Aaron M. Dollar

Updated 12/22/22

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PROFESSIONAL EXPERIENCE

Yale University
Professor (July 2019 - present)
Associate Professor with Tenure (Jan. 2016-June 2019)
John J. Lee Associate Professor on Term (Jan. 2014 – Dec. 2015)
John J. Lee Assistant Professor (Oct. 2012 – Dec. 2013)
Assistant Professor (Jan. 2009 – Oct. 2012)
Department of Mechanical Engineering and Materials Science

Professor (by courtesy) (Jan. 2020 – present)
Department of Computer Science

Boston Dynamics Artificial Intelligence Institute, Cambridge, MA
Visiting Fellow (2023-present)

Providence Veterans Affairs Medical Center, Rhode Island
Research Associate, Without Compensation (WOC) (2011-2019)

Brown University
Visiting Professor (June 2014 – June 2015)
Department of Ecology and Evolutionary Biology (Host: Prof. Stephen Gatesy)

Scuola Superiore Sant'Anna, Pisa, Italy
Visiting Professor (Jan. 2012 – July 2012)
Biorobotics Institute (Host: Prof. Maria Chiara Carrozza)

Massachusetts Institute of Technology
Postdoctoral Associate (Dec. 2006 – Dec. 2008)
Harvard/MIT Health Sciences and Technology and MIT Media Lab
Research Advisor: Hugh Herr

EDUCATION

Harvard University
Ph.D. Engineering Sciences (2007)
S.M. Engineering Sciences (2002)
Dissertation Title: "Design Principles for Robust Grasping in Unstructured Environments"
Thesis Advisor: Robert D. Howe

University of Massachusetts at Amherst
B.S. Mechanical Engineering (2000)

HONORS AND AWARDS

Major Awards:

- IEEE Fellow, class of 2023, through the IEEE Robotics and Automation Society
- IEEE Robotics and Automation Society Distinguished Lecturer, 2022-present

- Paper selected as Top 5 Editor's Pick from Science Robotics (IF 23.75) for the year 2021
- UMass Amherst College of Engineering Outstanding Junior Alumni Award, Sept. 2016
- NASA Early Career Faculty Award, July 2014
- DARPA Young Faculty Award, July 2013
- John J. Lee Endowed Junior Faculty Chair (sole Junior Endowed Chair in Engineering at Yale at the time), Yale University, Oct. 2012-Dec. 2015
- First place in DARPA's Autonomous Robotic Manipulation-Hardware (ARM-H) Competition (partner with Harvard University and iRobot Corporation), June 2012
- Early Career Spotlight, Robotics: Science and Systems Conference, June 2011
- Air Force Office of Scientific Research Young Investigator Award, 2011
- TR35, Technology Review's Top Young Innovators under 35, 2010
- NSF CAREER Award, 2010
- Best Student Paper, IEEE International Conference on Rehabilitation Robotics, June 2007
- First Place, ASME Student Mechanism Design Competition, Graduate Division, Sept. 2006

Other Awards:

- Honorary Master of Arts degree (M.A., privatim), Yale University, Feb. 2020
- Finalist for Best Manipulation Paper, IEEE International Conference on Robotics and Automation (ICRA), May 2019
- Finalist for Best Manipulation Paper, IEEE International Conference on Robotics and Automation (ICRA), May 2018
- Finalist for Best Poster, IEEE International Conference on Rehabilitation Robotics (ICORR), July 2017
- Finalist for Best Manipulation Paper, IEEE International Conference on Robotics and Automation (ICRA), May 2017
- Best Poster, Observing and Understanding Hands in Action Workshop (Hands 2015), at the Computer Vision and Pattern Recognition Conference (CVPR), June 2015
- Finalist for Best Manipulation Paper, IEEE International Conference on Robotics and Automation (ICRA), May 2013
- Packard Fellowships for Science and Engineering, Yale University Nominee, 2011
- Magna cum Laude with Departmental Honors, UMass Amherst, May 2000
- Tau Beta Pi Engineering Honor Society
- Pi Tau Sigma Mechanical Engineering Honor Society
- ACORN academic scholarship (50% of college costs), UMass Amherst, 1996-2000
- Snyder academic scholarship (1 chosen University-wide), UMass Amherst, 1998

<u>Awards to Advisees</u> (for work I supervised or co-supervised):

- National Science Foundation Graduate Research Fellowship, awarded to PhD student Hector Castillo, April 2022.
- RSS Pioneers selection for Andrew Morgan, 2022.
- National Science Foundation Graduate Research Fellowship, awarded to PhD student Andrew Morgan, April 2019.
- McCrosky Prize (top graduating Mechanical Engineer), Yale University, awarded to Connor McCann, May 2018.
- Second Place, Best Student Presentation, Myoelectric Controls Conference (MEC), awarded to Michael Leddy and Joseph Belter, Aug. 2017.
- Second Place, Student Mechanism and Robotics Design Competition, American Society of Mechanical Engineering, awarded to Connor McCann, July 2017.
- Belle and Carl Morse Junior Prize (most outstanding scholarship by Junior Engineering Student), Yale University, awarded to Connor McCann, May 2017.
- Best Student Paper Finalist, IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob), awarded to Joseph Belter, June 2016.
- Best Student Paper, IEEE/IFToMM International Conference on Reconfigurable Mechanisms and Robotics (ReMAR), awarded to Raymond Ma, July 2015.
- Best Work in Progress Award, World Haptics Conference, work led by Adam Spiers, June 2015

- McCrosky Prize (top graduating Mechanical Engineer), Yale University, awarded to Paul (Pablo) Napolitano, May 2015.
- 2014 Best Student Mechatronics Paper Award, ASME Dynamic Systems and Control Division (best overall student mechatronics paper from the three division-sponsored conferences in 2013 – IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), American Control Conference (ACC), Dynamic Systems and Control Conference (DSCC)), awarded to Hari Vasudevan, Oct. 2014
- Finalist, Student Best Hardware Demonstration, ASME Smart Materials, Adaptive Structures, and Intelligent Systems Conference (SMASIS), awarded to Ahsan Nawroj, Sept. 2014.
- First Place, ASME Student Mechanism Design Competition, Graduate Division, awarded to Joseph Belter, Aug. 2014.
- Finalist, Best Student Paper Award, ASME Dynamic Systems and Control Conference awarded to Hari Vasudevan, Oct. 2013.
- First Place, ASME Student Robot Design Competition, Graduate Division, awarded to Kamran Shamaei, Aug. 2013.
- Wim van der Hoek Award (best MechE Graduation project in the three Dutch technical Universities), Dutch Society of Precision Engineering, awarded to Stefan Spanjer, Sept. 2012.
- Henry Prentiss Becton Prize (top overall graduating Engineer), Yale University, awarded to Gavrail Tatarliev, May 2011.
- McCrosky Prize (top graduating Mechanical Engineer), Yale University, awarded to Gavrail Tatarliev, May 2011.
- Honorable Mention, NSF Graduate Research Fellowship, awarded to Raymond Ma, Apr. 2012
- McCrosky Prize (top graduating Mechanical Engineer), Yale University, awarded to Greg Brown, May 2010.
- Honorable Mention, NSF Graduate Research Fellowship, awarded to Joseph Belter, Apr. 2010

PUBLICATIONS

Available online at http://www.eng.yale.edu/grablab/pubs.html
Underlined authors performed the described work under my primary supervision
Starred* authors were undergraduate research assistants for the described work

Refereed Journal Articles

J95. Robust Whole-Hand Spatial Dexterous Manipulation via Energy Maps with Caging, Rolling, and Sliding
W. Bircher and **A.M. Dollar**, *IEEE Transactions on Robotics*, (in review).

J94. Open Robot Hardware: Progress, Benefits, Challenges, and Best Practices
V. Patel, M. Liarokapis, and **A.M. Dollar**, *IEEE Robotics and Automation Magazine* (in press).

J93. Trajectory Control – An Effective Strategy for Controlling Multi-DOF Upper Limb Prosthetic Devices
Y. Gloumakov, A. Spiers, and **A.M. Dollar**, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 30, pp. 420-430, 2022.

J92. The Yale MyoAdapt Hand: A Highly Functional and Adaptive Single Actuator Prosthesis
M. Leddy, L. Resnik, and **A.M. Dollar**, *IEEE Transactions on Medical Robotics and Bionics*, vol. 4(3), pp. 807-820, 2022.

J91. Finite Element Modeling of Internally Actuated Triangular Lattice and Its Variants for Modular Active Cell Robots (MACROs)
G. Singh and **A.M. Dollar**, *IEEE Robotics and Automation Letters* (with RoboSoft 2022 option), vol. 7(3), pp. 6083 – 6090, 2022.

J90. Force-based Simultaneous Mapping and Object Reconstruction for Robotic Manipulation
J. Bimbo, A. Morgan, and **A.M. Dollar**, *IEEE Robotics and Automation Letters* (with ICRA 2022 option), vol. 7 (2), pp. 4749-4756, 2022.

J89. Mechanical Characterization of Compliant Cellular Robots, Part I: Passive Stiffness,
G. Singh, A. Nawroj, and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 15(2), 021012, 2023.

J88. Mechanical Characterization of Compliant Cellular Robots, Part II: Active Strain,
G. Singh, A. Nawroj, and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 15(2), 021013, 2023.

J87. Complex In-hand Manipulation via Compliance-enabled Finger Gaiting and Multi-Modal Planning
A. Morgan, K. Hang, B. Wen, K. Bekris, and **A.M. Dollar**, *IEEE Robotics and Automation Letters* (with ICRA 2022 option), 7 (2), 4821-4828, 2022.

J86. Quantifying Prosthetic and Intact Limb Use in Upper Limb Amputees via Egocentric Video: An Unsupervised, At-Home Study
A. Spiers, J. Cochran, L. Resnik, and **A.M. Dollar**, *IEEE Transactions on Medical Robotics and Bionics*, vol. 3 (2), pp. 463-484, 2021.

J84. Towards Generalized Manipulation Learning through Grasp Mechanics-based Features
A. Morgan, W. Bircher, and **A.M. Dollar**, *IEEE Transactions on Robotics*, vol. 37(5), pp. 1553-1569, 2021.

J83. The Stewart Hand: A Highly Dexterous 6-DOF Manipulator Based on the Stewart-Gough Platform
C. McCann*, V. Patel, and **A.M. Dollar**, *IEEE Robotics and Automation Magazine*, vol. 28(2), pp. 23-36, 2021.

J82. Manipulation for Self-Identification, and Self-Identification for Better Manipulation
K. Hang, W. Bircher, A. Morgan, and **A.M. Dollar**, *Science Robotics*, vol. 6(54), 2021.

J81. Sliding, Rolling, and Breaking Contact: Complex Manipulation with a Simple Robotic Hand
W. Bircher, A. Morgan, and **A.M. Dollar**, *Science Robotics*, vol. 6(54), 2021.

J80. Effect of Number of Digits on Human Precision Manipulation Workspaces
T. Feix, I.M. Bullock, Y. Gloumakov, and **A.M. Dollar**, *IEEE Transactions on Haptics*, vol. 14(1), pp. 68-82, 2021.

J79. Dimensionality Reduction and Motion Clustering during Activities of Daily Living: Decoupling Hand Location and Orientation
Y. Gloumakov, A. Spiers, and **A.M. Dollar**, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 28(12), pp. 2955-2965, 2020.

J78. Dimensionality Reduction and Motion Clustering during Activities of Daily Living: 3, 4, and 7 Degree-of-Freedom Arm Movements
Y. Gloumakov, A. Spiers, and **A.M. Dollar**, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 28(12), pp. 2826-2836, 2020.

J77. Object-Agnostic Dexterous Manipulation of Partially Constrained Trajectories
A. Morgan, K. Hang, and **A.M. Dollar**, *IEEE Robotics and Automation Letters* (with IROS 2020 option), vol. 5(4), pp. 5494-5501, 2020.

J76. Examining the Frictional Behavior of Primitive Contact Geometries for use as Robotic Finger Pads
M.T. Leddy and **A.M. Dollar**, *IEEE Robotics and Automation Letters* (with ICRA 2020 option), vol. 5(2), pp. 3137-3144, 2020.

J75. Benchmarking Cluttered Robot Pick-and-Place Manipulation with the Box and Blocks Test
A. Morgan, K. Hang, W. Bircher, F. Alladkani, A. Gandhi, B. Calli, and **A.M. Dollar**, *IEEE Robotics and Automation Letters*, vol. 5(2), pp. 454-461, 2020.

J74. Using a Variable-Friction Robot Hand to Determine Proprioceptive Features for Object Classification During Within-Hand-Manipulation
A. Spiers, A. Morgan, K. Srinivasan, B. Calli, and **A.M. Dollar**, *IEEE Transactions on Haptics,* vol. 13(3), pp. 600-610, 2020.

J73. Hand-Object Configuration Estimation using Particle Filters for Dexterous In-Hand Manipulation
K. Hang, W. Bircher, A. Morgan, and **A.M. Dollar**, *International Journal of Robotics Research,* 2019.

J72. Modeling and Evaluation of Robust, Whole-hand Caging Manipulation
R.R. Ma, W. Bircher, and **A.M. Dollar**, *IEEE Transactions on Robotics*, vol. 35(3), pp. 549-563, June 2019.

J71. Combining Analytical Modeling and Learning to Simplify Dexterous Manipulation with Adaptive Robot Hands
M.V. Liarokapis and **A.M. Dollar**, *IEEE Transactions on Automation Science and Engineering*, vol. 16(3), pp. 1361-1372, July 2019.

J70. Perching and Resting -- A New Paradigm for UAV Maneuvering with Modularized Landing Gears
K. Hang, X. Lyu, H. Song, J.A. Stork, **A.M. Dollar**, D. Kragic, F. Zhang, *Science Robotics*, vol. 4(28), eaau6637, March 2019.

J69. Learning a State Transition Model of an Underactuated Adaptive Hand
A. Sintov, A. Morgan, A. Kimmel, **A.M. Dollar**, K.E. Bekris, A. Boularias, *IEEE Robotics and Automation Letters* (with ICRA 2019 option) vol. 4(2), pp. 1287-1294, 2019.

