Robot. *International Journal of Social Robotics,* 4(4): 383-395, 2012.

[J9] E. L. Sauser, B. D. Argall, G. Metta and A. G. Billard. Iterative Grasp Adaptation Learning with Tactile Corrections. *Robotics and Autonomous Systems,* 60(1): 55-71, 2012.

[J8] B. D. Argall, B. Browning and M. Veloso. Teacher Feedback to Scaffold and Refine Demonstrated Motion Primitives on a Mobile Robot. *Robotics and Autonomous Systems*, 59(3-4): 243-255, 2011.

[J7] B. D. Argall, Eric L. Sauser and A. G. Billard. Tactile Guidance for Policy Adaptation. *Foundation and Trends in Robotics,* 1(2): 79-133, 2010.

[J6] B. D. Argall and A. G. Billard. A Survey of Tactile Human-Robot Interactions. *Robotics and Autonomous Systems*. 58(10): 1159-1176, 2010.

[J5] B. D. Argall, S. Chernova, M. Veloso, and B. Browning. A Survey of Robot Learning from Demonstration. *Robotics and Autonomous Systems,* 57(5): 469-483, 2009.

[J4] B. D. Argall, Z. S. Saad, and M. S. Beauchamp. Simplified Intersubject Averaging on the Cortical Surface Using SUMA. *Human Brain Mapping*, 27(1):14-27, 2006.

[J3] M. S. Beauchamp, B. D. Argall, J. Bodurka, J. H. Duyn, and A. Martin. Unraveling multisensory integration: Patchy organization within human STS multisensory cortex. *Nature Neuroscience*, 7(11): 1190-1192, 2004.

[J2] M. S. Beauchamp, K. E. Lee, B. D. Argall, and A. Martin. Integration of Auditory and Visual Information about Objects in Superior Temporal Sulcus. *Neuron*, 41:809-823, 2003.

[J1] B. D. Argall, E. Cheleshkin, J. M. Greenberg, C. Hinde, and P.J. Lin. A rigorous Treatment of a Follow-the-Leader Traffic Model with Traffic Lights Present. *SIAM Journal on Applied Mathematics*, 63(1):149-168, 2002.

## Ph.D. DISSERTATION

B. D. Argall. *Learning Mobile Robot Motion Control from Demonstration and Corrective Feedback*. Ph.D. Thesis, Robotics Institute, Carnegie Mellon University, Mar. 2009. Technical report CMU-RI-TR-09-13.

## REFEREED CONFERENCE PUBLICATIONS

[C47] D. Barsoum, M. Zhang, L. Y.C. Loke and B. Argall. Curating User-Defined Interface Maps for Robot Teleoperation. To appear in the *International Conference on Rehabilitation Robotics (ICORR)*.

[C46] F. A. Neylon, A. Thompson, R. Kalvakota, C. Fisher, F. Rizzoglio, L. Miller and B. Argall. A Customizable Fitting Protocol for the Body-Machine Interface. To appear in the *International Conference on Rehabilitation Robotics (ICORR)*.

[C45] A. Thompson, F. Rizzoglio, F. A. Neylon, D. R. Barsoum, L. E. Ammon, M. N. McCune, L. Miller and B. Argall. An Evolution of Assistive Robot Arm Control to Meet End-User Ability. In *Companion of the ACM/IEEE International Conference on Human-Robot Interaction,* Boulder, Colorado, USA, Mar. 2024.

[C44] M. Nejati-Javaremi, L. Y. C. Loke and B. Argall. Interface-Aware Assistance for 7-DoF Robot Arm Teleoperation: Case Studies of Feasibility. In *Proceedings of the International Symposium on Experimental Robotics (ISER),* Chang Mai, Thailand, Nov. 2023.

[C43] J. M. Lee, T. Gebrekristos, D. De Santis, M. Nejati-Javaremi, D. Gopinath, B. Parikh, F. A. Mussa-Ivaldi and B. Argall. An Exploratory Multi-Session Study of Learning High-Dimensional Body-Machine Interfacing for Assistive Robot Control. In *Proceedings of the International Conference on Rehabilitation Robotics (ICORR)*, Singapore, Sep. 2023.

[C42] L. Y. C. Loke, D. Barsoum, T. Murphey and B. Argall. Characterizing Eye Gaze for Assistive Device Control. In *Proceedings of the International Conference on Rehabilitation Robotics (ICORR)*, Singapore, Sep. 2023.

[C41] A. Thompson, Y. C. Loke and B. Argall. Control Interface Remapping for Bias-Aware Assistive Teleoperation. In *Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR)*, Rotterdam, The Netherlands, Jul. 2022.

[C40] M. Nejati Javaremi, S. Sinaga, Y. Jin, M. Elwin and B. Argall. The Interface Usage Skills Test: An Open Source Tool for Real-Time Quantitative Evaluation for Clinicians and Researchers. In *Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR)*, Rotterdam, The Netherlands, Jul. 2022.

[C39] D. E. Gopinath, A. Thompson and B. Argall. Information Theoretic Intent Disambiguation via Contextual Nudges for Assistive Shared Control. In *Proceedings of the Workshop on the Algorithmic Foundations of Robotics (WAFR),* College Park, Maryland, USA, Jun. 2022.

[C38] J. M. Lee, T. Gebrekristos, D. De Santis, M. Nejati-Javaremi, D. Gopinath, B. Parikh, F. A. Mussa-Ivaldi and B. D. Argall. Learning to Control Complex Robots Using High-Dimensional Interfaces: Preliminary Insights. In *Proceedings of the AAAI Fall Symposium on AI for Human-Robot Interaction*, virtual, Nov. 2021.

[C37] M. Nejati, D. Wu and B. Argall. The Impact of Control Interface on Features of Heart Rate Variability. In *Proceedings of the IEEE Engineering in Medicine and Biology Society Conference (EMBC)*, virtual, Nov. 2021.

[C36] C. Miller, T. Gebrekristos, M. Young and B. Argall. An Analysis of Human-Robot Information Streams to Inform Dynamic Autonomy Allocation. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, virtual, Oct. 2021.

[C35] D. Gopinath*, M. Nejati* and B. Argall. Customized Handling of Unintended Interface Operation in Assistive Robots. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA),* virtual, Jun. 2021.

[C34] F. Lau*, D. Gopinath* and B. Argall. A JavaScript Framework for Crowdsourced Human-Robot Interaction Experiments: RemoteHRI. In *Proceedings of the AAAI Fall Symposium on Trust and Explainability in Artificial Intelligence of Human-Robot Interaction*, virtual, Nov. 2020.

