

# Alberto Rodriguez

Associate Director of Manipulation Research, Boston Dynamics

Visiting Scientist, MechE, MIT

LinkedIn • Google Scholar • MCube Lab

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## PROFESSIONAL APPOINTMENTS

### Boston Dynamics

2024 - present Associate Director of Manipulation Research, Boston Dynamics

2021 - 2023 Manipulation Research Lead, Boston Dynamics

### Massachusetts Institute of Technology

2023 - present Visiting Scientist, Department of Mechanical Engineering

2021 - 2023 Associate Professor with tenure (AWIT), Department of Mechanical Engineering

2019 - 2020 Associate Professor without tenure (AWOT), Department of Mechanical Engineering

2014 - 2018 Assistant Professor, Department of Mechanical Engineering

## EDUCATION

2014 Postdoc, MIT (with Russ Tedrake)

2013 PhD Robotics, CMU, Thesis "Shape for Contact" (with Matthew Mason)

2006 Degree in Telecommunications Engineering, UPC

2005 Degree in Mathematics, UPC

## AWARDS AND HONORS

### Career Awards

2021 Mathworks Faculty Research Innovation Fellowship.

2020 IEEE Early Academic Career Award in Robotics and Automation  
*"For contributions to dexterous robot manipulation".*

2020 Class of 1957 Career Development Professorship.  
*"This professorship recognizes innovative and imaginative teaching".*

2020 Google Faculty Research Award.

2018 Amazon Faculty Research Award.

2017 Amazon Robotics Challenge 2017, Stowing task, 1st place.

2016 Walter Henry Gale (1929) Career Development Professorship.

2016 Amazon Picking Challenge 2016, 3rd and 4th place.

2015 Amazon Picking Challenge 2015, 2nd place.

### Paper Awards

2022 ICRA [Best Manipulation Paper Award](#)

*Manipulation of Unknown Objects via Contact Configuration Regulation*

2021 ICRA [Best Conference Paper Award](#)

*Extrinsic Contact Sensing with Relative-Motion Tracking from Distributed Tactile Measurements*

2021 ICRA [Finalist Best Paper Award in Service Robotics](#)

*Tactile SLAM: Real-time inference of shape and pose from planar pushing*

2021 FA [Japan Factory Automation \(FA\) Foundation Paper Award](#)

*What are the important technologies for bin picking? Technology analysis of robots in competitions based on a set of performance metrics*

2020 TRO [IEEE Transactions on Robotics King-Sun Fu Memorial Best Paper Award](#)

*TossingBot: Learning to Throw Arbitrary Objects with Residual Physics*

2020 RSS [Best Paper Award Finalist](#)

*Cable Manipulation with a Tactile-Reactive Gripper*

2020 ICRA	<a href="#">Best Manipulation Paper Award Finalist</a> <i>Tactile Dexterity: Manipulation Primitives with Tactile Feedback</i>
2019 RSS	<a href="#">Best Systems Paper Award</a> <i>TossingBot: Learning to Throw Arbitrary Objects with Residual Physics</i>
2018 IROS	<a href="#">Best Cognitive Paper Award</a> <i>Augmenting Physical Simulators with Stochastic Neural Networks: Case Study of Planar Pushing and Bouncing</i>
2018 IROS	<a href="#">Best Cognitive Paper Award Finalist</a> <i>Learning Synergies between Pushing and Grasping with Self-Supervised Deep Reinforcement Learning</i>
2018 Amazon	<a href="#">Best Systems Paper Award in Manipulation</a> <i>Robotic Pick-And-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching</i>
2018 Amazon	<a href="#">Best Technical Paper Award in Manipulation Finalist</a> <i>GelSlim: A High-Resolution, Compact, Robust, and Calibrated Tactile-sensing Finger</i>
2018 RSS	<a href="#">Best Student Paper Award</a> <i>In-Hand Manipulation via Motion Cones</i>
2016 IROS	<a href="#">Best Paper Award Finalist</a> <i>More than a Million Ways to be Pushed: A High-Fidelity Experimental Data Set of Planar Pushing</i>
2014 ICRA	<a href="#">Best Video Award Finalist</a> <i>Regrasping Objects with Extrinsic Dexterity</i>
2013 ICRA	<a href="#">Best Student Paper Award</a> <i>Effector Form Design for 1DOF Planar Actuation</i>
2011 RSS	<a href="#">Best Student Paper Award</a> <i>From Caging to Grasping</i>