J68. Pre-Grasp Sliding Manipulation Planning of Thin Objects Using Soft, Compliant, or Underactuated Hands
K. Hang, A. Morgan, and **A.M. Dollar**, *IEEE Robotics and Automation Letters* (with ICRA 2019 option), vol. 4(2), pp. 662-669, 2019. **Finalist for Best Manipulation Paper Award at ICRA 2019.**

J67. Behavioral Correlates of Semi-Zygodactyly in Ospreys (Pandion haliaetus) based on Analysis of Internet Images
D. Sustaita, Y. Gloumakov, L.R. Tsang, and **A.M. Dollar**, *PeerJ*, 7:e6243, 2019.

J66. State of the Art in Artificial Wrists: A Review of Prosthetic and Robotic Wrist Design
N. Bajaj, A. Spiers, and **A.M. Dollar**, *IEEE Transactions on Robotics*, vol. 35(1), pp. 261 – 277, 2019.

J65. Robust Precision Manipulation with Simple Process Models using Visual Servoing Techniques with Disturbance Rejection
B. Calli and **A.M. Dollar**, *IEEE Transactions on Automation Science and Engineering*, vol. 16(1), pp. 406 – 419, 2019.

J64. Variable-Friction Finger Surfaces to Enable Within-Hand Manipulation via Gripping and Sliding
A. Spiers, B. Calli, and **A.M. Dollar**, *IEEE Robotics and Automation Letters,* (with IROS 2018 option), vol. 3(4), pp. 4116 – 4123, 2018.

J63. Post-Contact, In-Hand Object Motion Compensation with Adaptive Hands
M.V. Liarokapis and **A.M. Dollar**, *IEEE Transactions on Automation Science and Engineering*, vol. 15(2), pp. 456-467, 2018.

J62. A Prismatic-Revolute-Revolute Joint Hand for Grasping from UAVs and other Minimally Constrained Vehicles
S.B. Backus and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 10(2), 025006, 2018.

J61. Toward Modular Active-Cell Robots (MACROs): SMA Cell Design and Modeling of Compliant, Articulated Meshes
A.I. Nawroj, J.P. Swensen, and **A.M. Dollar**, *IEEE Transactions on Robotics*, vol. 33(4), pp. 796 – 806, 2017.

J60. Shape Control of Compliant, Articulated Meshes: Towards Modular Active-Cell Robots (MACROs)
A.I. Nawroj and **A.M. Dollar**, *IEEE Robotics and Automation Letters*, (with IROS 2017 option) vol. 2(4), pp. 1878-1884, 2017.

J59. Yale-CMU-Berkeley Dataset for Robotic Manipulation Research
B. Calli, A. Singh, J. Bruce, A. Walsman, K. Konolige, S. Srinivasa, P. Abbeel, and **A.M. Dollar**, *The International Journal of Robotics Research*, vol. 36(3), pp. 261 – 268, 2017.

J58. Adaptive Legged Robots through Exactly-Constrained and Non-Redundant Design
O.Y. Kanner, N. Rojas, L.U. Odhner, and **A.M. Dollar**, *IEEE Access*, vol. 5, pp. 11131 – 11141, 2017.

J57. Reconfigurable Modular Chain: a Reversible Material for Folding 3D Lattice Structures
X. Zu, C. McCann*, and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics*, vol. 9(2), 025002, 2017.

J56. Yale OpenHand Project: Optimizing Open-Source Hand Designs for Ease of Fabrication and Adoption
R.R. Ma and **A.M. Dollar**, *IEEE Robotics and Automation Magazine*, vol. 24(1), pp. 32-40, 2017.

J55. Design and Evaluation of Shape Changing Haptic Interfaces for Pedestrian Navigation Assistance
A. Spiers and **A.M. Dollar**, *IEEE Transactions on Haptics*, vol. 10(1), pp. 17-28, 2017.

J54. Spherical Hands: Toward Underactuated, In-Hand Manipulation Invariant to Object Size and Grasp Location
R.R. Ma, N. Rojas, and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 8(6), 061021, 2016.

J53. The GR2 Gripper: An Underactuated Hand for Open-Loop In-Hand Planar Manipulation
N. Rojas, R.R. Ma, and **A.M. Dollar**, *IEEE Transactions on Robotics,* vol. 32(3), pp. 763-770, 2016.

J52. Single-Grasp Object Classification and Feature Extraction with Simple Robot Hands and Tactile Sensors

A. Spiers, M.V. Liarokapis, B. Calli, and **A.M. Dollar**, *IEEE Transactions on Haptics,* vol. 9(2), pp. 207-220, 2016.

J51. Classification and Kinematic Equivalents of Contact Types for Fingertip-Based Robot Hand Manipulation
N. Rojas and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics*, vol. 8(4), 041014, 2016.

J50. Gross Motion Analysis of Fingertip-Based Within-Hand Manipulation
N. Rojas and **A.M. Dollar**, *IEEE Transactions on Robotics,* vol. 32(4), pp. 1009-1016, 2016.

J49. The Coupler Surface of the RSRS Mechanism
N. Rojas and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics*, vol. 8(1), 014505, 2016.

J48. An Adaptive Three-fingered Prismatic Gripper with Passive Rotational Joints
S.B. Backus and **A.M. Dollar**, *IEEE Robotics and Automation Letters (with 2016 ICRA option),* vol. 1(2), pp. 668-675, 2016.

J47. The GRASP Taxonomy of Human Grasp Types
T. Feix, J. Romero, H.-B. Schmiedmayer, **A.M. Dollar**, and D. Kragic, *IEEE Transactions on Human-Machine Systems,* vol. 46(1), pp. 66-77, 2016.

J46. Dimensional Synthesis of Three-fingered Robot Hands for Maximal Precision Manipulation Workspace
J. Borras-Sol and **A.M. Dollar**, *International Journal of Robotics Research,* vol. 34(14), pp. 1731–1746, 2015.

J45. A Unified Position Analysis of the Dixon and the Generalized Peaucellier Linkages
N. Rojas, **A.M. Dollar**, and F. Thomas, *Mechanism and Machine Theory*, vol. 94, pp. 28-40, 2015.

J44. Benchmarking in Manipulation Research: Using the Yale-CMU-Berkeley Object and Model Set
B. Calli, A. Walsman, A. Singh, S. Srinivasa, P. Abbeel, and **A.M. Dollar**, *IEEE Robotics and Automation Magazine,* vol. 22(3), pp. 36-52, 2015.

J43. Biomechanical Effects of Stiffness in Parallel with the Knee Joint during Walking
K. Shamaei, M. Cenciarini, A.A. Adams, K.N. Gregorczyk, J.M. Schiffman, and **A.M. Dollar**, *IEEE Transactions on Biomedical Engineering,* vol. 62(10), pp. 2389–2401, 2015. Featured Article.

J42. Workspace Shape and Characteristics for Human Two- and Three-Fingered Precision Manipulation
I.M. Bullock, T. Feix, and **A.M. Dollar**, *IEEE Transactions on Biomedical Engineering*, vol. 62(9), pp. 2196-2207, 2015.

J41. Stable, Open-Loop Precision Manipulation with Underactuated Hands
L.U. Odhner and **A.M. Dollar**, *International Journal of Robotics Research*, vol. 34(11), pp. 1347-1360, 2015.

J40. Estimating Thumb–Index Finger Precision Grip and Manipulation Potential in Extant and Fossil Primates
T. Feix, T.L. Kivell, E. Pouydebat, and **A.M. Dollar**, *Journal of the Royal Society Interface,* vol. 12, 20150176, 2015.

J39. Strengthening of 3D Printed Fused Deposition Manufactured Parts using the Fill Composing Technique

J.T. Belter, and **A.M. Dollar**, *PLOS ONE*, vol. 10(4): e0122915, 2015.

J38. Design for Control of Wheeled Inverted Pendulum Platforms
H. Vasudevan, **A.M. Dollar**, and John Morrell, *ASME Journal of Mechanisms and Robotics,* vol. 7(4), 041005, 2015.

J37. Mechanical Analysis of Avian Feet: Multiarticular Muscles in Grasping and Perching
S.B. Backus, D. Sustaita, L.U. Odhner, and **A.M. Dollar**, *Royal Society Open Science*, vol. 2(2), 140350, 2015.

J36. Printing 3D Electrical Traces in Additive Manufactured Parts via Low Melting Temperature Metals
J.P. Swensen, L.U. Odhner, B. Araki*, and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 7(2), 021004, 2015.

J35. Hybrid Deposition Manufacturing: Design Strategies for Multi-Material Mechanisms via 3D-Printing and Material Deposition
R.R. Ma, J.T. Belter, and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 7(2), 021002, 2015.

J34. The Yale Human Grasping Data Set: Grasp, Object, and Task Data in Household and Machine Shop Environments
I.M. Bullock, T. Feix, and **A.M. Dollar**, *International Journal of Robotics Research*, vol. 34(3), pp. 251–255, 2015.

J33. Stability of Helicopters in Compliant Contact under PD-PID Control
P.E.I. Pounds and **A.M. Dollar**, *IEEE Transactions on Robotics,* vol. 30(6), pp. 1472-1486, 2014.

J32. Analysis of Human Grasping Behavior: Correlating Tasks, Objects, and Grasps
T. Feix, I.M. Bullock, and **A.M. Dollar**, *IEEE Transactions on Haptics,* vol. 7(4), pp. 430-441, 2014.

J31. Analysis of Human Grasping Behavior: Object Characteristics and Grasp Type
T. Feix, I.M. Bullock, and **A.M. Dollar**, *IEEE Transactions on Haptics,* vol. 7(3), pp. 311-323, 2014.

J30. Active-Cells for Redundant and Configurable Articulated Structures
J.P. Swensen, A.I Nawroj, P.E.I. Pounds, and **A.M. Dollar**, *Smart Materials and Structures*, vol. 23(10), 104003, 2014.

J29. A Passively Adaptive Continuously Variable Transmission
J.T. Belter and **A.M. Dollar**, *IEEE Transactions on Robotics,* vol. 30(5), pp. 1148-1160, 2014.

J28. Exploring Dexterous Manipulation Workspaces with the iHY Hand
L.U. Odhner, R.R. Ma, and **A.M. Dollar**, *Journal of the Robotics Society of Japan,* vol. 32(4), pp. 318-322, 2014.

J27. Design and Preliminary Evaluation of a Quasi-Passive Knee Exoskeleton for Investigation of Motor Adaptation in Lower Extremity Joints
K. Shamaei, M. Cenciarini, A.A. Adams, K.N. Gregorczyk, J.M. Schiffman, and **A.M. Dollar**, *IEEE Transactions on Biomedical Engineering,* vol. 61(6), pp. 1809-1821, 2014 (**Featured Article**).

J26. A Compliant, Underactuated Hand for Robust Manipulation
L.U. Odhner, L.P. Jentoft, M.R. Claffee, N. Corson, Y. Tenzer, R.R. Ma, M. Buehler, R. Kohout, R.D. Howe, **A.M. Dollar**, *International Journal of Robotics Research,* vol. 33(5), pp. 736-752, 2014.

J25. Robust Resonant Frequency-Based Contact Detection with Applications in Robotic Reaching and Grasping
S.B. Backus and **A.M. Dollar**, *ASME/IEEE Transactions on Mechatronics,* vol. 19(5), pp. 1552-1561, 2014.

J24. Design and Functional Evaluation of a Quasi-Passive Complaint Stance Control Knee-Ankle-Foot Orthosis
K. Shamaei, P. Napolitano*, and **A.M. Dollar**, *IEEE Transactions on Neural Systems and Rehabilitation Engineering,* vol. 22(2), pp. 258-268, 2014.

J23. Parallel Robots Actuation Torque Reduction Using Joint Compliance
J. Borras-Sol and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 6(2), 021006, 2014.

J22. Intrinsic Embedded Sensors for Polymeric Mechatronics: Flexure and Force Sensing
L. Jentoft, **A.M. Dollar**, C.R. Wagner, and R.D. Howe, *Sensors, Special Issue on Tactile Sensing,* vol. 14(3), pp. 3861-3870, 2014.

J21. Analyzing Dexterous Hands using a Parallel Robots Framework
J. Borras-Sol and **A.M. Dollar**, *Autonomous Robots, Special Issue on Modern Approaches for Dexterous Manipulation,* vol. 36(1), pp. 169-180, 2014.

J20. Linkage-Based Analysis and Optimization of an Underactuated Planar Manipulator for In-Hand Manipulation
R.R. Ma and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics*, vol. 6(1), 011002, 2014.

J19. Electrically Conductive Bulk Composites through a Contact-Connected Aggregate
A.I. Nawroj, J.P. Swensen, and **A.M. Dollar**, *PLOS ONE,* vol. 8(12): e82260, 2013.

J18. Estimation of Quasi-Stiffness of the Human Hip in the Stance Phase of Walking
K. Shamaei, G.S. Sawicki, and **A.M. Dollar**, *PLOS ONE,* vol. 8(12): e81841, 2013.

J17. Grasp Type and Frequency in Daily Household and Machine Shop Tasks
I.M. Bullock, J.Z. Zheng, S. De La Rosa*, C. Guertler*, and **A.M. Dollar**, *IEEE Transactions on Haptics,* vol. 6(3), pp. 296-308, 2013.

J16. The Mechanical Design and Performance Specifications of Anthropomorphic Prosthetic Hands: A Review
J.T. Belter, J. Segil, **A.M. Dollar**, and R.F. Weir, *Journal of Rehabilitation Research and Development*, vol. 50(5), pp. 599-618, 2013.

J15. Kinematic Design of an Underactuated Robot Leg for Passive Terrain Adaptability and Stability
O.Y. Kanner and **A.M. Dollar**, *ASME Journal of Mechanisms and Robotics,* vol. 5, 031006-1, Aug. 2013.