[C33] I. Abraham, A. Broad, A. Pinosky, B. Argall and T. Murphey. Hybrid Control of Motor Learning Skills. In *Proceedings of the Workshop on the Algorithmic Foundations of Robotics (WAFR),* virtual, Jun. 2020.

[C32] M. Young, M. Nejati and B. Argall. Discrete N-Dimensional Entropy of Behavior: DNDEB. In *Proceedings of the IEEE International Conference on Intelligent Robots (IROS)*, Macao, China, Oct. 2019.

[C31] M. Nejati, M. Young and B. Argall. Interface Operation and Implications for Shared-Control Assistive Robots. In *Proceedings of the IEEE-RAS-EMBS International Conference on Rehabilitation Robotics (ICORR)*, Toronto, Canada, Jun. 2019. **\*Finalist for Best Student Paper Award**

[C30] A. Broad, T. Murphey and B. Argall. Highly Parallelized Data-driven MPC for Minimal Intervention Shared Control. In *Proceedings of Robotics: Science and Systems (RSS)*, Freiburg, Germany, Jun. 2019.

[C29] M. Young, C. Miller, Y. Bi, W. Chen, and B. D. Argall. Formalized Task Characterization for Human-Robot Autonomy Allocation. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA),* Montreal, Canada, May 2019.

[C28] A. Broad, T. Murphey and B. Argall. Operation and Imitation under Safety-Aware Shared Control. In *Proceedings of the Workshop on the Algorithmic Foundations of Robotics (WAFR)*, Mérida, México, Dec. 2018.

[C27] S. Jain and B. Argall. Recursive Bayesian Intent Inference in Shared-Control Robotics. In *Proceedings of the IEEE International Conference on Intelligent Robots (IROS)*, Madrid, Spain, Oct. 2018.

[C26] M. Young, M. Nejati, A. Erdogan and B. Argall. An Analysis of Degraded Communication Channels in Human-Robot Teaming and Implications for Dynamic Autonomy Allocation. In *Proceedings of the Conference on Field and Service Robotics,* Zurich, Switzerland, Sep. 2017.

[C25] A. Broad, T. Murphey and B. Argall. Learning Models for Shared Control of Human-Machine Systems with Unknown Dynamics. In *Proceedings of Robotics: Science and Systems (RSS),* Boston, Massachusetts, USA, Jul. 2017.

[C24] D. Gopinath and B. Argall. Mode Switch Assistance To Maximize Human Intent Disambiguation. In *Proceedings of Robotics: Science and Systems (RSS),* Boston, Massachusetts, USA, Jul. 2017.

[C23] A. Erdogan and B. Argall. Prediction of User Preference over Shared-Control Paradigms for a Robotic Wheelchair. In *Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR),* London, United Kingdom, Jul. 2017.

[C22] M. Nejati and B. Argall. Automated Incline and Drop-off Detection for Assistive Powered Wheelchairs. In *Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN),* New York, New York, USA, Aug. 2016.

[C21] A. Broad and B. Argall. Path Planning under Kinematic Constraints for Assistive Robotics. In *Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS),* London, United Kingdom, Jun. 2016.

[C20] S. Jain and B. Argall. Grasp Detection for Assistive Robotic Manipulation. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA),* Stockholm, Sweden, May 2016.

[C19] S. Jain, K. Barsness and B. Argall. Automated and Objective Assessment of Surgical Training: Detection of Procedural Steps on Videotaped Performances. In *Proceedings of the International Conference on Digital Image Computing: Techniques and Applications (DICTA)*, Adelaide, Australia, Nov. 2015.

[C18] S. Jain, A. Farshchiansadegh, A. Broad, F. Abdollahi, F. Mussa-Ivaldi and B. Argall. Assistive Robotic Manipulation through Shared Autonomy and a Body-Machine Interface. In *Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR)*, Singapore, Aug. 2015.

[C17] B. Argall. Turning Assistive Machines into Assistive Robots. In *Proceedings of SPIE 9370, Quantum Sensing and Nanophotonic Devices XII*, San Francisco, California, USA, Feb. 2015. (Keynote paper)

[C16] S. Jain and B. Argall. Automated Perception of Safe Docking Locations with Alignment Information for Assistive Wheelchairs. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),* Chicago, Illinois, USA, Sep. 2014.

[C15] B. D. Argall. Modular and Adaptive Wheelchair Automation. In *Proceedings of the International Symposium on Experimental Robotics (ISER)*, Marrakech, Morrocco, Jun. 2014.

[C14] M. Derry and B. D. Argall. Extending Myoelectric Prosthesis Control with Shapable Automation: A First Assessment. In *Proceedings of the International Conference on Human-Robot Interactions (HRI),* Bielefeld, Germany, Mar. 2014.

[C13] A. Goil, M. Derry and B. Argall. Using Machine Learning to Blend User and Robot Controls for Assisted Wheelchair Doorway Navigation. In *Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR),* Seattle, Washington, USA, Jun. 2013.

[C12] M. Derry and B. D. Argall. Automated Doorway Detection for Assistive Shared-Control Wheelchairs. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA),* Karlsruhe, Germany, May 2013.

[C11] B. D. Argall and A. G. Billard. Learning from Demonstration and Correction via Multiple Modalities for a Humanoid Robot. In *Proceedings of the International Conference SKILLS*, Montpellier, France, Dec. 2011.

[C10] B. D. Argall. Continuing Robot Skill Learning after Demonstration with Human Feedback. In *Proceedings of the International Conference SKILLS*, Montpellier, France, Dec. 2011.

[C9] B. D. Argall, E. L. Sauser and A. G. Billard. Tactile Guidance for Policy Refinement and Reuse. In *Proceedings of the IEEE International Conference on Development and Learning (ICDL)*, Ann Arbor, Michigan, USA, Aug. 2010.

[C8] B. D. Argall, E. L. Sauser and A. G. Billard. Policy Adaptation through Tactile Correction. In *Proceedings of the Annual Convention of the Society for the Study of Artificial Intelligence and Simulation of Behaviour*, Leicester, UK, Mar. 2010.

[C7] B. D. Argall, B. Browning, and M. Veloso. Learning Mobile Robot Motion Control from Demonstrated Primitives and Human Feedback. In *Proceedings of the International Symposium on Robotics Research (ISRR)*, Luzern, Switzerland, Aug. 2009.

[C6] B. D. Argall, B. Browning, and M. Veloso. Automatic Weight Learning for Multiple Data Sources when Learning from Demonstration. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Kobe, Japan, May 2009.

[C5] B. D. Argall, B. Browning, and M. Veloso. Learning Robot Motion Control with Demonstration and Advice-Operators. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),* Nice, France, Sep. 2008.

[C4] B. D. Argall, B. Browning, and M. Veloso. Learning to Select State Machines using Expert Advice on an Autonomous Robot. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Rome, Italy, Apr. 2007.