## LEADERSHIP AND SERVICE ACTIVITIES

### Massachusetts Institute of Technology

2021	MIT, Re-imagining Public Safety at MIT Working Group.
2021	MIT, MechE, General Faculty Search committee.
2020	MIT, MechE, Committee Strategic Integration of Data Science in Mech. Eng.
2020	MIT, Team 2020, Evaluating MIT's options for Fall semester in light of COVID-19.
2020 - 2021	MIT, Housing, COVID-19 Policies committee.
2019	MIT, Housing, Policies committee.
2018 - 2022	MIT, Robotics, Lead MIT Robotics Seminar and fundraising for MIT Robotics.
2016 - present	MIT, Housing, Associate Head of House in graduate dorm Sydney-Pacific.
2016	MIT, MechE, Controls and Dynamics Curriculum Revision Committee.
2013 - 2021	MIT, MechE, Graduate Admissions Committee.

### Robotics Community

2022 - present	RSS Advisory board
2021 - 2022	RSS Sponsorship chair
2020 - 2021	Co-created "Robotics Today" ( <a href="http://roboticstoday.github.io">http://roboticstoday.github.io</a> ) Open virtual series of technical talks in robotics.
2020 - 2019	RSS Area chair for Manipulation

### Workshop Organization

2021	RSS 2021 "Advancing Artificial Intelligence and Manipulation for Robotics: Understanding Gaps, Industry and Academic Perspectives, and Community Building"
2018	ICRA 2018 "Advances in Robotic Warehouse Automation"
2017	RSS 2017 "Empirically Data-driven Robotic Manipulation"

2017	ICRA 2017 “Warehouse Picking Automation Workshop 2017: Solutions, Experience, Learnings and Outlook of the Amazon Picking Challenge”
2016	CASE 2016 “Automation for Warehouse Logistics”
2015	NSF “Locomotion and Manipulation: Why the Great Divide?”
2013	ICRA 2013 “Caging and its Applications in Grasping/Multi-agent Cooperation.”
2013	RSS 2013 “Common Platforms in Robotic Manipulation.”

## TEACHING EXPERIENCE

2021 - present	MITx Robotics Essentials
2018 - 2021	2.003 Dynamics and Controls - lead instructor
2016	2.12 Introduction to Robotics - lead instructor
2014 - 2017	2.003 Dynamics and Controls - co-lead instructor

## INTELLECTUAL PROPERTY

2022 Jul	Patent (pending) “Robotic Grippers” Publication number: US20220105642-A1
2024 Jan	Patent (issued) “Tactile Dexterity and Control” Publication numbers: US20210146532-A1, US11878415-B2, WO2021097166-A1
2022 Feb	Patent (issued) “Robotic Manipulation of Objects Using External Contacts” Publication numbers: US20200055152-A1, WO2020041120-A1
2022 Feb	Patent (issued) “Robotic Manipulation of Objects for Grip Adjustment” Publication numbers: US20200055680-A1, WO2020041117-A1
2017 Feb	Patent (issued) “Two-Phase Gripper to Reorient and Grasp” Publication number: US9808936-B2
2014 Oct	Patent (issued) “Method and Apparatus for Using Post Assembly Process Interaction Signatures to Detect Assembly Failures” Publication numbers: WO2014160760-A3, CN105229548-A

## PUBLICATIONS

### Journal Papers

- [J23] 2024 Science *simPLE: a visuotactile method learned in simulation to precisely pick, localize, regrasp, and place objects* (Science Robotics)  
Bauza M., A. Bronars, Y. Hou, I. Taylor, N. Chavan-Daffe and A. Rodriguez
- [J22] 2024 IJRR *Robust Planning for Multi-stage Forceful Manipulation*  
Holladay R., T. Lozano-Perez and A. Rodriguez
- [J21] 2023 IJRR *Tac2Pose: Tactile Object Pose Estimation from the First Touch*  
Bauza M., A. Bronars and A. Rodriguez
- [J20] 2023 IJRR *Certified Grasping*  
Aceituno-Cabezas B., J. Ballester and A. Rodriguez
- [J19] 2021 Science *The unstable queen: Uncertainty, mechanics, and tactile feedback* (Science Robotics)  
Rodriguez A.
- [J18] 2021 IJRR *Cable Manipulation with a Tactile-Reactive Gripper*  
She Y., S. Wang, S. Dong, N. Sunil, A. Rodriguez and E. Adelson
- [J17] 2020 PNAS *On the Use of Modeling and Simulation in Robotics: Opportunities, Challenges, and Suggestions for Moving Forward*  
Choi, H., C. Crump, C. Duriez, A. Elmquist, G. Hager, D. Han, F. Hearl, J. Hodgins, A. Jain, F. Leve, C. Li, F. Meier, D. Negrut, L. Righetti, A. Rodriguez, J. Tan and J. Trinkle
- [J16] 2020 TRO *TossingBot: Learning to Throw Arbitrary Objects with Residual Physics*  
Zeng, A., S. Song, J. Lee, A. Rodriguez and T. Funkhouser
- [J15] 2020 IJRR *Reactive Planar Manipulation with Hybrid Model Predictive Control*  
Hogan, F. and A. Rodriguez