J14. Open-Loop Precision Grasping with Underactuated Hands Inspired by a Human Manipulation Strategy
L.U. Odhner, R.R. Ma, and **A.M. Dollar**, *IEEE Transactions on Automation Science and Engineering,* vol. 10(3), pp. 625-633, 2013.

J13. A Hand-Centric Classification of Human and Robot Dexterous Manipulation
I.M. Bullock, R.R. Ma, and **A.M. Dollar**, *IEEE Transactions on Haptics,* vol. 6(2), pp. 129-144, 2013. Cover Article.

J12. Estimation of Quasi-Stiffness and Propulsive Work of the Human Ankle in the Stance Phase of Walking

K. Shamaei, G.S. Sawicki, and **A.M. Dollar**, *PLOS ONE,* vol. 8(3): e59935, 2013.

J11. Estimation of Quasi-Stiffness of the Knee in the Stance Phase of Human Walking
K. Shamaei, G.S. Sawicki and **A.M. Dollar**, *PLOS ONE,* vol. 8(3): e59993, 2013.

J10. The Connectedness of Packed Circles and Spheres with Application to Conductive Cellular Materials
J.P. Swensen and **A.M. Dollar**, *PLOS ONE,* vol. 7(12): e51695, 2012.

J9. Stability of Small-Scale UAV Helicopters and Quadrotors with Added Payload Mass under PID Control
P.E.I. Pounds, D.R. Bersak, and **A.M. Dollar**, *Autonomous Robots,* vol. 33, pp. 129-142, 2012.

J8. The Smooth-Curvature Flexure Model: An Accurate, Low-Dimensional Approach for Large-Deflection Euler-Bernoulli Bending Beams
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C15. Benchmarking Grasping and Manipulation: Properties of the Objects of Daily Living
K. Matheus* and **A.M. Dollar**, *proceedings of the 2010 IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2010.

C14. Hovering Stability of Helicopters with Elastic Tethers
P.E.I. Pounds and **A.M. Dollar**, *proceedings of the ASME Dynamic Systems and Control Conference (DSCC),* 2010.

C13. Fast, Accurate Models for Predicting the Compliance of Elastic Flexure-Jointed Robots
L.U. Odhner and **A.M. Dollar**, *proceedings of the 2010 ASME IDETC Mechanisms and Robotics Conference,* 2010.

C12. External Disturbances and Coupling Mechanisms in Underactuated Hands
R. Balasubramanian and **A.M. Dollar**, *proceedings of the 2010 ASME IDETC Mechanisms and Robotics Conference,* 2010.

C11. The Smooth Curvature Flexure Model: An Accurate, Low-Dimensional Approach for Robot Analysis
L.U. Odhner and **A.M. Dollar**, *proceedings of the Robotics: Science and Systems Conference (RSS),* 2010.

C10. The SDM Hand: A Highly Adaptive Compliant Grasper for Unstructured Environments
A.M. Dollar and R.D. Howe, *proceedings of the 2008 International Symposium on Experimental Robotics (ISER),* 2008, published in *Experimental Robotics: The Eleventh International Symposium, Springer Tracts in Advanced Robotics (STAR 54)*, O. Khatib et al. (Eds.), pp. 3-11, 2009.

C9. Design of a Quasi-Passive Knee Exoskeleton to Assist Running
A.M. Dollar and H. Herr, *2008 IEEE/RSJ Conference on Intelligent Robots and Systems (IROS),* Nice, France, Sept. 22-25, 2008.

C8. Active Orthoses for the Lower Limbs: Challenges and State of the Art
A.M. Dollar and H. Herr, *proceedings of the 2007 IEEE International Conference on Rehabilitation Robotics (ICORR),* Noordwijk, Netherlands, June 13-17, 2007.

C7. The SDM Hand as a Prosthetic Terminal Device: A Preliminary Evaluation
A.M. Dollar and R.D. Howe, *proceedings of the 2007 IEEE International Conference on Rehabilitation Robotics (ICORR),* Noordwijk, Netherlands, June 13-17, 2007. **Winner, Best Student Paper Award**

C6. Simple, Robust Autonomous Grasping in Unstructured Environments
A.M. Dollar and R.D. Howe, *proceedings of the 2007 IEEE International Conference on Robotics and Automation (ICRA),* Rome, Italy, April 10-14, 2007.

C5. Joint Coupling Design of Underactuated Grippers
A.M. Dollar and R.D. Howe, *proceedings of the ASME 30th Annual Mechanisms and Robotics Conference*, *2006 International Design Engineering Technical Conferences (IDETC)*, Philadelphia, PA, Sept. 10-13, 2006.

C4. Embedded Sensors for Biomimetic Robotics via Shape Deposition Manufacturing
A.M. Dollar, C.R. Wagner, R.D. Howe*, Proceedings of the first IEEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob2006)*, selected for a single-track podium presentation, Pisa, Italy, Feb. 20-22, 2006.

C3. Starting on the Right Track: Introducing Students to Mechanical Engineering with a Project-Based Machine Design Course
A.M. Dollar, A.E. Kerdok, S.G. Diamond, P.M. Novotny, R.D. Howe, *Proceedings of the Mechanical Engineering Education Symposium, 2005 ASME International Mechanical Engineering Congress and Exposition (IMECE),* Orlando, FL, Nov. 5-11, 2005.

C2. Design and Evaluation of a Robust Compliant Grasper using Shape Deposition Manufacturing
A.M. Dollar and R.D. Howe, *Proceedings of the ASME Dynamic Systems and Control Division, 2005 ASME International Mechanical Engineering Congress and Exposition (IMECE),* Orlando, FL, Nov. 5-11, 2005.

C1. Towards Grasping in Unstructured Environments: Optimization of Grasper Compliance and Configuration
A.M. Dollar and R.D. Howe, *Proceedings of the 2003 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Las Vegas, NV, October 27-31, 2003.

Contributed Papers and Abstracts

60. Optimization of Anthropomorphic Underactuated Hands for Two-Fingered Precision Grasping with a Single Actuator
M. Leddy and **A.M. Dollar**, *(in prep for ArXiv)*.

59. Confidence Metrics on Machine-Learned Classifications Enable Robust Automatic Labeling of Unlabeled Biological Data: A Case Study from Botany
J. Koss, A. Jiang*, P. Sweeney, N. Rios, and **A.M. Dollar**, proceedings of the 2021 Biodiversity Information Standards Conference (TDWG), 2021.

58. Revisiting the functional morphology of the Homo habilis OH 7 hand
Y. Gloumakov, **A.M. Dollar**, and T. Kivell, proceedings of the 2021 meeting of the European Society for the study of Human Evolution (ESHE), 2021.

57. Pre-Grasp Sliding Manipulation Planning of Thin Objects Using Soft, Compliant, or Underactuated Hands
K. Hang, A. Morgan, and **A.M. Dollar**, presentation at *IEEE International Conference on Robotics and Automation (published as journal paper in IEEE RAL),* 2019.

56. Variable-Friction Finger Surfaces to Enable Within-Hand Manipulation via Gripping and Sliding
A. Spiers, B. Calli, and **A.M. Dollar**, presentation at *IEEE International Conference on Intelligent Robots and Systems (IROS) (published as journal paper in IEEE RAL),* 2018.

55. Shape Control of Compliant, Articulated Meshes: Towards Modular Active-Cell Robots (MACROs)
A.I. Nawroj and **A.M. Dollar**, presentation at *IEEE International Conference on Intelligent Robots and Systems (IROS) (published as journal paper in IEEE RAL),* 2017.

54. YCB Benchmarking Project: Object Set, Data Set and their Applications
B. Calli, A. Singh, J. Bruce, A. Walsman, K. Konolige, S. Srinivasa, P. Abbeel, and **A.M. Dollar**, *Journal of the Society of Instrument and Control Engineers (Japan)*, vol. 56(10), pp. 792-797, 2017.

53. Classifying and Quantifying Unilateral Prosthesis Use in Home Environments to Inform Device and Treatment Design

A. Spiers, L. Resnick, and **A.M. Dollar**, *proceedings of the Myoelectric Controls/Powered Prosthetics Symposium (MEC),* 2017.

52. Design of a Powered Three Degree-of-Freedom Prosthetic Wrist
N. Bajaj and **A.M. Dollar**, *proceedings of the Myoelectric Controls/Powered Prosthetics Symposium (MEC),* 2017.

51. Design of a Powered Three Degree-of-Freedom Prosthetic Wrist
M. Leddy and **A.M. Dollar**, *proceedings of the Myoelectric Controls/Powered Prosthetics Symposium (MEC),* 2017.

50. Open-Source and Widely Disseminated Robot Hardware [From the Guest Editors]
A.M. Dollar, F. Mondada, A. Rodriguez, and G. Metta, *IEEE Robotics and Automation Magazine*, vol. 24(1), pp. 30-31, 2017.

49. Bringing Together Researchers in Robot Mechanisms and Design [TC Spotlight]
A.M. Dollar, C. Semini, K.J. Cho, and M. Ciocarlie, *IEEE Robotics and Automation Magazine*, vol. 24(1), pp. 18-19, 2017.

48. An Adaptive Three-fingered Prismatic Gripper with Passive Rotational Joints
S.B. Backus and **A.M. Dollar**, presentation at *IEEE International Conference on Robotics and Automation (published as journal paper in IEEE RAL),* 2016.

47. Flatland: An Immersive Theatre Experience Centered on Shape Changing Haptic Navigation Technology
A. Spiers, J. van der Linden, M. Oshodi, S. Wiseman, and **A.M. Dollar**, *Work in Progress Paper, World Haptics Conference,* Chicago, IL, 2015. **Winner, People's Choice Award for Work in Progress**

46. Classifying Dexterous Manipulation in Human and Robotic Systems
I.M. Bullock, T. Feix, and **A.M. Dollar**, *proceedings of the Workshop on Observing and Understanding Hands in Action (HANDS 2015), in conjunction with IEEE CVPR,* Boston, MA, 2015.

45. The Yale Human Grasping Data Set
I.M. Bullock, T. Feix, and **A.M. Dollar**, *proceedings of the Workshop on Observing and Understanding Hands in Action (HANDS 2015), in conjunction with IEEE CVPR,* Boston, MA, 2015. **Winner, Best Poster Presentation.**

44. Classifying Object and Task Properties in Unstructured Environments
T. Feix, I.M. Bullock, and **A.M. Dollar**, *proceedings of the Workshop on Observing and Understanding Hands in Action (HANDS 2015), in conjunction with IEEE CVPR,* Boston, MA, 2015.

43. Benchmarking in Manipulation Research: The YCB Object and Model Set and Benchmarking Protocols
B. Calli, A. Walsman, A. Singh, S. Srinivasa, P. Abbeel, and **A.M. Dollar**, *arXiv:1502.03143*, 2015.

42. Editorial: Special Issue on Novel Approaches to Design and Manufacture of Fully-Integrated Robotic Mechanisms
A.M. Dollar, K. Cho, R.S. Fearing, Y. Park, *ASME Journal of Mechanisms and Robotics*, 2015.

41. Robots Get a Grip
R.D. Howe, **A.M. Dollar**, and M. Claffee, *IEEE Spectrum*, pp. 42-47, Dec. 2014.

40. Development of Active-Cells for Macroscopically Deformable Structures

A. Nawroj, J.P. Swensen, and **A.M. Dollar**, *2014 ASME Smart Materials and Structures Conference*, 2014.

39. Classifying dexterous manipulation in human and robotic systems
    I.M. Bullock, R.R. Ma, and **A.M. Dollar**, *proceedings of the 2014 Hand, Brain, and Technology Conference,* Ascona, Switzerland, 2014.

38. Human grasping in unstructured environments
    T. Feix, I.M. Bullock, and **A.M. Dollar**, *proceedings of the 2014 Hand, Brain, and Technology Conference,* Ascona, Switzerland, 2014.

37. Modeling of precision grip in primates
    T. Feix, T. Kivell, E. Pouydebat, and **A.M. Dollar**, *proceedings of the 2014 Hand, Brain, and Technology Conference,* Ascona, Switzerland, 2014.

36. Kinematics of two- and three-fingered dexterous precision manipulation
    I.M. Bullock, T. Feix, and **A.M. Dollar**, *proceedings of the 2014 Hand, Brain, and Technology Conference,* Ascona, Switzerland, 2014.

35. Grasp and Force Based Taxonomy of Split-Hook Prosthetic Terminal Devices
    J.T. Belter, Bo Reynolds*, and **A.M. Dollar**, *proceedings of the Myoelectric Controls/Powered Prosthetics Symposium (MEC),* 2014.

34. Progress towards the Yale Body-Powered Anthropomorphic Prosthetic Hand: Mechanical Coupling Methods
    J.T. Belter and **A.M. Dollar**, *proceedings of the Myoelectric Controls/Powered Prosthetics Symposium (MEC),* 2014.

33. Effects of Knee Exoskeleton Mass, Joint Design, and Stiffness Level on the Metabolic Cost of Gait
    A.A. Adams, III, K.N. Gregorczyk, K. Shamaei, M. Cenciarini, J.M. Schiffman, and **A.M. Dollar**, *World Congress of Biomechanics*, 2014.

32. Editorial: Special Issue on the Mechanics and Design of Robotic Hands
    A.M. Dollar, A. Bicchi, M.R. Cutkosky, and R.D. Howe, *International Journal of Robotics Research*, 2014.

31. Development of a Bulk Conducting Polymer using Embedded Macroscopic Copper Cells
    A. Nawroj, J.P. Swensen, and **A.M. Dollar**, *2013 ASME Smart Materials and Structures Conference*, 2013.

30. Active-Cells for the Construction of Redundant and Configurable Articulated Structures
    J.P. Swensen and **A.M. Dollar**, *2013 ASME Smart Materials and Structures Conference*, 2013.

29. Towards Hyper-Redundant and Super-Configurable Articulated Structures
    J.P. Swensen and **A.M. Dollar**, *2012 ASME Smart Materials and Structures Conference*, 2012.

28. Compliance and Adaptive Underactuation for Prosthetic Terminal Devices
    A.M. Dollar, *2012 US Military Health System Research Conference*, 2012.