[C3] B. D. Argall, B. Browning, and M. Veloso. Learning by Demonstration with Critique from a Human Teacher. In *Proceedings of the International Conference on Human-Robot Interactions (HRI)*, Washington D.C., USA, Mar. 2007.

[C2] B. D. Argall, Y. Gu, B. Browning, and M. Veloso. The First Segway Soccer Experience: Towards Peer-to-Peer Human-Robot Teams. In *Proceedings of the International Conference on Human-Robot Interactions (HRI)*, Salt Lake City, Utah, USA, Mar. 2006. (Also Carnegie Mellon University Technical Report, CMU-CS-05-161, 2005.)

[C1] Z. S. Saad, R. C. Reynolds, B. Argall, S. Japee and R. W. Cox. SUMA: An Interface for Suface-based Intra- and Inter-Subject Analysis with AFNI. In *Proceedings of the IEEE International Symposium on Biomedical Imaging: Nano to Macro,* Washington D.C., USA, Apr. 2004.

**REFEREED WORKSHOP and SYMPOSIUM PUBLICATIONS**  (selected: not published elsewhere)

[W11] A. Thompson*, M. Lee*, L. Y.C. Loke*, B. Martinez*, K. Rowland*, M. Nejati Javaremi* and B. Argall. Identifying Accessibility Barriers to Robotics Research. In *RSS 2023 Workshop on Lowering Barriers for Robotics Research*, Daegu, Korea, Jul. 2023.

[W10] M. Nejati Javaremi, M. Young and B. Argall. Interface Modality Informing Assistive Autonomy. In *ICRA 2019 Workshop on Human Movement Science for Physical Human-Robot Collaboration*, Montreal, Canada, May 2019.

[W9] D. Gopinath, P. Egli and B. Argall. A Call for Convergence of Research Directions in Assistive Robotics. In *RSS Workshop on Socially and Physically Assistive Robotics for Humanity,* Ann Arbor, Michigan, USA, Jun. 2016.

[W8] S. Jain and B. Argall. Robot Learning to Switch Control Modes for Assistive Teleoperation. In *RSS Workshop on Planning for Human-Robot Interaction: Shared Autonomy and Collaborative Robotics,* Ann Arbor, Michigan, USA, Jun. 2016.

[W7] B. D. Argall. Information Extraction under Communication Constraints within Assistive Robot Domains. In *RSS Workshop on Model Learning for Human-Robot Communication*, Rome, Italy, Jul. 2015.

[W6] B. D. Argall and T. D. Murphey. Computable Trust in Human Instruction. In *Proceedings of the AAAI Fall Symposium on Artificial Intelligence for Human-Robot Interaction,* Arlington, Virginia, USA, Nov. 2014.

[W5] M. Derry and B. Argall. A Probabilistic Representation of User Intent for Assistive Robots. In *IROS Workshop on Rehabilitation and Assistive Robotics,* Chicago, Illinois, USA, Sep. 2014.

[W4] T. D. Murphey and B. D. Argall. Towards Software-Enabled Rehabilitation. In *IROS Workshop on Rehabilitation and Assistive Robotics,* Chicago, Illinois, USA, Sep. 2014.

[W3] B. D. Argall. Machine Learning for Shared Control with Assistive Machines. In *ICRA Workshop on Autonomous Learning: From Machine Learning to Learning in Real-world Autonomous Systems*, Karlsruhe, Germany, May 2013.

[W2] T. D. Murphey and B. D. Argall. Making Robotic Marionettes Perform. In *ICRA Workshop on Robotics and Performance Arts: Reciprocal Influences*, Minneapolis, Minnesota, USA, May 2012.

[W1] B. D. Argall, E. L. Sauser and A. G. Billard. Demonstration, Tactile Correction and Multiple Training Data Sources for Robot Motion Control. In *NIPS Workshop on Learning from Multiple Sources with Application to Robotics,* Whistler, British Columbia, Canada, Dec. 2009.

**REFEREED CONFERENCE ABSTRACTS** (selected: first/last author for conferences with abstract-only proceedings)

[A2] M. Nejati Javaremi, M. Young and B. Argall. Wheelchair Interface Usage Assessment Tasks and Performance Measures for Assistive Robots. In *ACRM Annual Conference: Progress in Rehabilitation Research*, Chicago, Ilinois, USA, Nov. 2019.

[A1] B. D. Argall, Z. S. Saad, A. Martin and M. S. Beauchamp. A Comparison between Surface and Volume-based Averaging Techniques for Cross-Subject fMRI Analysis. In *Proceedings of the 33rd Meeting for the Society for Neuroscience*, Abs. 863.12, New Orleans, Louisiana, USA, November 2003.

## ADVISING and MENTORING

**Postdoctoral Fellows:**
Ahmetcan Erdogan (PMR, *2015-2017,* AVL Turkey Research and Engineering)

**PhD Students (Advisor):**
Demiana Barsoum (ME)
Larisa Loke (ME)
Fiona Neylon (ME)
Kyle Puckett (ME)
Andrew Thompson (ME)
Michael Young (ME, *on leave*)

Alexander Broad (CS, *2019*, Boston Dynamics)
Deepak Gopinath (ME, *2022,* Toyota Research Institute)
Siddarth Jain (CS, *2019,* Mistubishi Electronics Research Lab)
Mahdieh Nejati Javaremi (ME, *2023*)

**Graduate Student Research:**
Graham Clifford (Masters of Science in Robotics, *Spring 2024, Fall 2024)*
Rintaroh Shima (Masters of Science in Robotics, *Spring 2023, Fall 2023)*
Ava Zahedi (Masters of Science in Robotics, *Spring 2023, Fall 2023)*
Jongmin Lee (CS, *Winter 2020 – Summer 2023*)
Temesgen Gebrekristos (ME, *Fall 2019 – Spring 2022,* Shield AI)
Yuming (Tim) Jin (Masters of Science in Robotics, *Spring 2021, Fall 2021)*
Vishwajeet Karmarkar (ME, *Winter – Fall 2020*)
Senthil Palanisamy (Masters of Science in Robotics, *Summer – Fall 2020)*
Musheng He (Masters of Science in Robotics, *Summer 2020)*
Luxi Huang (Masters of Science in Robotics, *Summer 2020)*
Ruotong Jia (Masters of Science in Robotics, *Summer 2020)*
Christopher Miller (ME, *Fall 2017 – Summer 2020*, Motivo)
Miaoding Dai (Masters of Science in Robotics, *Fall 2018,* 3M*)*
William (Shanhe) Wang (Masters of Science in Robotics, *Fall 2018,* Onetrack*)*
Nate Kaiser (Masters of Science in Robotics, *Spring – Fall 2017,* Zoox)
Abishek Patel (Masters of Science in Robotics, *Spring – Fall 2016,* Honda Research Institute)
Mahdieh Nejati (Masters of Science in Robotics, *Spring 2015 – Fall 2015,* PhD student at Northwestern University)
Matthew Derry (CS, *Winter 2012 – Spring 2015*, Toyota)
Zhu Chen (CS, *Fall 2011, Winter – Fall 2012, Winter – Spring 2013,* Compuware*)*
Aditya Goil (CS, *Fall 2011, Winter – Fall (including Summer) 2012, Winter 2013,* Amazon*)*