- [J14] 2019 A. Rob. *What are the Important Technologies for Bin Picking? Technology Analysis of Robots in Competitions based on a Set of Performance Metrics* (Advanced Robotics)  
Fujita M., Y. Domae, A. Noda, G. Garcia Ricardez, T. Nagatani, A. Zeng, S. Song, A. Rodriguez, A. Causo, I.M. Chen, and T. Ogasawara
- [J13] 2019 IJRR *Planar In-Hand Manipulation via Motion Cones*  
Chavan-Dafle, N., R. Holladay and A. Rodriguez
- [J12] 2019 IJRR *Robotic Pick-and-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching*  
Zeng, A., S. Song, K.-T. Yu, E. Donlon, F. Hogan, M. Bauza, D. Ma, O. Taylor, M. Liu, E. Romo, N. Fazeli, F. Alet, N. Chavan-Dafle, R. Holladay, I. Morona, P. Nair, D. Green, I. Taylor, W. Liu, T. Funkhouser and A. Rodriguez
- [J11] 2019 Science *See, feel, act: Hierarchical learning for complex manipulation skills with multisensory fusion* (Science Robotics)  
Fazeli, N., M. Oller, J. Wu, , Z. Wu, J. Tenenbaum and A. Rodriguez.
- [J10] 2018 TASE *Open Discussion of Robot Grasping Benchmarks, Protocols, and Metrics (Editorial)*  
Mahler, J., R. Platt, A. Rodriguez, M. Ciocarlie, A. Dollar, R. Detry, M. A. Roa, H. Yanco, A. Norton, J. Falco, K. van Wyk, E. Messina, J. Leitner, D. Morrison, M. Mason, O. Brock, L. Odhner, A. Kurenkov, M. Matl, and K. Goldberg
- [J9] 2018 AURO *Optimal Shape and Motion Planning for Dynamic Planar Manipulation*  
Taylor, O. and A. Rodriguez
- [J8] 2018 TASE *Analysis and Observations from the First Amazon Picking Challenge*  
Correll, N., K. Bekris, D. Berenson, O. Brock, A. Causo, K. Hauser, K. Okada, A. Rodriguez, J. Romano and P. Wurman
- [J7] 2018 RA-L *Friction Variability in Planar Pushing Data: Anisotropic Friction and Data-collection*  
Ma, D. and A. Rodriguez
- [J6] 2017 IJRR *Parameter and Contact Force Estimation of Planar Rigid-Bodies Undergoing Frictional Contact*  
Fazeli, N., R. Kolbert, R. Tedrake and A. Rodriguez
- [J5] 2014 IJRR *A Data-Driven Statistical Framework for Post-Grasp Manipulation*  
Paolini, R., A. Rodriguez, S. Srinivasa and M. Mason
- [J4] 2012 IJRR *Autonomous Manipulation with a General-Purpose Simple Hand*  
Mason, M., A. Rodriguez, S. Srinivasa and A. Vazquez
- [J3] 2012 IJRR *Grasp Invariance*  
Rodriguez, A. and M. Mason
- [J2] 2012 TRO *Path-Connectivity of the Free Space*  
Rodriguez, A. and M. Mason
- [J1] 2012 IJRR *From Caging to Grasping*  
Rodriguez, A., M. Mason and S. Ferry

### Conference Papers

- [C86] 2024 ICRA *TEXterity: Tactile Extrinsic dexTerity*  
Bronars A., S. Kim, P. Patre and A. Rodriguez
- [C85] 2023 CoRL *Shelving, Stacking, Hanging: Relational Pose Diffusion for Multi-modal Rearrangement*  
Simeonov A., A. Goyal, L. Manuelli, L. Yen-Chen, A. Sarmiento, A. Rodriguez, P. Agrawal and D. Fox
- [C84] 2023 IROS *Object manipulation through contact configuration regulation: Multiple and intermittent contacts*  
Taylor O. and N. Doshi and and A. Rodriguez
- [C83] 2023 IROS *Parallel-Jaw Gripper and Grasp Co-Optimization for Sets of Planar Objects*  
Jiang R. and N. Doshi and R. Gondhalekar and A. Rodriguez
- [C82] 2023 ICRA *A Tactile-enabled Hybrid Rigid-Soft Continuum Manipulator for Forceful Enveloping Grasps via Scale Invariant Design*  
Taylor I., M. Bawa and A. Rodriguez
- [C81] 2023 ICRA *Simultaneous Tactile Estimation and Control of Extrinsic Contact*