27. Leg stiffness while performing an extension/flexion task
    M. Cenciarini and **A.M. Dollar**, *2012 IEEE Engineering in Medicine and Biology Conference (EMBC)*, late-breaking results poster, 2012.

26. Characterization of Quasi-Stiffness and Work of Ankle in Walking
    K. Shamaei and **A.M. Dollar**, *2012 IEEE Engineering in Medicine and Biology Conference (EMBC)*, late-breaking results poster, 2012.

25. Characterization of Quasi-Stiffness of Lower Extremity Joints
    K. Shamaei, G.S. Sawicki, and **A.M. Dollar**, *proceedings of the* 2012 *Dynamic Walking Conference,* 2012.

24. Low-Dimensional Generalized Coordinate Models of Large-Deformation Elastic Joints
    L.U. Odhner and **A.M. Dollar**, *proceedings of the* 2012 *American Physical Society March Meeting, Focused Session: Extreme Mechanics – Structures for Form and Function,* 2012.

23. Grasping while Hovering with the Yale Aerial Manipulator
    P.E.I. Pounds, D. Bersak, and **A.M. Dollar**, *proceedings of the* 2011 *IEEE International Conference on Technologies for Practical Robot Applications (TePRA),* 2011.

22. The Yale Aerial Manipulator (video)
    P.E.I. Pounds, D. Bersak, and **A.M. Dollar**, *proceedings of the* 2011 *IEEE International Conference on Robotics and Automation (ICRA),* 2011.

21. Benchmarking for Grasping in Human Environments
    A.M. Dollar, *proceedings of the Workshop on Performance Evaluation and Benchmarking for Intelligent Robots and Systems with Cognitive and Autonomy Capabilities, IEEE International Conference on Intelligent Robots and Systems (IROS),* 2010.

20. A Framework for Studying Underactuation in the Human Hand
    R. Balasubramanian and **A.M. Dollar**, *proceedings of the 2010 American Society of Biomechanics Annual Meeting (ASB),* 2010.

19. New Models for Understanding the Compliant Behavior of Underactuated Manipulator Fingers
    L.U. Odhner, R. Balasubramanian, and **A.M. Dollar**, *proceedings of the 2010 International Workshop on Underactuated Grasping, Montreal, Quebec,* 2010.

18. Towards Benchmarking Grasping and Manipulation: Properties of the Objects of Daily Living
    A.M. Dollar, *proceedings of the Workshop on Strategies and Evaluation for Mobile Manipulation in Household Environments, Robotics: Science and Systems Conference,* 2010.

17. Simple, Reliable Robotic Grasping for Human Environments
    A.M. Dollar and R.D. Howe, *proceedings of the IEEE International Conference on Technologies for Practical Robot Applications (TePRA),* Woburn, MA, Nov. 11, 2008.

16. RoboticsCourseWare.org– An Open Repository of Robotics Pedagogical Materials
    A.M. Dollar*, Workshop on Teaching with Robots, Robotics: Science and Systems Conference,* Zurich, Switzerland, June 28, 2008.

15. RoboticsCourseWare.org – An Open Repository of Robotics Pedagogical Materials
    A.M. Dollar, D. Rus, and P. Fiorini, *IEEE Robotics and Automation Magazine*, *Education Editorial Column*, vol. 15(2), 2008.

14. The Robotics OpenCourseWare Project
    A.M. Dollar*, Workshop on Research in Robots for Education, Robotics: Science and Systems Conference,* Atlanta, GA, June 30, 2007.

13. Guiding Grasping with Proprioception and Markov Models

P. Deckers, **A.M. Dollar**, and R.D. Howe, *proceedings of the Workshop on Robot Manipulation: Sensing and Adapting to the Real World, Robotics: Science and Systems Conference,* Atlanta, GA, June 30, 2007.

12. Simple, Robust Grasping in Unstructured Environments
    A.M. Dollar and R.D. Howe, *Third Annual New England Manipulation Symposium,* Rensselaer Polytechnic Institute, June 1, 2007.

11. Simple, Robust Grasping in Human Environments
    A.M. Dollar and R.D. Howe, *proceedings of the 5th IARP/IEEE-RAS/EURON Workshop on Technical Challenges for Dependable Robots in Human Environments,* Rome, Italy, April 15, 2007.

10. The Harvard Hand – An Adaptive Gripper for Simple, Robust Grasping
    A.M. Dollar and R.D. Howe, *proceedings of the Workshop on Contact Interface in Robotic Manipulation, 2007 IEEE International Conference on Robotics and Automation (ICRA),* Rome, Italy, April 14, 2007.

9. Design Principles for Robust Grasping in Unstructured Environments
    A.M. Dollar, Ph.D. Dissertation, Harvard University, October 2006.

8. Designing Robust Robotic Graspers for Unstructured Environments
    A.M. Dollar and R.D. Howe, *proceedings of the Workshop on Manipulation for Human Environments, 2006 Robotics: Science and Systems Conference,* Philadelphia, PA, Aug. 19, 2006.

7. A Robust Robotic Hand for Unstructured Environments
    A.M. Dollar, *ASME 30th Annual Mechanisms and Robotics Conference*, *2006 International Design Engineering Technical Conferences (IDETC)*, Philadelphia, PA, Sept. 10-13, 2006. **First Place, 2006 ASME Student Mechanism Design Competition, Graduate Division.**

6. Teaching Robotics Everywhere: Spotlight on the Robotics Curriculum Clearinghouse
    A.M. Dollar and Daniela Rus, *IEEE Robotics and Automation Magazine*, *Education Editorial Column*, vol. 13(2), pp. 7-8, 2006.

5. Passive Compliant Grasping for Unstructured Environments (poster)
    A.M. Dollar and R.D. Howe, *Workshop on Humanoid Manipulation, Robotics: Science and Systems Conference*, Cambridge, MA, June 2005.

4. Arthropod Grasping and Manipulation: A Literature Review
    A.M. Dollar, *Harvard BioRobotics Laboratory Technical Report*, April 2001.

3. The Effect of Load Carrying on the Speed of Locomotion in Arthropods and a Biomimetic Arthropod Robot
    A.M. Dollar, *Harvard BioRobotics Laboratory Technical Report*, May 2001.

2. A Comparison of the Force Dynamics of the Precision Grip of Humans and Robots
    A.M. Dollar, *Harvard BioRobotics Laboratory Technical Report*, January 2001.

1. Mental Processes During a Quadrilateral Folding Task
    A.M. Dollar, Undergraduate Honors Thesis, Department of Mechanical and Industrial Engineering, University of Massachusetts at Amherst, 2000.

PATENTS AND APPLICATIONS

4. Weight Acceptance Control Orthosis

A.M. Dollar and K. Shamaei, U.S. Provisional Patent Application filed Dec. 2014. *Exclusive worldwide license to Becker Orthopedic Appliance Company (Birmingham, MI).*

3. Multi-Grasp Prosthetic Hand
   J.T. Belter, **A.M. Dollar,** M. Leddy, and K.D. Gemmell, U.S. Patent number 10,219,919 B2, issued Mar. 3, 2019.

2. Friction-Based Orthotic Impedance Modulation Device
   A.M. Dollar and K. Shamaei, U.S. Patent No. 9,788,985, issued Oct. 17, 2017. *Exclusive worldwide license to Becker Orthopedic Appliance Company (Birmingham, MI).*

1. Robust Compliant Adaptive Grasper and Method of Manufacturing Same
   A.M. Dollar and R.D. Howe, U.S. Patent number 8231158, issued July 31, 2012. *Exclusive worldwide license to Barrett Technology, Cambridge, MA (2009-2010) and RightHand Robotics, Cambridge, MA (2014-pres).*

SERVICE ACTIVITIES

Founder

- IROS Best Paper Award on Robot Mechanisms and Design – One of the few paper awards given at the co-sponsored IEEE RAS/ RSJ Conference. First given in 2020.
- ICRA Best Paper Award on Robot Mechanisms and Design – One of the few paper awards given at the flagship conference for the IEEE Robotics and Automation Society. First given in 2019.
- Yale/CMU/Berkeley (YCB) Object and Task Set – a resource for common benchmarking in robotic manipulation research, including a kit of physical objects (distributed to over 50 research groups worldwide), RGBD scans and geometric models of the objects, and detailed protocols and benchmarking procedures. With Sidd Srinivasa (CMU) and Pieter Abbeel (UC Berkeley). Launched May 2015.
- OpenRobotHardware.org – a resource for efforts in disseminating, encouraging, and suggesting best-practices for Open and Open Source mechanical and electrical hardware for robotic systems, with a particular focus on projects that may be useful in academic research and education. Launched October 1, 2013.
- Yale OpenHand Project – a resource for the free dissemination of inexpensive and easy-to-fabricate robotic hands, complete with modifiable source files and in-depth instructional videos.
- RoboticsCourseWare.org - a repository for pedagogical materials for facilitating implementation of new university-level robotics courses. In collaboration with Daniela Rus (MIT) and Paolo Fiorini (University of Bologna). Funded in part by IEEE Robotics and Automation Society. Launched February 15, 2008.

Founding Chair

IEEE Robotics and Automation Society Technical Committee on Mechanisms and Design, 2014-pres. Currently over 230 members.

Editorial Work - Journals

- Management Committee, IEEE/ASME Transactions on Mechatronics, 2016-2021.
  - Treasurer, 2021
  - Chair, 2019
  - Secretary, 2017-2018
- Lead Guest Editor, Special Issue on Benchmarking for Robot Manipulation, IEEE Robotics and Automation Letters, 2018-pres.
- Associate Editor, ASME Journal of Mechanisms and Robotics, 2013-2017.
- Lead Guest Editor, Special Issue on Open-Source Robot Hardware, IEEE Robotics and Automation Magazine, 2013-2016.
- Lead Guest Editor, Special Issue on Novel Approaches to Design and Manufacture of Fully-Integrated Robotic Mechanisms, ASME Journal of Mechanisms and Robotics, 2014-2015.

- Lead Guest Editor, Special Issue on Mechanics and Design of Robot Hands, International Journal of Robotics Research, 2013-2014.

Editorial Work - Conferences

- Associate Editor, IEEE Int. Conf. on Robotics and Automation (ICRA), 2014
- Associate Editor, IEEE Int. Conf. on Intelligent Robots and Systems (IROS), 2013
- Associate Editor, IEEE Int. Conf. on Robotics and Automation (ICRA), 2013
- Associate Editor, IEEE Int. Conf. on Biorobotics and Biomechatronics (BioRob), 2012
- Associate Editor, IEEE Int. Conf. on Robotics and Automation (ICRA), 2012

Symposium/Workshop/Tutorial Chair

- Workshop on "Advancing Robot Manipulation Through Open-Source Ecosystems", ICRA 2023 (co-chair)
- Workshop on "2nd Workshop on Compliant Robot Manipulation: Challenges and New Opportunities", ICRA 2023 (co-chair)
- Workshop on "Advancing Human-Robot Interaction Research and Benchmarking Through Open-Source Ecosystems", HRI 2023 (co-chair)
- Workshop on "Perspectives on Achieving Research Convergence for Robotics-Enabled Future of Work", ICRA 2022 (co-chair)
- Workshop on "Compliant Robot Manipulation: A Discussion on Challenges and New Opportunities", ICRA 2022 (co-chair)
- Workshop on Benchmarking in Robotic Manipulation, ICRA 2019 (chair)
- New England Manipulation Symposium 2018 (chair)
- Yale OpenHand Workshop 2018 (chair)
- Workshop on Examining Sensing Modalities for Robust and Dexterous Object Manipulation, IROS 2018 (co-chair)
- Workshop on Benchmarking in Robotic Manipulation, IROS 2017 (chair)
- Workshop on Grasping and Manipulation Datasets, ICRA 2016 (co-chair)
- Yale-CMU-Berkeley Object and Model Set Tutorial, ICRA 2015 (chair)
- Tutorial on Fabrication Techniques, National Robotics Initiative PI Meeting, Arlington, VA, Oct. 2013 (co-chair)
- Workshop on Common Platforms in Robotic Manipulation, Robotics: Science and Systems Conference (RSS), 2013 (co-chair).
- Open-Source Robot Hand Tutorial, ICRA 2013 (chair)
- Dexterous Hands and Grasping Symposium, 50th Anniversary of Robotics celebration, IROS 2011 (co-chair w/Aaron Edsinger)
- New England Manipulation Symposium 2011 (co-chair w/John Morrell)

Program/Scientific Committee

- Senior Program Committee, IEEE International Conference on Robotics and Automation (ICRA), 2023
- International Symposium on Experimental Robotics (ISER), Buenos Aires, 2018
- IEEE International Conference on Rehabilitation Robotics (ICORR), Singapore, 2015
- Workshop on Robot Manipulation, IEEE Int. Conf. on Robotics and Autonomous Systems (IROS), 2014.
- Robotics: Science and Systems Conference, 2014
- Executive Program Committee, IEEE Int. Conf. on Biorobotics and Biomechatronics (BioRob), 2012
- Workshop on Mobile Manipulation, IEEE Int. Conf. on Robotics and Automation (ICRA), 2011
- Workshop on Manipulation in Human Environments, Robotics: Science and Systems Conference 2008
- Workshop on Robotics in Education, Robotics: Science and Systems Conference 2008
- Workshop on Manipulation in Human Environments, Robotics: Science and Systems Conference 2007

Technical Review Panels/Advisory Boards

- IEEE Robotics and Automation Society
    - Technical Activities Board (TAB), 2014-present
    - Publication Activities Board (PAB), 2016-present
- US National Robotics Roadmap, 2020 panelist, Jan. 2020
- US National Robotics Roadmap, 2016 Update Committee, Sept.-Oct. 2016