**Visiting Students:**
Pascal Egli (Masters student in Robotics, Swiss Federal Institute of Technology Zurich (ETH), *Feb. – Aug. 2016*)
Lou-Ann Raymond (Masters student in Mechatronics, Université Libre de Bruxelles, *Jul. – Nov. 2014*)

**Undergraduate Research, Honors or Murphy Scholars Advisor:**
Victoria Israel (ME, *current)*
Max McCune (ME, *2024*)
Kevin Monjarrez *(*ME, *2024)*
Sisilia Sinaga (CS, *2022*)
Katherine Lin (CS, *2016*)
Bryanna Yeh (CE, *2016*)

**Undergraduate Research, Multi-quarter and Summer Internships:**
Victoria Israel (ME, *Winter – Spring 2025*)
Zhaohan Sun (ME, *Winter 2024 – Spring 2024, Fall 2024 – Winter 2025*)
Lucy Ammon (ME, *Spring 2023 – Summer 2024*)
Joel Goh (BME and CS, *Summer 2022 – Spring 2024*)
Max McCune (ME, *Spring 2023 – Spring 2024*)
Dan Yang (CS, *Winter 2024 – Spring 2024)*
Stephanie Ma (CS, *Spring 2023 – Summer 2023*)
Kevin Monjarrez *(*ME, *Fall 2022 – Spring 2023)*
Sisilia Sinaga (CS, *Summer 2021 –  Spring 2022)*
Juliet Ablaza (ME, *Summer 2021*)
Alexander Puce (ME, *Summer – Fall 2020*)
Finaly Lau (CS, *Summer 2020*)
Christopher Lindland (CS, *Summer 2020*)

Di Wu (ME, *Summer 2020*)
Biraj Parikh (CS, *Winter – Spring 2020*)
Abenazer Mekete (CS, Cornell University, *Summer 2019*)
William Su (EE, *Winter – Spring 2018, Fall 2018*)
William (Clay) Surmier (Robotics, *Summer 2018*)
Marc Gyongyosi (CS, *Fall 2014, Winter – Spring 2015, Fall 2016, Spring 2017*)
Christian Ingham (ME, University of Maryland, Baltimore County, *Summer 2016*)
Brian Zhan (CS, *Winter – Summer 2016*)
Katherine Lin (CS, *Winter – Spring 2015, Winter – Spring 2016*)
Bryanna Yeh (CE, *Winter – Fall 2015, Winter – Spring 2016*)
Haley De Boom (CS, *Spring 2015, Winter 2016*)
Samuel Schlesinger (ME, *Spring - Summer 2015*)
Colin Barnwell (CS, *Winter – Spring 2015*)
Seth McCammon (CS, *Fall 2013, Spring – Summer 2014, Spring 2015*)
David McDonald (ECE, Carnegie Mellon University, *Summer 2014*)
Luke Olney (U, *Summer 2014*)
Taiwon Chung (CS, *Summer 2023 – Spring 2014*)
Anika Dutta (EE, *Summer 2012*)
Paul Lam (BME, Chinese University of Hong Kong, *Summer 2012*)

**Undergraduate Research, Single Quarter:**
Brigitte Broszus (EE, *Winter 2018*), Peter Haddad (ME, *Fall 2014*), Neil Ehardt (CS, *Spring 2013*), Henry Spindell (CS, *Spring 2013*), Yin Chen (Applied Math, *Summer 2012*), Daniel Weiss (CE, *Spring 2012*)

**Highschool Research:**
Paul Rosa (*Fall 2014*), Sean Ye (*Summer 2014*), Marion Lewis (*Summer 2013*)

**Events:** (where served as a mentor)
Big 10 Women's Workshop, Senior Faculty Mentor, Big Ten Colleges of Engineering (Chicago IL, USA, *Jun. 2022*)
NSF Smart and Connected Health Aspiring Investigator's Meeting (Arlington VA, USA, *Jun. 2015*)
FIRST Design Review Panel, Northwestern University (Evanston IL, USA, *Jan. 2014*)
Women in Computing (student group) Panel, Northwestern University (Evanston IL, USA, *Apr. 2013*)

## ACTIVE FUNDING

Brenna Argall (PI, lead) and Jered Dean (co-PI). National Science Foundation: *NSF Convergence Accelerator: Track H: Mobility Independence through Accelerated Wheelchair Intelligence.* 12/15/2023 – 11/30/2026, $5,000,000 (Northwestern/SRAlab portion: $2,814,809, my portion of this: 100%).

Brenna Argall (PI, lead), Jered Dean, and John Rogers (co-PIs). National Science Foundation: *NSF Convergence Accelerator: Track H: Mobility Independence through Accelerated Wheelchair Intelligence.* 12/15/2022 – 11/30/2023, NCE: 2/29/2024, $724,415 (Northwestern/SRAlab portion: $593,404, my portion of this: 80%).

Brenna Argall (PI). National Science Foundation (FRR): *Interface-Aware Intelligence for Robot Teleoperation and Autonomy.* 7/15/2022 – 6/31/2026, $899,998 (my portion: 100%).

Brenna Argall (PI, lead), Sandro Mussa-Ivaldi and Elliot Roth (co-Is). National Institutes of Health: *R01: Human and Machine Learning for Customized Control of Assistive Robots*. 9/1/2018 – 5/31/2022, NCE: 5/31/2024, $1,427,043 (my portion: 85%).

Brenna Argall (PI). Murphy Society: *Updated and Upgraded Hardware for Introductory Robotics Laboratory*. 10/2024, $8,000 (my portion: 100%).

# COMPLETED FUNDING

Brenna Argall (PI, lead), Hadas Kress-Gazit, Guy Hoffman, and Todd Murphey (co-PIs). Northwestern Center for Advancing Safety of Machine Intelligence (CASMI): *Formal Specifications for Assistive Robotics.* 6/1/2022 – 2/28/2023, $111,859 (my portion: 95%).