- [C80] 2022 CoRL Kim S., D. Jha, D. Romeres, P. Patre and A. Rodriguez  
*MIRA: Mental Imagery for Robotic Affordances*  
Yen-Chen L., P. Florence, A. Zeng, J. Barron, Y. Dun, W. Ma, A. Simeonov, A. Rodriguez and P. Isola
- [C79] 2022 CoRL *SE(3)-Equivariant Relational Rearrangement with Neural Descriptor Fields*  
Simeonov A., Y. Du, L. Yen-Chen, A. Rodriguez, L. Kaelbling, T. Lozano-Perez and P. Agrawal
- [C78] 2022 CoRL *Efficient Tactile Simulation with Differentiability for Robotic Manipulation*  
Xu J., S. Kim, T. Chen, A. Rodriguez, P. Agrawal, W. Matusik and S. Sueda
- [C77] 2022 CoRL *Visuotactile Affordances for Cloth Manipulation with Local Control*  
Sunil N., S. Wang, Y. She, E. Adelson and A. Rodriguez
- [C76] 2022 IROS *A Hierarchical Framework for Long Horizon Planning of Object-Contact Trajectories*  
Aceituno-Cabezas B. and A. Rodriguez
- [C75] 2022 IROS *Shape and Motion Optimization of Rigid Planar Effectors for Contact Trajectory Satisfaction*  
Jiang R., N. Doshi, R. Gondhalekar and A. Rodriguez
- [C74] 2022 ICRA *NeRF-Supervision: Learning Dense Object Descriptors from Neural Radiance Fields*  
Yen-Chen L., P. Florence, J. Barron, T. Lin, A. Rodriguez and P. Isola
- [C73] 2022 ICRA *Neural Descriptor Fields: SE(3)-Equivariant Object Representations for Manipulation*  
Simeonov A., Y. Du, A. Tagliacchi, J. Tenenbaum, A. Rodriguez, P. Agrawal, and V. Sitzmann
- [C72] 2022 ICRA *Manipulation of unknown objects via contact configuration regulation*  
Doshi N., O. Taylor and A. Rodriguez  
[ICRA 2022 Best Manipulation Paper Award](#)
- [C71] 2022 ICRA *Active Extrinsic Contact Sensing: Application to General Peg-in-Hole Insertion*  
Kim S. and A. Rodriguez
- [C70] 2022 ICRA *GelSlim 3.0: High-Resolution Measurement of Shape, Force and Slip in a Compact Tactile-Sensing Finger*  
Taylor I., S. Dong and A. Rodriguez
- [C69] 2021 ENSS *RFusion: Robotic Grasping via RF-Visual Sensing and Learning*  
Borouhaki T., I. Perper, M. Nachin, A. Rodriguez and F. Adib
- [C68] 2021 IROS *iNeRF: Inverting Neural Radiance Fields for Pose Estimation*  
Yen-Chen L., P. Florence, J. Barron, A. Rodriguez, P. Isola, T. Lin
- [C67] 2021 CoRL *A Differentiable Recipe for Learning Visual Non-Prehensile Planar Manipulation*  
Aceituno-Cabezas B., A. Rodriguez, S. Tulsiani, A. Gupta, and M. Mukadam
- [C66] 2021 ICRA *Tactile-RL for Insertion: Generalization to Objects of Unknown Geometry*  
Dong S., D. Jha, D. Romeres, S. Kim, D. Nikovski and A. Rodriguez
- [C65] 2021 ICRA *Planning for Multi-stage Forceful Manipulation*  
Holladay R., T. Lozano-Perez and A. Rodriguez
- [C64] 2021 ICRA *Extrinsic Contact Sensing with Relative-Motion Tracking from Distributed Tactile Measurements*  
Ma D., S. Dong, A. Rodriguez  
[ICRA 2021 Best Conference Paper Award](#)
- [C63] 2021 ICRA *Tactile SLAM: Real-time Inference of Shape and Pose from Planar Pushing*  
Suresh A., M. Bauza, K-T. Yu, J. Mangelson, A. Rodriguez and M. Kaess  
[ICRA 2021 Finalist Best Paper Award in Service Robotics](#)
- [C62] 2021 ICRA *Robotic Grasping of Fully-Occluded Objects using RF Perception*  
Borouhaki T., J. Leng, I. Clester, A. Rodriguez and F. Adib
- [C61] 2020 CoRL *Tactile Object Pose Estimation from First Touch with Geometric Contact Rendering*  
Bauza M., E. Valls, B. Lim, T. Sechopoulos and A. Rodriguez
- [C60] 2020 CoRL *A Long Horizon Planning Framework for Manipulating Rigid Pointcloud Objects*  
Simeonov A., Y. Du, B. Kim, F. Hogan, J. Tennenbaum, P. Agrawal and A. Rodriguez
- [C59] 2020 IROS *PnuGrip: An Active Two-Phase Gripper for Dexterous Manipulation*  
Taylor I., N. Chavan-Daffe, G. Li, N. Doshi and A. Rodriguez