- IEEE Robotics and Automation Society AdHoc Committee on New Publication Strategies, March 2014-2015.
- National Institute of Standards and Technology (NIST) working group on Performance Metrics for Robot Hands (PI: Joe Falco), October 2013-pres.
- Advisory Board for AEROWORKS (proposal to EU FP7-ICT-2013-10), PI: G. Nikolakopoulos (Luleå University of Technology, Sweden)
- Review Panel for University of Birmingham (UK) program to launch manipulation research center, July 2012
- EU-US Workshop on Medical/Healthcare Robotics, May 2012
- Fall Program Speaker (3 hours), Chief of Naval Operations Strategic Studies Group, Naval War College, October 2011
- Human Sciences Basic Research Evaluation Visiting Committee, Natick Soldier Research, Development, and Engineering Center, April 2009
- Computing Community Consortium / Computing Research Association - Research Roadmap for Service Robotics Workshop (led to National Robotics Initiative, among others), San Francisco, CA, Aug 7-8, 2008
- Computing Community Consortium / Computing Research Association - Research Roadmap for Healthcare Robotics Workshop (led to National Robotics Initiative, among others), Washington DC, June 19-20, 2008

Grant Proposal Reviews

- NASA Graduate Research Fellowship, 2021/2022
- Ad-Hoc Proposal Reviewer, CISE Core Programs, National Science Foundation, 2019
- Ad-Hoc Proposal Reviewer, CISE Core Programs, National Science Foundation, 2018
- Ad-Hoc Proposal Reviewer, External Research Proposal Reviews, Oak Ridge Institute for Science and Education, 2018
- Ad-Hoc Proposal Reviewer, (redacted European University Fellowship Program), 2018.
- Proposal Review Panelist, CISE Core Programs, National Science Foundation, 2017
- Ad-Hoc Proposal Reviewer, National Science Foundation, National Robotics Initiative, 2017
- Ad-Hoc Proposal Reviewer, Veterans Health Administration, 2017
- Ad-Hoc Proposal Reviewer, Army Research Office, 2015
- Proposal Review Panelist, National Institutes of Health (NIH), Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), 2015
- Proposal Review Panelist, Joint Warfighter Medical Research Program, U.S. Army Medical Research and Materiel Command, 2015
- Proposal Review Panelist, National Robotics Initiative, National Science Foundation, 2015
- Proposal Review Panelist, Graduate Research Fellowship Program, National Science Foundation/American Society of Engineering Education, 2014/2015
- Proposal Review Panelist, Joint Warfighter Medical Research Program, U.S. Army Medical Research and Materiel Command, 2014
- Ad-Hoc Proposal Reviewer, Commissione per la Ricerca dell'Università della Svizzera italiana, Swiss National Science Foundation, 2014
- Proposal Review Panelist, Clinical and Rehabilitative Medicine Research Program, U.S. Army Medical Research and Materiel Command, 2014
- Ad-Hoc Proposal Reviewer, IIS Core Programs, National Science Foundation, 2014
- Proposal Review Panelist, Graduate Research Fellowship Program, National Science Foundation/American Society of Engineering Education, 2013/2014
- Ad-Hoc Proposal Reviewer, IIS Core Programs, National Science Foundation, 2012
- Ad-Hoc Proposal Reviewer, American Institute of Biological Sciences, 2012
- Ad-Hoc Proposal Reviewer, Army Research Office, 2011
- Proposal Review Panelist, IIS Core Programs, National Science Foundation, 2010

Peer Review (partial list)

<u>Journals:</u>

- Advanced Robotics
- Annals of Biomedical Engineering
- ASME Journal of Mechanisms and Robotics
- ASME Journal of Mechanical Design

- ASME/IEEE Transactions on Mechatronics
- Autonomous Robots
- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Biomedical Engineering
- IEEE Transactions on Haptics
- IEEE Transactions on Neural Systems and Rehabilitation Engineering
- IEEE Transactions on Robotics
- International Journal of Robotics Research
- International Journal of Modelling and Simulation
- Journal of Medical Devices
- Journal of Neuroengineering and Rehabilitation
- Journal of Rehabilitation Research and Development
- Prosthetics and Orthotics International
- Science
- Science Robotics

Conferences:

- ASME International Mechanical Engineering Congress and Exposition
- ASME Mechanisms and Robotics Conference
- ASME Dynamic Systems and Control Conference
- IEEE Haptics Symposium
- IEEE International Conference on Advanced Robotics
- IEEE International Conference on Biomedical Robotics and Biomechatronics
- IEEE International Conference on Intelligent Robots and Systems
- IEEE International Conference on Rehabilitation Robotics
- IEEE International Conference on Robotics and Automation

Outreach and Community Service

Community Service:

- Member, Open Space Committee, Town of Killingworth, Connecticut, 2021-pres.
  - Secretary, 2022

Events and Talks:

- Keynote Lecture, Annual Trustees and Members Meeting, Eli Whitney Museum, Hamden, CT, October 2017
- Session host and Speaker for *Science for Everyone Program,* Essex CT Public Library, April 2014.
- Session host and Speaker of PBS/NOVA-sponsored "Science Café", a free event for communicating research results to the public, Branford, CT, January 2011.
- Co-organizer of Robotics Workshop sponsored by the Center for Talented Youth, March 2010. Served 250 middle-school students and parents from the Northeast US.
- Speaker at seminar series on engineering career options, University of New Haven, October 2010.

Lab Outreach:

- Robot hand design project developed for Middle Schoolers, Eli Whitney Museum, Fall 2017
- Lab tours for local Cub Scout troop, Engineer Activity pin, Jan. 2014
- Pathways to Engineering for Middle Schoolers, Lab Tours and Demos, April 2013
- ASME Student Professional Development Conference, Engineering Panel Discussion (PhD Student Joseph Belter), April 2012
- Yale Engineering Week, Design Project Supervision/Assistance and Lab Tours/Demos, February 2012
- Pathways to Engineering for Middle Schoolers, Lab Tours and Demos, April 2011

University Service

University-wide Service

- Chair, University-wide Student Shop Safety Committee (Fall 2013-present)
- Member, University-wide Safety Committee (Fall 2014-present)
- Founder and Lead, Yale Tech for Conservation group, bringing undergrad and grad students from computing backgrounds to work on environmental projects (Fall 2019-present)

- Leader and Participant, numerous Planetary Solutions workshops and white papers, 2020-2021
- Member, Computer Science Panel, University Science Strategy Committee, (2018)
- Center for Engineering Innovation and Design Faculty Advisory Group (Fall 2013-present)
- ITS Focus Group (2014)

Departmental and Engineering Service

- Joint Board of Permanent Officers, Quorum representative, 2019-pres.
- Chair, Mechatronics/Robotics Search Committee, Dept. of Mechanical Engineering and Materials Science (2021)
- Admissions Committee, Dept. of Mechanical Engineering and Materials Science (2019-2020 academic year)
- Chair, Mechatronics/Robotics Search Committee, Dept. of Mechanical Engineering and Materials Science (2020)
- Chair, Design Lecturer Search Committee, Dept. of Mechanical Engineering and Materials Science (2018)
- Chair, Curriculum Committee, Dept. of Mechanical Engineering and Materials Science (2017-pres)
- Curriculum Committee, Dept. of Mechanical Engineering and Materials Science (2015-2016)
- Dept. of Mechanical Engineering and Materials Science Senior Project Evaluation Committee, for Yale College's NEASC accreditation (Fall 2013)
- Admissions Committee, Dept. of Mechanical Engineering and Materials Science (2013-2014 academic year)
- Junior Robotics Faculty Search Committee, Dept. of Mechanical Engineering and Materials Science (Spring 2014)
- Coordinator, Mechanical Engineering and Materials Science Departmental Seminar Series (Fall 2013-Spring 2014)
- Junior Robotics Faculty Search Committee, Dept. of Mechanical Engineering and Materials Science (Spring 2013)
- Senior Robotics Faculty Search Committee, Dept. of Mechanical Engineering and Materials Science (Fall 2011)
- ITS Focus Group, Science and Engineering Faculty (Fall 2011)
- Senior Faculty Search Committee, Dept. of Mechanical Engineering and Materials Science (Fall 2010-Spring 2014)
- Admissions Committee, Dept. of Mechanical Engineering and Materials Science (2009-2010 academic year)
- Admitted Graduate Students Weekend Organizing Committee (Spring 2009, 2010, 2011)
- Victor Tyler Distinguished Lectureship Steering Committee (Spring 2009)

Student Group Advising/Supervision

- Faculty Advisor, Yale Robotics Club (2013-present)
- Faculty Advisor, Yale Undergrad Robotics (2012-2013)
- Faculty Advisor, Hybrid Car Team (2009-2010)
- Faculty Advisor, Team Lux (Yale Hovercraft Team) (2009-2010)
- Initiated Yale FIRST Robotics Alumni group (Fall 2011)

PROFESSIONAL AFFILIATIONS

Professional Societies

- Senior Member, IEEE, Robotics and Automation, Engineering in Medicine and Biology, and Education Societies
- American Society of Mechanical Engineers
- American Society for Engineering Education

University-Based Affiliations

- Fellow of Davenport College, Yale University
- Cabot House Senior Common Room, Harvard University

INVITED TALKS AND GUEST LECTURES

- *Robotics Seminar Series,* MIT, Feb. 2023.
- *Department of Mechanical Engineering Seminar,* Duke University, Oct. 2022.
- *Modeling, Estimation, and Control Conference (MECC) (formerly ASME DSCC), Keynote Speaker,* Oct. 2022.
- *Workshop on New Frontiers of Parallel Robots,* International Conference on Robotics and Automation (ICRA), May 2022.
- *Debates on the Future of Robotics Research,* Invited Panelist, ICRA 2022.
- *Workshop on Shaping the Quality Metric of a Grasp with the Manipulation Task,* International Conference on Robotics and Automation (ICRA), May 2020.
- *Aerospace Engineering Departmental Seminar*, University of Maryland, March 2019
- *Trent International Prosthetics Symposium, Keynote Speaker,* Manchester, UK, March 2019.
- *WVU Robotics Seminar*, West Virginia University, Oct. 2018
- *New England Robotics Conference (NERC), Keynote Speaker*, Rutgers University, Oct. 2018
- *Institute for Robotics and Intelligent Machines Seminar*, Georgia Tech, Oct. 2018
- *Workshop: Hands in the Real World: Connecting End-Effector Design, Sensitivity, and Behavior,* International Conference on Intelligent Robots and Systems (IROS), Oct. 2018
- *Workshop: Closing the Loop on Human-Robot Symbiosis: Human/Robot in-the-loop Machine Learning,* International Conference on Intelligent Robots and Systems (IROS), Oct. 2018
- *Workshop: Experimental Robotic Grasping and Manipulation: Benchmarks, Datasets, and Competitions,* International Conference on Intelligent Robots and Systems (IROS), Oct. 2018
- *United Technologies Research Center*, East Hartford, CT, Sept. 2018
- *Ovation CPO Conference (run by Procurement Leaders), Keynote Speaker,* July 2018
- *Southwest Robotics Symposium, Invited Speaker,* Arizona State University, January 2018
- *Annual Trustees and Members Meeting Keynote*, Eli Whitney Museum, Hamden, CT, October 2017
- *Symposium on Intelligent Systems*, Max Planck Institute for Intelligent Systems, Stuttgart, Germany, December 2016
- *Workshop on Evaluation and Benchmarking of Underactuated and Soft Robotic Hands,* International Conference on Intelligent Robots and Systems (IROS), October 2016
- *Department of Mechanical Engineering Seminar*, University of Massachusetts at Amherst, Sept. 2016
- *Biomechanics and Neural Control of Movement 2016 Meeting,* Deer Creek Conference Center and Lodge, Mt. Sterling, Ohio, June 2016
- *Workshop on Exploiting Contact and Dynamics in Manipulation,* International Conference on Robotics and Automation (ICRA), May 2016
- *Workshop on Grasping and Manipulation Datasets,* International Conference on Robotics and Automation (ICRA), May 2016
- *Biological Anthropology Colloquium,* Yale University, Jan. 2016
- *Department of Mechanical Engineering Seminar*, Vanderbilt University, Dec. 2015
- *Multimodal Manipulation Under Uncertainty,* Dagstuhl Seminar, Oct. 2015
- *Intelligent Robotics Group Seminar,* NASA Ames Research Center, June 2015
- *Workshop on Robotic Hands, Grasping, and Manipulation,* International Conference on Robotics and Automation (ICRA), May 2015
- *Department of Mechanical Engineering Seminar,* Cornell University, April 2015
- *NSF Workshop: Locomotion and Manipulation: Why the Great Divide?,* Arlington, VA, April 2015
- *Robotics Institute Seminar,* Carnegie Mellon University, March 2015
- *Department of Mechanical Engineering Seminar*, MIT, Feb. 2015
- *Laboratory for Computational Sensing and Robotics Seminar*, Johns Hopkins University, Feb. 2015
- *Humanity-Centered Robotics Initiative Seminar,* Brown University, Dec. 2014
- *Department of Ecology and Evolutionary Biology,* Brown University, Sept. 2014