Brenna Argall (PI). National Science Foundation (Robust Intelligence): *CAREER: Robot Learning from Motor-Impaired Instructors and Task Partners.* 2/1/2016 – 1/31/2021, NCE: 1/31/2023, $525,000 (my portion: 100%).

Todd D. Murphey (PI, lead) and Brenna Argall (co-PI). National Science Foundation: *CPS: Medium: Information-based Control of Cyber-Physical Systems Operating in Uncertain Environments.* 9/15/2018 – 9/14/2021, NCE: 9/14/2022, $896,030 (my portion: 50%).

Brenna Argall (PI). Office of Naval Research: *Dynamic Allocation of Autonomy for Limited-Bandwidth Human-Robot Teams Based on Measures of Trust in the Human*. 2/1/2016 – 1/31/2020, NCE: 1/31/2022, $954,398 (my portion: 100%).

Brenna Argall (PI) and Siddhartha Srinivasa (PI, lead). National Science Foundation: *CPS: Synergy: Collaborative Research: Learning Control Sharing Strategies for Assistive Cyber-Physical Systems.* 10/1/2015 – 9/31/2018, NCE: 2/28/2021, $730,390 (RIC/Northwestern portion: $363,937, my portion of this: 100%).

Brenna Argall (PI, lead) and Siddhartha Srinivasa (PI). National Institutes of Health (NIBIB/NICHD): *R01: SCH: A Formalism for Customizing and Training Intelligent Assistive Devices.* 9/1/2014 – 8/31/2017, NCE: 2/28/2019, $700,581 (RIC/Northwestern potion: $546,989, my portion of this: 100%).

Todd D. Murphey (PI, lead), Brenna Argall (co-PI) and Magnus Egerstedt (PI). National Science Foundation: *CPS: Synergy: Collaborative Research: Mutually Stabilized Correction in Physical Demonstration.* 10/1/2013 – 9/31/2017, NCE: 9/31/2018, $999,998 (Northwestern portion: $699,999, my portion of this: 50%).

John Condon (PI) and Brenna Argall (co-I). National Institutes of Health (NICHD): *SBIR*: *Semi-autonomous Robotic Powered Wheelchair Functionality.* 1/1/2016 – 12/31/2017, $224,995 (RIC/Northwestern portion: $70,500, my portion of this: 100%).

Kevin Lynch (PI), Brenna Argall, J. Edward Colgate, Todd D. Murphey, and Ying Wu (co-PIs). National Science Foundation: *MRI: Equipment Development: Bimanual Robotic Manipulation and Sensory Workspace*. 9/1/2012 – 3/31/2016, $400,000.

Brenna Argall (PI). BMW. *The Identified Flying Object Project.* 10/2014, $15,000. (Gift for student project.)

Brenna Argall (PI). Murphy Society: *Hardware for the Laboratory Component of a New Undergraduate Robotics Course*. 10/2012, $15,000 (my portion: 100%).

Brenna Argall (PI). Center for Engineering and Health, Northwestern University: *Meta-Control Shaping for the Partial Automation of Upper Limb Prostheses*. 6/15/2012 – 9/15/2012, $10,192 (my portion: 100%).


# PUBLIC ENGAGEMENT

**Publicity (external):**
2024:    Fox32 Chicago, "Breaking Barriers: Self-Driving Wheelchairs Inspire Independence, Increased Mobility"
        (*May 8*)

2023:   Solve It! for Kids Podcast, "How Will AI Help Humans with Mobility?", (*May 2*)
2022:   Sunrise Medical Education in Motion Blog, "LUCI Enables Semi-Autonomous Robotic Wheelchair Controls"
        (*Dec. 2*)
        LUCI Press Release, "LUCI Announces Platform-Sharing Research Collaboration with Sunrise Medical and the
        Shirley Ryan AbilityLab at Northwestern University" (*Dec. 1*)
2021:   Evanston Roundtable, "This Northwestern University Professor is Unstoppable" (*Jun. 23*)
        Mission Unstoppable, "Using Robotics for Assistive Devices" (*Feb. 27*)
2020:   Industry Week, "The Autonomous Wheelchair Could Soon be a Reality" (*Mar. 18*)
2019:   Adler After Dark Star Wars Release Event, Demo of robotic arm (*Dec. 19*)
2017:   OZY, "Self-driving Wheelchairs: Coming to a Nursing Home near You?" (*Sep. 15*)
        Fast Company, "The Next Frontier in Automation: Self-Driving Wheelchairs" (*Mar. 8*)
2016:   Crain's Chicago Business, "Why Brenna Argall is on Our 40 under 40 in Chicago List" (*Dec. 2*)
        Carnegie Mellon Today, "Autonomous Wheelchair Improves Patient Mobility" (*Oct. 25*)
        Morning Edition, NPR, "Northwestern University Lab Working on 'Smart Wheelchairs'" (*Sep. 26*)
        Digital Trends, "Autonomous Wheelchair Could Transform Life for Its Users" (*Sep. 15*)
        Big Ten Network, "This Wheelchair from Northwestern Offers Freedom through Autonomy" (*Sep. 11*)
        Crain's Business Chicago, Innovator Profile, "Where Robot Meets Wheelchair" (*Aug. 11*)
        Multiple Sclerosis News Today, *"Science Foundation Awards to Further Work in Rehabilitation Robotics,
        Online Tools at Northwestern University"* (*Mar. 7*)
        ALS News Today, *"ALS Research to Benefit from National Science Foundation Award for Robotics"* (*Feb. 29*)
        Newswise, "Promising Young Scientists Receive Prestigious Career Award" (*Feb. 25*)
2014:   Medill Reports Chicago, "Autonomous Robots Give Patients with Paralysis New Mobility" (*Jun. 5*)
2013 – current:  Museum of Science and Industry, Demo of laboratory robots during National Robotics Week (Chicago
        IL, USA, *each Apr. 2013 – current*)


**Invited Participation:**
2025:   HHMI-Janelia Workshop on Bridging Biology, roBotics, Brains, and Behavior (B5) (Ashburn VA, USA, *Jun.*)
2024:   U.S. Department of Veterans Affairs Innovation Experience (iEx), Panelist (Chicago IL, USA, *Oct.*)
2022:   Exploring the Intersection of AI and Healthcare, Greater Illinois Chapter (GIC) of Healthcare and Information
        Management Systems (HIMSS), Speaker and Participant (unable to attend)
2021:   Annual Meeting of the National Academy of Medicine, IG18 Symposium on Human Health and Equity in an
        Age of Robotics and Intelligent Machines, Panelist and Speaker (virtual, *Oct*)
        DoD Policy and Ethics for Intelligent Autonomous Systems Technical Exchange Meeting, Panel on the Ethics of
        Autonomy, Panelist and Speaker (virtual, *Mar*)
2020:   IFRR Colloquium on Robotics and Neuroscience, Panelist (virtual, *Dec*)
        National Academies' Board on Human-Systems Integration (BOSHI) Panel on AI in Healthcare, Panelist and
        Speaker (virtual, *Nov*)
        DoD Joint Artificial Intelligence Center (JAIC), Chicago's satellite office bid (virtual, *May*)
        Workshop on Women in Medical Robotics, International Symposium on Medical Robotics, Panelist
        (unable to attend)
2019:   National Academy of Engineering, Frontiers of Engineering Symposium (Charleston SC, USA, *Sep.*)
        Dagstul Seminar on Verification and Synthesis of Human-Robot Interaction (Dagstul, Germany, *Feb.*)
2018:   Adler After Dark *Geek Chic*, Adler Planetarium, Panelist (unable to attend)
        Inaugural issue of the *Annual Review of Control, Robotics, and Autonomous Systems* (*May*)
2017:   AI and Amplifying Human Abilities Panel, CCC Symposium on Computing Research Addressing National
        Priorities and Societal Needs, Panelist and Speaker (Washington DC, USA, *Oct.*)
        AI vs. IQ, Chicago Innovation Awards, Panelist (Chicago IL, USA, *Mar.*)
        Workshop on Interactive Learning, Simons Institute for the Theory of Computing, Participant and Speaker
        (Berkeley CA, USA, *Feb.*)
        Chicago Brain Trust, Invited Member (Chicago IL, USA, *Jan.-Dec.*)
2016:   Kellogg Trust Project, Northwestern University, Podcast (Evanston IL, USA, *Nov.*)
        Kellogg on Growth Forum, Northwestern University, Panelist (Evanston IL, USA, *Nov.*)
        Workshop on Algorithms for Human-Robot Interaction, INRIA, Participant (Paris, France, *Jul.*)

Barbados Workshop on Reinforcement Learning, organized by Richard Sutton et. al, (unable to attend)

FDA meeting on the development of standards for autonomy in assistive robotic devices (Silver Spring MD, USA, *Mar*.)

Rewriting the U.S. National Robotics Roadmap, CCC-supported workshops (San Francisco CA, USA, *Mar.* and Atlanta GA, USA, *Sep.*)

2015 :  The Robot Revolution, Chicago Council on Foreign Affairs, Panelist (Chicago IL, USA, *Nov*.)

Dagstul Seminar on Robot Manipulation Under Uncertainty, Participant and Speaker (Dagstul, Germany, *Oct*.)

Technology & Society Conference, University of Chicago, Panelist and Speaker (Chicago IL, USA, *May*)

IDEAS Workshop on Engineering and Surgery, Harvard Medical School and Beth Israel Deaconess Medical Center, Participant and Speaker (Boston MA, USA, *Mar.* 2015)

2014:  USC Symposium on the Futures of Robotics, University of Southern California (Los Angeles CA, USA, *Apr*.)

2013 :  Computer Science & Education, CS Everywhere Workshop, Northwestern, Panelist (Evanston IL, USA, *Nov*.)


**Invited Lectures (outside of affiliated departments):**

2017:  Full-day Seminar, Northern Suburban Special Education District Assistive Technology Team (Forest Hills IL, USA, *Jan*.)

2016:  Advances in Biotechnology (NIH Biotech Training Program), Northwestern Univ. (Evanston IL, USA, *Apr*.)

2015:  Big Ideas in Medicine, University of Chicago School of Medicine (Chicago IL, USA, *May)*

2013:  Undergraduate robotics class, University of Notre Dame (South Bend IN, USA, *Mar.)*

2012:  Summer School in Computational Sensory-Motor Neuroscience (CoSMo) (Chicago IL, USA, *Aug.)*

2011:  Department of Informatics Summer School, University of Zurich (Zurich, Switzerland, *Jul.)*


**Invited Talks (prior 10 years):**

2024:  AI Speaker Series, Mayo Clinic (virtual, *Dec*.)

Coulter BME Seminar, University of North Carolina at Chapel Hill and North Carolina State University (virtual, *Nov*.)

Presenter, Health Tech Horizons: Navigating the Future, Greater Illinois Chapter (GIC) of Healthcare and Information Management Systems (HIMSS) (Oak Brook IL, USA, *May*)

2023:  Presenter, American Academy of Cerebral Palsy and Developmental Medicine (AACPDM) Community Forum (Chicago IL, USA, *Sep*.)

Speaker, Progress in Clinical Motor Control: Movement and Rehabilitation Sciences (Chicago IL, USA, *Jul*.)

Keynote, NSF FRR/NRI PI Meeting (Washington DC, USA, *May*)

Teruko Yata Memorial Lecture, Carnegie Mellon Robotics Institute (Pittsburgh PA, USA, *Apr*.)

Robotics Seminar, University of Utah (virtual, *Apr*.)

2022:  DREAMS/CPAR Seminar, UC Berkeley and CITRIS (virtual, *Dec*.)

NeurIPS 2022 Workshop on Human in the Loop Learning (virtual, *Dec*.)

Distinguished Speaker Series, Virginia Tech (virtual, *Sep*.)

Legs & Walking Lab Seminar Series, Shirley Ryan AbilityLab (Chicago IL, USA, *Sep*.)

ICRA 2022 Workshop on Shared Autonomy in Physical Human-Robot Interaction: Adaptabilty and Trust (virtual, *May*)

2021:  Robotics Seminar, University of Washington (virtual, *Nov*.)

ICRA 2021 Workshop on Learning for Caregiving Robots (virtual, *Jun*.)

2020:  Plenary Talk, International Conference on Machine Learning (ICML) (virtual, *Jul*.)

RSS 2020 Workshop on Emergent Behaviors in Human-Robot Interaction (virtual, *Jul*.)

RSS 2020 Workshop on Interpretability and Shared Autonomy in HRI (virtual, *Jul*.)

Keynote Speaker, CYBATHALON Symposium (unable to attend)

Presentation on opportunities for ASME in AI, American Society of Mechanical Engineer's (ASME) Public Affairs & Outreach Council (telecon, *Mar*.)