- *Hand, Brain, and Technology 2014 Conference,* Invited Talk, Ascona, Switzerland, Sept. 2014
- *Workshop on Human vs. Robot Grasping,* Invited Keynote, Robotics: Science and Systems Conference, July 2014
- *Wood Creek Reading Day,* Wood Creek Capital Management, New Haven CT, May 2014
- *Science for Everyone Program,* Essex Connecticut Public Library, April 2014
- *Center for Systems Science Seminar Series,* Department of Electrical Engineering, Yale University, Feb. 2014
- *University of Pennsylvania,* GRASP Seminar Series, Feb. 2014.
- *Cornell University*, Sibley School of Mechanical and Aerospace Engineering, Department Seminar, Oct. 2013
- *National Robotics Initiative PI Meeting*, *Tutorial on Fabrication Techniques,* National Science Foundation, Arlington, VA, Oct. 2013
- *Intelligent Robotics (CPSC 572), Guest Lecture,* Yale University, Sept. 2013
- *16th Workshop on Adaptive and Learning Systems*, Yale University, June 2013
- *Workshop on Design and Control of Robotic Exoskeletons with Compliant Joints and Actuation Systems,* International Conference on Rehabilitation Robotics, June 2013
- *Université Pierre et Marie Curie (University of Paris 6), Paris (France),* Institut des Systèmes Intelligents et de Robotique Guest Seminar, Oct. 2012
- *National Museum of Natural History, Paris (France),* Primatology Guest Seminar, Oct. 2012
- *Workshop on Beyond Robot Grasping: Modern Approaches for Dynamic Manipulation,* IROS 2012, Algarve, Portugal, Oct. 2012
- *Workshop on Aerial Physically Acting Robots (AIRPHARO),* IROS 2012, Algarve, Portugal, Oct. 2012
- *ETH Zurich (Switzerland),* Department of Mechanical Engineering Guest Seminar, July 2012
- *Karlsruhe Institute of Technology (Germany),* Center for Anthropometrics Guest Seminar, July 2012
- *Technical University of Darmstadt (Germany),* Department of Computer Science Guest Seminar, July 2012
- *University of Verona (Italy),* Department of Informatics Guest Seminar, July 2012
- *University of Pisa (Italy),* Centro Piaggio Guest Seminar, July 2012
- *Scuola Superiore Sant'Anna (Pisa, Italy),* Neurorobotics Course Guest Lecture (4 of 4), July 2012
- *Italian Institute of Technology (Genova, Italy),* Guest Seminar, July 2012
- *University of the West of England (UK),* Bristol Robotics Lab Seminar, July 2012
- *Workshop on Grasping and Manipulation,* Institute for Advanced Studies, University of Birmingham (UK), July 2012
- *University of Birmingham (UK),* School of Psychology Guest Seminar, July 2012
- *University of Southampton (UK),* School of Health Sciences and School of Engineering Guest Seminar, July 2012
- *Scuola Superiore Sant'Anna (Pisa, Italy),* Neurorobotics Course Guest Lecture (3 of 4), July 2012
- *Scuola Superiore Sant'Anna (Pisa, Italy),* Neurorobotics Course Guest Lecture (2 of 4), June 2012
- *Università di Siena (Siena, Italy),* Workshop on Neuroscience and Robotics, May 2012
- *German Aerospace Center (DLR)(Oberpfaffenhofen-Wessling, Germany),* Guest Seminar, Institute of Robotics and Mechatronics, March 2012
- *Otto Bock Prosthetics,* Special Guest Seminar, Vienna, Austria, Feb 2012
- *Scuola Superiore Sant'Anna (Pisa, Italy),* Neurorobotics Course Guest Lecture (1 of 4), Feb 2012
- *University of Southern California,* Engineering, Neuroscience & Health Seminar Series, November 2011
- *NASA Johnson Space Center,* Software, Robotics, and Simulation Division, November 2011
- *Rice University*, Department of Mechanical Engineering Guest Seminar, November 2011
- *Rensselaer Polytechnic Institute*, Mechanical Engineering Departmental Seminar, November 2011

- *Strategic Studies Group Fall Program,* U.S. Naval War College, October 2011
- *University of Delaware*, Mechanical Engineering Departmental Seminar, October 2011
- *Workshop on Redundancy in Robot Manipulators and Multi-Robot Systems,* (w/R. Balasubramanian) International Conference on Intelligent Robots and Systems (IROS), September 2011
- *Early Career Spotlight,* Robotics: Science and Systems Conference, June 2011
- *Scuola Superiore Sant'Anna,* ARTS Lab Seminar, Pisa, Italy, June 2011
- *Universita' Degli Studi Di Napoli Federico II,* Master's RIS Seminar, Naples, Italy, June 2011
- *15th Workshop on Adaptive and Learning Systems*, Yale University, June 2011
- *Workshop on Educating Robotics Engineers and Scientists*, IEEE International Conference on Robotics and Automation (ICRA), May 2011
- *Workshop on Manipulation under Uncertainty*, IEEE International Conference on Robotics and Automation (ICRA), May 2011
- *Yale University*, Yale Science and Engineering Forum, April 2011
- *Carnegie Mellon University,* Center for the Foundations of Robotics Seminar Series, April 2011
- *Johns Hopkins University*, Department of Mechanical Engineering Seminar Series, April 2011
- *MIT Media Lab,* MAS 962 "Human 2.0: Principles of Human Augmentation" Guest Lecture, February 2011
- *Arizona State University*, Department of Aerospace and Mechanical Engineering Seminar Series, December 2010
- *University of Rhode Island*, Mechanical, Industrial and Systems Engineering Seminar Series, November 2010
- *University of New Haven*, Alvine Engineering Professional Effectiveness and Enrichment Program Speaker Series, October 2010
- *Willow Garage*, October 2010
- *Workshop on Performance Evaluation and Benchmarking for Intelligent Robots and Systems with Cognitive and Autonomy Capabilities*, International Conference on Robotics and Autonomous Systems, October 2010
- *EmTech 2010,* Emerging Technologies Conference, Massachusetts Institute of Technology, Sept. 2010
- *Center for Talented Youth,* Yale University, March 2010
- *University of Michigan*, School of Kinesiology, October 2009
- *iRobot Corporation*, March 2009
- *MIT Media Lab,* MAS 965 "Human 2.0: Principles of Human Augmentation" Guest Lecture, February 2009
- *Natick Soldier Research, Development, and Engineering Center,* December 2008
- *Workshop on Robotics Education*, Robotics: Science and Systems Conference, Zurich, June 2008
- *Yale University* Mechanical Engineering Seminar, April 2008
- *MIT Cognitive Machines Group*, December 2007
- *MIT Personal Robotics Group*, August 2007
- *Rehabilitation Institute of Chicago SMPP Lab Meeting*, November 2007
- *Harvard University ES159*, "Introduction to Robotics" Guest Lecture, April 2007
- *MIT CSAIL Robotics Journal Club*, March 2006
- *Harvard University ES51*, "Computer-Aided Machine Design" Guest Lecture, Nov. 2005

SPONSORED RESEARCH PROJECTS

Research Funds Raised as PI to date: ~$15.8M
Research Funds Raised for Research in my Lab to date: ~$11.6M

(role: PI unless otherwise noted)
Current Projects (by end date)
National Science Foundation - $40,020 to Co-PI Dollar

"POSE: Phase I: Collaborative Open-source Manipulation and Perception Assets for Robotics Ecosystem (COMPARE)" (with Holly Yanco (PI, UMass Lowell) and Berk Calli (Co-PI WPI))
9/1/22 – 8/31/23

Yale Institute for Biospheric Studies (YIBS), Hutchinson Postdoc Program - ~$300,000 to support two Postdoctoral Fellows (PI Dollar and Co-PI Holly Rushmeier (CS))
7/1/22 – 6/30/24

Yale Planetary Solutions Project, Seed Grant - $80,000 to seed work developing a saliva-collection system to monitor wildlife pathogens (PI Serap Aksoy (Public Health))
6/1/22 – 5/31/23

National Science Foundation - $399,032 to Co-PI Dollar
"Collaborative Research: Self-Identification for Robot Manipulation under Uncertainty Aided by Passive Adaptability" (with Kaiyu Hang (PI, Rice))
2/1/22 – 1/31/25

National Science Foundation - $2,500,000 ($1,520,000 to Yale, PI Dollar)
"FW-HTF-RL: Collaborative Research: Shared Autonomy for the Dull, Dirty, and Dangerous: Exploring Division of Labor for Humans and Robots to Transform the Recycling Sorting Industry" (with Berk Calli (PI, WPI), Jacob Whitehill (Co-PI, WPI), Kate Saenko (Co-PI, BU), Vitaly Ablavsky (Co-PI, BU), Marian Chertow (Co-PI, Yale), Barbara Reck (Co-PI, Yale), Brian Scassellati (Co-PI, Yale) and Amy Wrzesniewski (Co-PI, Yale))
9/01/19 – 8/31/23

Completed Projects (by end date)

National Science Foundation - $2,000,000 ($570,000 to PI Dollar)
"EFRI C3 SoRo: Muscle-like Cellular Architectures and Compliant, Distributed Sensing and Control for Soft Robots" (with Tom Roberts (Co-PI, Brown), Josh Smith (Co-PI, U. Washington), and Jeff Trinkle (Co-PI, RPI))
12/01/18 – 11/30/22

National Science Foundation - $718,214
"NRI: Rethinking Multi-Legged Robots: Passive Terrain Adaptability through Underactuated Mechanisms and Exactly-Constrained Kinematics"
10/01/16 – 09/30/20

National Science Foundation - $425,000 to Co-PI Dollar
"RI: Medium: Collaborative Research: Towards Practical Encoderless Robotics Through Vision-Based Training and Adaptation" (with Greg Hager (PI, Johns Hopkins) and Berk Calli (Co-PI, WPI))
8/15/19 – 8/14/22

National Science Foundation - $632,500
"NRI: INT: COLLAB: Integrated Modeling and Learning for Robust Grasping and Dexterous Manipulation with Adaptive Hands" (with Kostas Bekris (PI, Rutgers) and Abdeslam Boularias (Co-PI, Rutgers))
9/01/17 – 08/31/20

CDMRP Defense Medical Research and Development Program - $2,551,015 ($1,540,910 to PI Dollar)
"A Modular Multi-DOF Prosthetic Wrist and Low-Level Autonomous Control for Ease-of-Use" (Co-PIs Linda Resnik (Brown, Providence VAMC), Helen Huang (NC State), Nicole Sasson (NYHHS VAMC))
9/01/15 – 8/31/19

CDMRP Peer Reviewed Orthopedic Research Program - $1,125,000 ($617,391 to PI Dollar)

"Smart Control Modes for Facilitating Use of Multi-DOF Upper-Limb Prosthetics" (Co-PIs Linda Resnik (Brown, Providence VAMC) and Helen Huang (NC State))
9/01/15 – 8/31/19

Army Research Office/TATRC – $ 476,645 ($340,370 to PI Dollar)
"Studying Upper-Limb Amputee Prosthesis Use to Inform Device Design" (Co-PI Linda Resnik (Brown, Providence VAMC))
09/08/14 – 09/07/18

National Science Foundation - $1,200,000
"NRI-Small: Dexterous Manipulation with Underactuated Hands: Strategies, Control Primitives, and Design for Open-Source Hardware"
09/01/13 – 08/31/18

National Science Foundation - $10,000,000 ($100,000 to Co-I Dollar)
"Collaborative Research: Socially Assistive Robots" (PI Scassellati, Yale)
6/01/12 – 5/31/17

NASA Early Career Faculty Award – $200,000
"Digital Manufacturing of Lightweight and Efficient Structures via Reconfigurable Lattice Printing"
09/05/14 – 09/04/15

DARPA Young Faculty Award – $500,000
"Rapid Field Fabrication by Non-Experts"
08/01/13 – 07/31/15

CDMRP Joint Warfighter Military Research Program – $500,000
"A Compliant and Adaptive Body-Powered Anthropomorphic Prosthetic Terminal Device"
08/01/13 – 07/31/15

Pfeiffer Research Foundation - $150,000 (direct costs)
"In Their Hands: Amputee Testing and Redesign of a "Soft Touch" Prosthesis"
06/01/13 – 05/31/15

National Science Foundation - $498,591
"CAREER: Underactuated Precision Robotic Grasping and Manipulation"
03/01/10 – 02/28/15

DoD Defense Medical Research and Development Program – $1,331,269 ($989,485 to PI Dollar)
"Variable-Stiffness Knee Orthosis for Gait Assistance and Rehabilitation" (Co-PIs Linda Resnik (Brown, Providence VAMC) and Susan D'Andrea (Providence VAMC))
01/10/11 – 12/31/14

Air Force Office of Scientific Research, Young Investigator Program – $360,000
"Active Cells for Multifunctional Structures"
6/1/11 – 5/31/14

DARPA IPTO, Autonomous Robotic Manipulation (ARM-H) – $320,000 to Co-PI Dollar
"The Low-Cost HANDLE Manipulator" (PI Martin Buehler and Bob Kohout (iRobot), Co-PI Rob Howe (Harvard))
11/01/10 – 06/31/13

Pfeiffer Research Foundation - $219,500 (direct costs)
"A Soft Touch for Prosthetic Hands"
06/01/10 – 05/31/13

Office of Naval Research - $529,474

"Bio-Inspired Aerial Grasping and Manipulation"
05/01/10 – 04/30/13

U.S. Army Natick Soldier Research, Development, and Engineering Center, In-House Laboratory Independent Research (ILIR) - $256,314
"Fundamental Advances in Exoskeletons to Augment the Human"
11/01/10 - 03/31/13

DoD Peer Reviewed Orthopedic Research Program – $160,068
"Compliance and Adaptive Underactuation for Prosthetic Terminal Devices"
08/01/10 – 07/31/11

IEEE Robotics and Automation Society, New Initiatives Program – $12,500
Co-PI with Daniela Rus (MIT) and Paolo Fiorini (University of Bologna), 4/2008-12/2008
"Teaching Robotics Everywhere: A Repository of Robotics Teaching Materials (Phase II)"

IEEE Robotics and Automation Society, New Initiatives Program - $24,900
Co-PI with Daniela Rus (MIT) and Paolo Fiorini (University of Bologna), 7/2007-12/2007
"Teaching Robotics Everywhere: A Repository of Robotics Teaching Materials"

Honda Research Institute, Research Contract – ($200,000)
Coauthor with PI Robert Howe (Harvard), 6/2008-7/2009
"Dexterous Humanoids: Human-level Grasping in Unstructured Environments"

Department of Defense, Natick Soldier RD&E Center – ($260,000)
Coauthor with PI Hugh Herr (MIT), 5/2008-5/2010
"Leg Exoskeleton for Load-Carrying Augmentation in Walking"

STUDENT AND RESEARCH STAFF SUPERVISION

Postdoctoral and Research Associates Supervised

Current

- Adam Seewald, Postdoctoral Associate (PhD University of Southern Denmark), Feb. 2022-pres.
- Quentin Bateux, Postdoctoral Associate (PhD IRISA/Inria Rennes Bretagne Atlantique (France)), Mar. 2022-pres.

Previous

- Gaurav Singh, Postdoctoral Associate (PhD in Industrial and Systems Engineering, University of Illinois), Oct. 2019-June 2022. Now Assistant Professor of Mechanical, Robotics, and Industrial Engineering, Lawrence Technical University, Southfield, Michigan.
- Joao Bimbo, Postdoctoral Associate (PhD in Computer Science, Kings College, UK), Oct. 2019-Sept. 2021. Now Assistant Professor of Electrotechnical Engineering at Lusofona University, Portugal.
- Kaiyu Hang, Postdoctoral Associate (PhD in Computer Science, Royal Institute of Technology (KTH), Sweden), March 2018-March 2022. Now Assistant Professor of Computer Science at Rice University.
- Tony Odongo, *Postgraduate Research Associate* (BS in Electrical Engineering, Yale University), Sept. 2019-May 2020.
- Yutaro Yamada, *Postgraduate Research Associate* (BS in Computer Science, Yale University), May 2018-May 2019. Now PhD Student in Statistics and Data Sciences, Yale.
- Berk Calli, *Postdoctoral Associate* (PhD in Mechanical Engineering, Delft University of Technology, Netherlands), Oct. 2014-pres. Now Assistant Professor of Robotics at Worcester Polytechnic Institute.

- Krishnan Srinivasan, *Postgraduate Research Associate* (BS in Computer Science, Yale University), August 2017-May 2018. Now PhD Student at Stanford University, Computer Science.
- Adam Spiers, *Associate Research Scientist* (PhD in Mechanical Engineering, University of Bristol, UK), Nov. 2015-May 2018; *Postdoctoral Associate,* Feb. 2014-Nov 2015. Now Lecturer at Imperial College, London.
- Zhe (Joseph) Xu, *Postdoctoral Associate* (PhD in Computer Science and Engineering, University of Washington), April 2015-March 2017. Now doing a startup in Seattle.
- Minas Liarokapis, *Postdoctoral Associate* (PhD in Mechanical Engineering, National Technical University of Athens, Greece), Aug. 2014-Dec. 2016. Now Lecturer (Asst. Prof. equivalent) at University of Auckland, New Zealand.
- Nicolas Rojas, *Postdoctoral Associate* (PhD in Robotics, Technical University of Catalonia), Jan. 2014-Dec. 2015. Now Reader (Asst. Prof. equivalent) at Imperial College, London, UK.
- Thomas Feix, *Postdoctoral Associate* (PhD in Mechanical Engineering, Technical University of Vienna), May 2012-Nov. 2015. Now at Adidas on Adidas Future Team.
- Kevin Gemmell, *Postgraduate Associate* (BS in Mechanical Engineering, University of Rhode Island), Aug. 2014-July 2015. Now Engineer at NuVasive, Inc. (products for the surgical treatment of spine disorders).
- Michael Leddy, *Postgraduate Associate* (BS in Mechanical Engineering, Johns Hopkins University), June 2014-June 2015. Now PhD Student at Yale.
- John Swensen, *Associate Research Scientist* (PhD in Mechanical Engineering, Johns Hopkins University), July 2014-June 2015, *Postdoctoral Associate*, Dec. 2011-June 2014. Now Asst. Professor in Mechanical Engineering at Washington State University (July 2015-present).
- Lael Odhner, *Associate Research Scientist* (ScD in Mechanical Engineering, Massachusetts Institute of Technology), Sept. 2012-May 2014; *Postdoctoral Associate,* Sept. 2009-Aug. 2012. Now at Right-Hand Robotics (Co-Founder).
- Julia Borras-Sol, *Postdoctoral Associate* (PhD in Robot Kinematics, Technical University of Catalonia), Nov. 2011-Aug. 2013. Now Postdoctoral Associate at Karlsruhe Institute of Technology, Germany.
- Massimo Cenciarini, *Postdoctoral Associate* (PhD in Bioengineering, University of Pittsburgh), Nov. 2010-April 2013. Now Postdoctoral Associate at Albert Ludwigs University of Freiburg, Germany.
- Ravi Balasubramanian, *Associate Research Scientist* (PhD in Robotics, Carnegie Mellon University, Postdoctoral Associate, University of Washington), Oct. 2009-Sept. 2011. Now Asst. Professor in Mechanical Engineering at Oregon State University (July 2011-present).
- Paul Pounds, *Postdoctoral Associate* (PhD in Robotics, Australia National University), Feb. 2009-Sept. 2011. Now Lecturer (Asst. Prof. equivalent) in Mechatronics at University of Queensland, Australia (Feb. 2012-present).

PhD Students Supervised

Current

- Mei Hao (BS in Mechanical Engineering, WPI, and MS in Mechanical Engineering, Stanford), Aug. 2022-pres.
- Joshua Grace (BS in Computer Science, Cal Poly), Aug. 2022-pres.
- Yeongsik Seo (BS and MS in Mechanical Engineering, Sogang University (Korea)), Aug 2022-pres.
- Connor Pan (BS and MS in Computer Engineering, Northwestern), Aug 2022-pres.
- Hector Castillo (BS Mechanical Engineering, MIT), Aug 2020-pres.
- Vatsal Patel (BS and MS in Mechanical Engineering, UC Berkeley), Aug 2019-pres.
- Seonghoon (Sam) Noh (BS in Mechanical Engineering, Vanderbilt), June 2018-pres.
- Andrew Morgan (BS in Computer Engineering/BS in Computer Science, Youngstown State University) Aug. 2017-pres.

Previous

- Walter Bircher (BS and MS in Mechanical Engineering, University of Nebraska) Sept. 2015-pres. Now at Amazon Robotics.

    - Dissertation: "Whole-Hand Robotic Manipulation with Rolling, Sliding, and Caging"
    - Awards: *NSF Graduate Research Fellow; JC Lichty Fellow (Yale University Fellowship)*
- Neil Bajaj (BS in Mechanical Engineering and BS in Kinesiology, University of Massachusetts, Amherst) Sept. 2014-pres. Now at Vicarious Surgical.
- Michael Leddy (BS in Mechanical Engineering, Johns Hopkins University) Sept. 2015-pres. Now at Tesla Robotics.
    - Dissertation: "Advancing the Underactuated Grasping Capabilities of Single Actuator Prosthetic Hands"
- Yuri Gloumakov (BS in Biomedical Engineering, Columbia University, BS in Physics, Brandeis University) Sept. 2014-pres. Now Postdoc at Stanford University.
    - Dissertation: "Prototypical Arm Motions From Human Demonstration for Upper-Limb Prosthetic Device Control"
- Jimin Hong (BS in Mechanical Engineering, Princeton University) July 2016-Jan 2021. Now at Hyundai Motor Group.
- Jillian Cochran (BS in Engineering Sciences (with Bioengineering concentration), Harvard University) Aug. 2016-Dec. 2020. Now Engineer/Consultant at SKF Group.
- Ahsan Nawroj (BS in Electrical Engineering, Lafayette College), July 2012-August 2017. Now in Management Consulting.
    - Dissertation: " Modular Active-Cell Robots (MACRO): An Approach for Designing Shape-Changing Structures"
    - Awards: *Finalist, Student Best Hardware Demonstration, ASME Smart Materials, Adaptive Structures, and Intelligent Systems Conference (SMASIS) (2014).*
- Oren Kanner (BE in Mechanical Engineering, Cooper Union, MS in Mechanical Engineering, Technion), Sept. 2010-pres.
- Spencer Backus (BS in Mechanical Engineering, Olin College), Sept. 2010-March 2017. Now Researcher at NASA Jet Propulsion Laboratory.
    - Dissertation: "Design and Optimization of Hands for Grasping from UAVs and Other Minimally Constrained Vehicles"
- Ian Bullock (BS in Engineering, Harvey Mudd College), Sept. 2010-Sept. 2016. Now Researcher at Apple.
    - Dissertation: "Understanding Human Hand Functionality: Classification, Whole-Hand Usage, and Precision Manipulation"
    - Awards: *Yale Advanced Graduate Leadership Program (2013); Finalist for Best Manipulation Paper, IEEE International Conference on Robotics and Automation (2013)*
- Raymond Ma (BS in Mechanical Engineering and BS in Electrical Engineering, Massachusetts Institute of Technology), Sept. 2010-Sept. 2016. Now Researcher at NASA Jet Propulsion Laboratory.
    - Dissertation: "Strategies for Dexterous Manipulation with Underactuated Robotic Hands"
    - Awards: *Honorable Mention, NSF Graduate Research Fellowship (2012); Winner, Best Student Paper Award, IEEE/IFToMM International Conference on Reconfigurable Mechanisms and Robotics (ReMAR) (2015)*
- Joseph Belter (BS in Mechanical Engineering, University of Michigan), Sept. 2009-Nov. 2015. Now Engineer at ClearMotion.
    - Awards: *Honorable Mention, NSF Graduate Research Fellowship (2010)*; *First Place, ASME Mechanism Design Competition, Graduate Division (2014)*
- Hari Vasudevan (BE in Instrumentation and Electronics, R.V. College of Engineering, Bangalore; MS in Biomedical Engineering, IIT Madras; MS/MPhil/PhD Yale University), June 2012-Oct. 2014. (with Prof. John Morrell). Now Sensing Systems Engineer at Apple.
    - Dissertation: "Development of Clusterwheel Balancing Robots and Methods for Improving Performance of Wheeled Inverted Pendulum Machines"
    - Awards: *Finalist, Best Student Paper, ASME Dynamic Systems and Control Conference (2013); Best Student Mechatronics Paper Award, ASME Dynamic Systems and Control Division (best overall student mechatronics paper from the three division-sponsored conferences in 2013) (2014)*

- Kamran Shamaei (MS in Mechanical Engineering, ETH Zurich; MS/MPhil/PhD Yale University) Sept. 2009-Aug. 2014. Now Postdoctoral Associate at Stanford University.
    - Dissertation: "Compliant Knee Exoskeletons and Their Effects on Gait Biomechanics"
    - Awards: *First Place, ASME Student Robot Design Competition, Graduate Division (2013)*
- Ying (Jean) Zheng (BS in Mechanical Engineering, MIT, MS/MPhil/PhD Yale University), June 2012-May 2013. (with Prof. John Morrell). Now Engineering Director at Center for Biomedical and Interventional Technology, Yale University.
    - Dissertation: "Development of Variable Attention Capture (VAC) Haptic Feedback Systems for Conveying Information at an Appropriate Level of Salience"
- Daniel Bersak (BS in Electrical Engineering and Computer Science, and Comparative Media Studies, MIT), June 2010-June 2012.

Masters Students Supervised
- Joshua Zheng (BS in Biomedical Engineering, Johns Hopkins University), Jan. 2010-Dec. 2010.
- Daniel Bersak (BS in Electrical Engineering and Computer Science, and Comparative Media Studies, Massachusetts Institute of Technology), Sept. 2009-June 2010.
- Tangji Tong (BS in Electrical Engineering, Nanjing University), Sept. 2009-Dec. 2009.
- Peter Deckers (co-supervised with Robert Howe, MS in Engineering Sciences, Harvard University), Spring 2007

Visiting Students Supervised
- Louis Hanut (Master's candidate at UC Louvain, Belgium), Spring 2022.
- Aude Bunel (Master's candidate in Ecole Centrale Lyon, Lyon France), Winter/Spring 2018.
- Axay Rana (PhD candidate in Mechanical Engineering, Ecole de Technologie Superieure, Montreal), Summer 2014.
- Stefan Spanjer (MS candidate in Mechanical Engineering, Univ. of Twente, Netherlands, primary supervisor Just Herder), Summer 2011.
    - Awards: *Wim van der Hoek Award (from the Dutch Society of Precision Engineering for best MechE Graduation project in the three national technical Universities) (2013).*

Doctoral Dissertation Committee Member
- Bilige Yang (Yale Mechanical Engineering, Prof. Kramer-Bottiglio), 2019-pres.
- Meiying Qin (Yale Computer Science, Prof. Scassellati), 2019-pres.
- Hayley McClintock (Yale Mechanical Engineering, Prof. Kramer-Bottiglio/Schroers), 2018-2019.
- Dylan Shah (Yale Mechanical Engineering, Prof. Kramer-Bottiglio), 2017-pres.
- Trevor Buckner (Yale Mechanical Engineering, Prof. Kramer-Bottiglio), 2017-pres.
- Robert Baines (Yale Mechanical Engineering, Prof. Kramer-Bottiglio), 2017-pres.
- Naijia Liu (Yale Mechanical Engineering, Prof. Schroers), 2016-pres.
- Alexandru Litoiu (Yale Computer Science, Prof. Scassellati), 2015-pres.
- Ali Yawar (Yale Mechanical Engineering, Prof. Venkadesan), 2015-pres.
- Neelima Sharma (Yale Mechanical Engineering, Prof. Venkadesan), 2015-pres.
- Wen Chen (Yale Mechanical Engineering, Prof. Schroers), 2011-2013.
- Jonathan Awerbuch (Yale Mechanical Engineering, Prof. Morrell), 2009-2010.
- Justin W. Hart (Yale Computer Science, Prof. Scassellati), 2009-Oct. 2014.
- Hari Vasudevan (Yale Mechanical Engineering, Prof. Morrell), 2009-2012.
- Jean Zheng (Yale Mechanical Engineering, Prof. Morrell), 2008-2013.
- Baran Sarac (Yale Mechanical Engineering, Prof. Schroers), 2009-2013.

External Dissertation Committee Member/Reader
- Tianjian Chen (Columbia University, Prof. Ciocarlie), 2021.