Robotics Seminar, Purdue University (West Lafayette IN, USA, *Jan.)*

2019:  Mechanical and Aerospace Engineering Seminar, Princeton University (unable to attend)

Seminar, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) (Munich, Germany, *Jun.)*

RSS 2019 Workshop on AI and Its Alternatives for Shared Autonomy (Freiberg, Germany, *Jun.)*

Seminar, École Polytechnique Fédérale de Lausanne (EPFL) (Lausanne, Switzerland, *Feb.*)
2018:   Keynote Speaker, Workshop on the Algorithmic Foundations of Robotics (WAFR) (unable to attend)
Speaker, USC Institute for Contextual Robotics 5th Annual Forum (unable to attend)
Keynote Speaker, GirlCon, K8-12 participants addressing diversity in STEM (unable to attend)
RSS 2018 Workshop on Beyond Reward Engineering (unable to attend)
2017:   Seminar, Field Museum Women in Science (Chicago IL, USA, *Nov.*)
Speaker, International Symposium on Wearable & Rehabilitation Robotics (Houston TX, USA, *Nov.*)
IROS 2017 Workshop on Human-in-the-Loop Manipulation (Vancouver, Canada, *Sep.*)
IROS 2017 Workshop on Adaptive Control Methods in Assistive Technologies (Vancouver, Canada, *Sep.*)
IROS 2017 Workshop on Assistance and Service Robotics in a Human Environment (Vancouver, Canada, *Sep.*)
RSS 2017 Workshop on Resilient Intelligence in Autonomous Systems (Boston MA, USA, *Jul.*)
Midwest Robotics Workshop (Chicago IL, USA, *May*)
Featured Speaker, State of the Science Conference, Rehabilitation Engineering Research Center on
    Technologies to Support Successful Aging with Disability (RERC TechSAge) (Atlanta GA, USA, *Mar.*)
Trust Seminar Series, Northwestern University (Evanston IL, USA, *Jan.*)
2016:   Robotics Seminar, MIT (Boston MA, USA, *Oct.*)
GRASP Seminar, University of Pennsylvania (Philadelphia PA, USA, *Sep.*)
Robotics Institute Seminar, Carnegie Mellon University (Pittsburgh PA, USA, *Sep.*)
Forum for Artificial Intelligence, University of Texas at Austin (Austin TX, USA, *Sep.*)
RO-MAN 2016 WS on Human-Oriented Appr. for Assistive and Rehab. Robotics (New York NY, USA, *Aug.*)
Workshop on Algorithms for Human-Robot Interaction, INRIA (Paris, France, *Jul.*)
Seminar, University of Illinois at Chicago (Chicago IL, USA, *Apr.*)
Computational Research Day, Northwestern University (Evanston IL, USA, *Apr.*)
2015 :  Engineering Neuroscience & Health Seminar, University of Southern California (Los Angeles CA, USA, *Nov.*)
Mechanical & Aerospace Engineering Robotics Research Seminar, UCLA (Los Angeles CA, USA, *Nov.*)
Workshop on Algorithms for Human-Robot Interaction, UC Berkeley (Berkeley CA, USA, *Nov.*)
Seminar, Max Planck Institute for Intelligent Systems (Tübingen, Germany, *Oct.*)
Talk, University of Stuttgart (Stuttgart, Germany, *Oct.*)
Centro E. Piaggio Seminar, University of Pisa (Pisa, Italy, *Sep.*)
Careers in Science Seminar, NSF REU Program in Medical Informatics (Chicago IL, USA, *Aug.*)
NCCR Seminar,  École Polytechnique Fédérale de Lausanne (EPFL) (Lausanne, Switzerland, *Jul.*)
Talk, University of Zurich (Zurich, Switzerland, *Jul.*)
Technology & Society Conference, University of Chicago (Chicago IL, USA, *May*)
National Robotics Week Talk, Museum of Science & Industry (Chicago IL, USA, *Apr.*)
Information Technology Practice Center, University of Wisconsin Parkside (Kenosha WI, USA, *Apr.*)
Harvard Medical School IDEAS Workshop on Engineering and Surgery (Boston MA, USA, *Mar.*)
Keynote, SPIE Photonics West (San Francisco CA, USA, *Feb.*)
Robotics Seminar, Stanford University (Palo Alto CA, USA, *Feb.*)
Robotics & Intelligent Machines Seminar, Georgia Institute of Technology (Atlanta GA, USA, *Jan.*)
Neurorecovery & Rehabilitation Lecture, The Institute for Rehabilitation & Research (Houston TX, USA, *Jan.*)
Robotics Seminar, Rice University (Houston TX, USA, *Jan.*)


## PROFESSIONAL ACTIVITIES

**University Committees**
CS/ME Embodied Artificial Intelligence Tenure-Track Search Committee, Chair (Northwestern, *present*)
Ad-hoc McCormick Promotion and Tenure Committee (Northwestern, *present*)
CS Diversity Committee (Northwestern, *2022 – present*)
CS Strategic Planning Committee (Northwestern, *2021 – present*)
ME Graduate Studies Committee (Northwestern, *2020 – present*)
CS IBM Chair Search Committee (Northwestern, *2023 – 2024*)
CS Tenure-Track Hiring Committee (Northwestern, *2022*)

ME Department Chair Search Committee (Northwestern, *2019*)
CS+X Opportunities Committee (Northwestern, *2016 – 2018*)
Masters of Science in Robotics Curriculum Committee (Northwestern, *2013*)
Undergraduate Computer Science Curriculum Committee (Northwestern, *2011 – 2017*)
EECS Faculty Search Committee (Northwestern, *2013–2015, 2017*)
ME Faculty Search Committee (Northwestern, *2014, 2016, 2017*)
PMR Faculty Search Committee (Northwestern, *2014*)

**External Committees and Meetings**
The Future of Robotics and the National Robotics Initiative (NRI), CCC-supported workshops and report (San Francisco CA, USA, *Mar. 2016,* and Atlanta GA, USA, *Sep. 2016)*.
NIDRR RERC Machines Assisting Recovery from Stroke and Spinal Cord Injury for Reintegration into Society (MARS3) Advisory Board. (Chicago IL, USA, *Sep. 2016*).

**Journal Associate Editor**
IEEE Transactions on Robotics (T-RO) (*2019-2022*)
IEEE Robotics and Automation Letters (*2015-2020*)

**Journal Committee Member**
Annual Review of Control, Robotics, and Autonomous Systems (*2024-current*)

**Journal Guest Editor**
Autonomous Robots Special Issue on Assistive and Rehabilitation Robotics (*2017*)

**Conference Organizer**
Registration Chair and Local co-Chair, IROS 2014
Local Chair, ARSO 2014
Workshop co-Chair, HRI 2014
Local Chair, HRI 2011