Undergraduate Research Assistants Supervised (* indicates peer-reviewed paper authorship from work in the lab)

- Zubin Kramer Guha, (BS in Mechanical Engineering, Yale), Fall 2021-pres.
- Anne Lin, (BS in Mechanical Engineering, Yale), Summer 2022
- Jacob Wang, (BS in Mechanical Engineering, Yale), Summer 2022
- Solomon Gonzalez, (BS in Mechanical Engineering, Yale), Summer 2022
- Omeed Fallahi, (BS in Computer Science, Yale), Summer 2022
- Laszlo Kopits (BS candidate in Mechanical Engineering and Computer Science, Yale), Sept. 2019 - pres.
- Carli Roush (BS candidate in Ecology and Evolutionary Biology, Yale), Nov. 2020-pres.
- Trinidad Kechkian (BS candidate in Environmental Studies, Yale), Nov. 2020-pres.
- Anthony Jiang (BS candidate in Computer Science, Yale), May 2020-pres.
- Laszlo Kopits (BS candidate in Mechanical Engineering, Yale), Sept. 2019 - pres.
- Stephanie Blaz-Lizarazo (BS candidate in Bioengineering, Yale), Oct. 2018 - pres.
- Sarah Ornellas (BS candidate in Mechanical Engineering and Biomedical Engineering, Yale), Sept. 2018-pres.
- Anwar Akkari (BS candidate in Mechanical Engineering, Yale), July 2018-Oct. 2018.
- Phyllis Mugadza (BS candidate in Bioengineering, Yale), May 2018-Aug. 2018.
- Karli Cecil (BS candidate in Psychology, Yale), May 2017-Oct. 2018.
- Connor McCann (BS candidate in Mechanical Engineering, Yale), June 2015-June 2018.** *Winner of Belle and Carl Morse Junior Prize (most outstanding scholarship by Junior Engineering Student), Yale University, May 2017.*
- Mrinal Kumar (BS candidate in Bioengineering, Yale), Feb. 2017-May 2017.
- Ellen Yang (BS candidate in Mechanical Engineering, Yale), Sept. 2016-Dec. 2017.
- Paedyn Gomes (BS candidate in Mechanical Engineering, Yale), June 2016-Sept. 2016.
- Allison Bushman (BS candidate in Mechanical Engineering, Yale), June 2016-Sept. 2016.
- Joanna Jin (BA candidate in Economics, Yale), Jan 2016-June 2016.
- Bryan Duerfeldt (BS candidate in Mechanical Engineering, Yale), June 2015-May 2016.
- David Amanfu (BS candidate in Mechanical Engineering, Yale), March 2014-Dec. 2017.
- Andrew Black (BS candidate in Mechanical Engineering, Yale), June 2013-May 2016.
- Betsy Li (BS candidate in Mechanical Engineering, Yale), Aug. 2015-Dec. 2015.
- Gerardo Carranza (BS candidate in Mechanical Engineering, Yale), May 2014-Aug. 2014.
- Tom Bu (BS candidate in Mechanical Engineering, Yale), May 2014-Aug. 2014.
- Ryan Reza (BS candidate in Mechanical Engineering, Yale), May 2014-Aug. 2014.
- Henok Addis (BS candidate in Electrical Engineering, Yale), Feb. 2014-May 2014.
- Alec Arena (BS candidate in Mechanical Engineering, Yale), Jan. 2014-May 2014.
- Bernardo Saravia (BS candidate in Mechanical Engineering, Yale), Jan. 2014-May 2014.
- Gordon McCambridge (BS candidate in Mechanical Engineering, Yale), Jan. 2014-May 2014.
- Lawrence Tenn (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- Alejandro Carrillo (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- Huu Tran Nguyen (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- John Rockaway (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- Brandon Araki (BS candidate in Biomedical Engineering, Yale), Sept. 2013-May 2014.*
- Steven Rofrano (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- Jonathan Simonds (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- Hans Kassier (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- Sager Yadama (BS candidate in Mechanical Engineering, Yale), Sept. 2013-May 2014.
- Chad Small (BS candidate in Biology, Yale), Sept. 2013-May 2014.
- Pablo Napolitano (BS candidate in Mechanical Engineering, Yale), May 2012-May 2014.**
- Chinmay Jaju (BS candidate in Mechanical Engineering, Yale), Jan. 2012-May 2014.
- Charlotte Guertler (BS candidate in Mechanical Engineering, Yale), March 2011-May 2014.**
- Hannah Mae Robinson (BS candidate in Mechanical Engineering, Yale), Sept. 2013-March 2014.
- Jane Coates (BS candidate in Biomedical Engineering, Yale), June 2013-Aug. 2013.
- Daniel Rathbone (BS candidate in Mechanical Engineering, Yale), Jan. 2012-Aug. 2013.

- Stephen Hall (BS candidate in Mechanical Engineering, Yale), March 2011-Aug. 2013.
- Joshua Lepine (BS candidate in Mechanical Engineering, Penn State), June 2013-Aug. 2013.
- Tyler Smith (BS candidate in Mechanical Engineering, Yale), June 2013-Aug. 2013.
- Bo Reynolds (BS candidate in Mechanical Engineering, Yale), Oct. 2009-May 2013.
- Nick Demas (BS in Mechanical Engineering, Yale), Jan. 2012-May 2012.
- Chad Walker (BS in Mechanical Engineering, Yale), Jan. 2011-May 2012.*
- Sara de la Rosa (BS in Mechanical Engineering, Yale), June 2010-May 2012.**
- Usman Anwer (BS in Mechanical Engineering, Yale), June 2010-Dec. 2012.
- Jan Kolmas (BS candidate in Mechanical Engineering, Yale), March 2011-Sept. 2011.
- Adam Reeve (BS in Mechanical Engineering, Yale), Jan. 2011–May 2011.
- Ethan Carlson (BS in Mechanical Engineering, Yale), Sept. 2010-May 2011.
- Kayla Matheus (BA in Mechanical Engineering and Art, Yale University), June 2009-Aug. 2011.*
- Winni Wei (BS in Engineering, Harvey Mudd College), June 2010-Aug. 2010.
- Greg Brown (BS in Mechanical Engineering, Yale University), June 2009-Aug. 2010.
- Leif Jentoft (BS in Systems Engineering, Olin College), summer and fall 2008.*
- Karina Pikhart (BS in Mechanical Engineering, MIT), winter 2008.
- Jason H. Gao (SB in Engineering Sciences (Electrical), Harvard University), summer 2007.*
- Francisco Isenberg (SB in Engineering Sciences (Mechanical), Harvard University), summer 2005.
- Chris Johnson (SB in Engineering Sciences (Mechanical), Harvard University), summer 2004.

Senior Projects Supervised

- Omeed Fallahi, Yale, Computer Science, 2022
- Timothy Foldy-Porto, Yale, Physics, 2020
- Grace Cheung, Yale, Computer Science, 2020
- Elizabeth Brooks, Yale, Electrical Engineering and Computer Science, 2020
- Anna Hwang, Yale, Statistics and Data Sciences, 2020
- Connor McCann, Yale, Mechanical Engineering, 2018
- David Amanfu, Yale, Mechanical Engineering, 2017
- Tyler Smith, Yale, Mechanical Engineering, 2015
- Brandon Araki, Yale, Mechanical Engineering, 2014
- Alec Arena, Yale, Mechanical Engineering, 2014
- John Rockaway, Yale, Mechanical Engineering, 2014
- Charlotte Guertler, Yale, Mechanical Engineering, 2014
- Bo Reynolds, Yale, Mechanical Engineering, 2013
- Chad Walker, Yale, Mechanical Engineering, 2011-2012
- Chaka Jaliwa, Yale, Electrical Engineering, 2010-2011
- Kayla Matheus, Yale, Art and Mechanical Engineering, 2010-2011
- William (Max) Sutter, Yale, Mechanical Engineering, 2010-2011
- Gavrail Tatarliev, Yale, Mechanical Engineering, 2010-2011, *winner of Henry Prentiss Becton prize (top overall graduating Engineer) and McCrosky Prize (top graduating Mechanical Engineer)*
- Greg Brown, Yale, Mechanical Engineering, 2009-2010, *winner of McCrosky Prize (top graduating Mechanical Engineer)*
- Ben Somers, Yale, Mechanical Engineering, 2009-2010
- Francisco Isenberg, Harvard (w/R. Howe), Mechanical Engineering, 2006
- Bobby Everett, Harvard (w/R. Howe), Mechanical Engineering, 2005-2006

High School Interns Supervised

- Nathan Ahn (Hopkins School, New Haven), Summer 2019.

TEACHING EXPERIENCE

Yale University

- *You, Your Planet, and a Sustainable Future (ENAS/EVST 123),* Instructor, Fall 2022
- *Mechanical Design (MENG185),* Instructor, Spring 2009, Spring 2010, Spring 2011, Fall 2011, Spring 2013, Spring 2014, Spring 2016, Spring 2017, Spring 2020, Spring 2021, Spring 2022
- *Advanced Robotic Mechanisms (ENAS778),* Instructor, Fall 2013, Fall 2016, Fall 2019
- *Senior Design (Capstone) (MENG489),* Instructor, Fall 2015, Spring 2018, Fall 2018
- *Introduction to Robot Analysis (ENAS777),* Instructor, Fall 2010

Harvard University

- *Engineering Senior Design Projects (ES100hf),* Teaching Fellow, fall 2005, and spring 2006.
- *Computer Aided Machine Design (ES51),* Head Teaching Fellow, fall 2003 and fall 2004; Teaching Fellow, spring 2003. Nominated for student-initiated teaching award.
- *Junior-year Engineering Design Project (ES96),* Teaching Fellow, spring 2002. Assisted in all aspects of the semester-long group project course.

University of Massachusetts at Amherst

- *Thermodynamics I (MIE 230),* Teaching Assistant, spring 2000.
- *Honors Introduction to Mechanical and Industrial Engineering (MIE 113H),* Teaching Assistant, fall 1999.
- *Introduction to the Honors Program (Honors 191a),* Section Leader, fall 1997-1999.

SELECTED PRESS AND MEDIA COVERAGE

- IEEE Spectrum, Cover Article on The Bionic-Hand Arms Race, August 2022
- "Variable Friction Robot Fingers", Sept. 2018, covered by IEEE Spectrum, Bloomberg TV, Hackaday, Yale University home page and Yale Engineering, among others.
- "Grasping the Future of Robotics", Nov. 2016, covered by Yale University home page and Yale Engineering, among others
- "A Shape-Shifting Navigation Device", Aug. 2015, covered by (among others):
    - Science Update (from Science Magazine)
    - Yale University home page and Yale Engineering
    - Popular Science
    - Gizmag
    - Phys.org
    - New Haven Register
- "A Better Grasp of Primate Grip", April 2015, covered by (among others):
    - Yale University home page and Yale Engineering
    - Archeology Magazine (online)
    - Phys.org
    - Archeology News Network
    - ScienceDaily
- "Yale OpenHand Project" open-source 3D-printed robotic hand, covered by Hackaday and 3Ders, among others, Feb. 2015.
- *IEEE Spectrum* Magazine, "Robots Get a Grip", pp. 42-47, Dec. 2014.
- *IEEE Spectrum* Feature "Coming to Grips: A flexible, rubber-jointed hand could change how robots grasp objects," web version, Nov. 2014.
- Work featured in the book *The Shark's Paintbrush: Biomimicry and How Nature is Inspiring Innovation*, by Jay Harman, White Cloud Press, 2014.
- *Yale School of Engineering and Applied Science*, mailing on John J. Lee Endowed Junior Chair, July 2013.
- "DARPA Robot Hand", article and video, May 2013, covered by (among many others):
    - CNN (Outfront Erin Burnett, TV)
    - NBC News (Technology section)
    - CBS News (Science and Technology section)
    - Popular Science
    - Huffington Post

    - IEEE Spectrum Online
    - Gizmodo
    - Element14
- Yale University Facebook Page, "Robot Competition: Yale students demonstrate their designs", May 2013
- Yale School of Engineering Facebook Page, "Clash of the Titans", May 2013
- "Robust Robot Hand", article and video, Dec. 2010, covered by (among many others):
    - Wired
    - Popular Science
    - Engadget
    - IEEE Spectrum
- *Yale Bulletin,* "Aaron Dollar appointed the John J. Lee Assistant Professor", Dec. 2012
- *IEEE Spectrum Magazine online*, "Robotics Blog", Nov. 15, 2012
- *Yale Bulletin,* "Yale leads $10 million effort to build social robots", Apr. 2012
- *Treehugger Best of Green Award,* Best Biomimicry Invention, April 2011.
- *Yale Bulletin,* "Awards and Honors", Dec. 2010
- *Yale Alumni Magazine*, "Light & Verity", Nov/Dec. 2010
- *Technology Review,* "Demo: A Gentler Robotic Touch", Nov. 2010, **3-page print feature**
- *Yale Daily News,* "Yale lab creates flying, grabbing robot," Oct. 2010
- *Technology Review,* "TR35 Young Innovators", Sept. 2010, **Cover Image, print edition**
- *Yale Bulletin,* "Dollar Chosen as One of "35 Young Innovators Under 35" for Work on Flexible Robotic Hands", Aug. 2010
- "Yale Aerial Manipulator", article and video, Aug. 2010, covered by:
    - Digg
    - Engadget
    - Inside Aero
    - Popular Science
    - Science 2.0
    - Technology Review
- *Yale Bulletin,* "Creative Classroom: With Catapults and ATVs, Engineer Brings Practice to Theory", May 2010
- *Yale Bulletin,* "Yale Robots Dance, Gesture and, Hopefully, Spark Interest in Science", April 2010
- *Yale Bulletin,* "Four Yale Engineers Are Honored for Skill at Melding Research and Teaching", April 2010
- *Technology Review,* "The Year in Robotics", Dec. 2009
- *The Harvard Crimson,* "Robotic Hand Grabs for More Flexibility", Sept. 2009
- "A Simpler, Gentler Robotic Grip", article and video, Sept. 2009, covered by:
    - Design Boom
    - New York Times syndicate video
    - Singularity Hub
    - Technology Review
- *Barrett Technology,* "Harvard's SDM Hand – Worldwide Exclusive License", Sept. 2009
- *Yale Engineering,* "Students Compete in Mechanical Design Competition", May 2009
- *Discovery Channel News,* "New Exoskeleton Gives Soldiers Super Strength", April 2009
- *Christian Science Monitor,* "Nature-inspired robots swim, crawl, and scuttle like animals", June 2008