**Conference Program Committee Member**

**Senior Program Committee**
ICRA (*2022, 2023, 2025*)

**Area Chair**
HRI (*2015*)
RSS (*2017, 2019, 2021, 2022*)
WAFR (*2024*)

**Associate Editor**
ICRA *(2013)*
IROS (*2014 – 2016*)
RO-MAN (*2011, 2013*)

**Organizing Committee Member**
RSS 2020   Workshop on *AI and Its Alternatives in Assistive & Collaborative Robotics: Decoding Intent* (full day)
RSS 2019   Workshop on *AI and Its Alternatives for Shared Autonomy in Assistive and Collab. Robotics* (full day)
RSS 2017   Workshop on *Human-Centered Robotics* (full day)
AAAI 2016  Fall Symposium Series *Shared Autonomy in Research and Practice* (three days)
RSS 2016   Workshop on *Socially and Physically Assistive Robotics for Humanity* (full day)
AAAI 2015  Fall Symposium Series *Artificial Intelligence for Human-Robot Interactions* (three days)
IROS 2014  Workshop on *Rehabilitation & Assistive Robots* (full day)
HRI 2014   Workshop on *Algorithmic Human-Robot Interactions* (full day)

AAAI 2012 Fall Symposium Series *Robots Learning Interactively from Human Teachers (RLIHT)* (three days)
RSS 2011 Workshop on *The State of Imitation Learning: Understanding its Applications and Promoting its Adoption* (full day)
IJCAI 2011 Workshop on *Agents Learning Interactively from Human Teachers (ALIHT)* (two days)
ICRA 2010 Tutorial on *Robot Learning from Demonstration* (half day)
AAMAS 2010 Workshop on *Agents Learning Interactively from Human Teachers* (full day)

**PhD Thesis Committee Member**
*Post-defense:* Millicent Schlafly (ME, Northwestern University, *2024*), Ethan Gordan (CS, University of Washington, *2023*), Mahdieh Nejati (ME, Northwestern University, *2023*), Kyra Rudy (ME, Northwestern University, *2023*), Margaret Swerdloff (BME, Northwestern University, *2023*), Aleksandra Ola Kalinowska (ME, Northwestern University, *2023*), Angel German Espinosa Coarasa (CS, Northwestern University, *2023*), Rueben Aaronson (Robotics Institute, CMU), *2022*), Yuni Teh (BME, Northwestern University, *2022*), Deepak Gopinath (ME, Northwestern University, *2022*), Taosha Fan (ME, Northwestern University, *2022*), Kathleen Fitzsimmons (ME, Northwestern University, *2020*), Ahalya Prabhakar (ME, Northwestern University, *2020*), Ian Abraham (ME, Northwestern University, *2020*), Nili Krausz (BME, Northwestern University, *2019*), Blair Hu (BME, Northwestern University, *2019*), Siddarth Jain (CS, Northwestern University, *2019*), Alexander Broad (CS, Northwestern University, *2019*), Michael Lucas (CS, Northwestern University, *2019*), Iason Batzianoulis (Engineering, École Polytechnique Fédérale de Lausanne (EPFL), 2019), Lucia Ureche (Engineering, École Polytechnique Fédérale de Lausanne (EPFL), 2018), Anastasia Mavrommati (ME, Northwestern University, *2017*), Emmanouil Tzorakoleftherakis (ME, Northwestern University, *2017*), Elias Thorp (BME, Northwestern University, *2017*), Ehsan Noohi (CS, University of Illinois – Chicago, *2016*), John Spanias (BME, Northwestern University, *2016*), Lauren Miller (ME, Northwestern University, *2015*), Andrew Wilson (ME, Northwestern University, *2015*), Alex Ansari (ME, Northwestern University, *2015*), Yang Bai (ME, Northwestern University, *2015*), Jarvis Schultz (ME, Northwestern University, *2014)*, Tim Caldwell (ME, Northwestern University, *2013)*, Kevin Kim (EE, Northwestern University, *2013)*, Ed Kwei-wei Huang (EE, Northwestern University, *2013)*, Tanveer Abbas (EE, University of Auckland, *2011)*
*Pre-defense:* Maximilian Carvajal (BME, Northwestern University), Andrew Curtis (CS, Northwestern University), Yu-Sian (Sharon) Jiang (ECE, University of Texas at Austin), Lin Liu (ME, Northwestern University), Larisa Loke (ME, Northwestern University), Andrew Thompson (ME, Northwestern University), Matthew Woods (EE, Northwestern University)

**Technical Committee Member**
IEEE RAS TC on Human Movement Understanding
IEEE RAS TC on Robot Learning

**Panel Reviewer**
NIH (Technology Assisted Clinical Informatics, *2020*; MFSR Study Section, *2016*)
NSF *(2012, 2014 – 2020, 2022, 2023)*
ONR (*2017*)
EPFL Fellows *(2014)*

**Journal Reviewer**
Assistive Technology (*2015*), Autonomous Robots (*2009, 2013, 2015, 2017, 2018*), IEEE Robotics and Automation Letters (*2017*), IEEE Transactions on Cognitive and Developmental Systems (*2017*), ACM Transactions on Human-Robot Interaction (*2022*), IEEE Transactions on Neural Systems and Rehabilitation Engineering (*2014–2016*), IEEE Transactions on Robotics (*2010, 2012, 2015, 2018*), IEEE Transactions on Systems, Man and Cybernetics (*2012*), International Journal of Robotics Research (*2011, 2016, 2018)*, International Journal of Service Robotics (*2010*), International Journal of Social Robotics (*2012*), Journal of Field Robotics (*2006–2011*), Robotics and Autonomous Systems (*2010, 2013, 2016*), Science Robotics (*2019*), Transactions on Autonomous Mental Development (*2013*)

**Conference Reviewer**
AAAI (*2005–2006, 2010*), AAAI Robotics Track (*2013*), AAAI Spring (*2009*) and Fall (*2016*) Symposium, AAMAS (*2006–2006, 2010*), AISB (*2014*), BioRob (*2014, 2016*), HRI (*2014, 2017*), ICDL (*2010), ICORR (2017),* ICRA (*2006–*

*2008, 2010–2013, 2015, 2016, 2022*), ICSR *(2010, 2012),* IJCAI (*2013*), IROS (*2008, 2010),* HRI (*2007–2008, 2011–2012, 2014*), Humanoids *(2010, 2012),* Robocup (*2006*), RO-MAN *(2010, 2016)*, RSS *(2011, 2013–2016),* TAROS *(2011)*

**Society Member**
American Institute for Medical and Biological Engineering (AIMBE, *2023 – present*), Fellow
Institute of Electrical and Electronics Engineers (IEEE, *2007 – present*), Senior Member (*2023*)
IEEE Robotics and Automation Society (RAS, *2010 – present*)
International Consortium for Rehabilitation Robotics (ICORR, *2022 – present*)
Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Standards Committee on Wheelchairs (*2022 – present*)
RESNA Warning and Driver Assistance Systems Working Group (*2022 – present*)
Association for the Advancement of Artificial Intelligence (AAAI, *2009, 2012 – 2013*)
Society for Neuroscience (*2002–2004*)