- [C58] 2020 RSS *A Global Quasi-Dynamic Model for Contact-Trajectory Optimization*  
Aceituno-Cabezas B. and A. Rodriguez
- [C57] 2020 RSS *Cable Manipulation with a Tactile-Reactive Gripper*  
She Y., S. Wang, S. Dong, N. Sunil, A. Rodriguez and E. Adelson  
[RSS 2020 Best Paper Award Finalist](#)
- [C56] 2020 ICRA *Accurate Vision-based Manipulation through Contact Reasoning*  
Kloss A., M. Bauza, J. Wu, J. Tenenbaum, A. Rodriguez and J. Bohg
- [C55] 2020 ICRA *Long-Horizon Prediction and Uncertainty Propagation with Residual Point Contact Learners*  
Fazeli, N., A. Ajay, and A. Rodriguez
- [C54] 2020 ICRA *Hybrid Differential Dynamic Programming for Planar Manipulation Primitives*  
Doshi, N., F. Hogan and A. Rodriguez
- [C53] 2020 ICRA *Tactile Dexterity: Manipulation Primitives with Tactile Feedback*  
Hogan, F., J. Ballester, S. Dong and A. Rodriguez  
[ICRA 2020 Best Manipulation Paper Award Finalist](#)
- [C52] 2019 ISRR *Certified Grasping*  
Aceituno-Cabezas, B., J. Ballester, and A. Rodriguez
- [C51] 2019 IROS *Force-and-Motion Constrained Planning for Tool Use*  
Holladay, R., T. Lozano-Perez and A. Rodriguez
- [C50] 2019 IROS *Tactile-based Insertion for Dense Box-Packing*  
Dong, S. and A. Rodriguez
- [C49] 2019 IROS *Omnipush: accurate, diverse, real-world dataset of pushing dynamics with RGB-D*  
Bauza, M., F. Alet, Y-C. Lin, T. Lozano-Perez, L. Kaelbling and A. Rodriguez
- [C48] 2019 IROS *A Convex-Combinatorial Model for Planar Caging*  
Aceituno-Cabezas, B., H. Dai and A. Rodriguez
- [C47] 2019 ICML *Graph Element Networks: adaptive, structured computation and memory*  
Alet, F., A. Jaks, M. Bauza, A. Rodriguez, T. Lozano-Perez and L. Kaelbling
- [C46] 2019 RSS *TossingBot: Learning to Throw Arbitrary Objects with Residual Physics*  
Zeng, A., S. Song, J. Lee, A. Rodriguez and T. Funkhouser  
[RSS 2019 Best System Paper Award](#)
- [C45] 2019 ICRA *Tactile Mapping and Localization from High-Resolution Tactile Imprints*  
Bauza M., O. Canal and A. Rodriguez
- [C44] 2019 ICRA *Dense Tactile Force Distribution Estimation using GelSlim and inverse FEM*  
Ma, D., E. Donlon, S. Dong and A. Rodriguez
- [C43] 2019 ICRA *Maintaining Grasps within Slipping Bound by Monitoring Incipient Slip*  
Dong, S., D. Ma, E. Donlon and A. Rodriguez
- [C42] 2019 ICRA *Combining Physical Simulators and Object-Based Networks for Control*  
Ajay, A., M. Bauza, J. Wu, N. Fazeli, J. Tenenbaum, A. Rodriguez and L. Kaelbling
- [C41] 2018 WAFR *GP-SUM. Gaussian Process Filtering of non-Gaussian Beliefs*  
Bauza, M. and A. Rodriguez
- [C40] 2018 CoRL *Data-Efficient Approach to Precise and Controlled Pushing*  
Bauze M., F. Hogan and A. Rodriguez
- [C39] 2018 IROS *Augmenting Physical Simulators with Stochastic Neural Networks: Case Study of Planar Pushing and Bouncing*  
Ajay, A., J. Wu, N. Fazeli, M. Bauza, L. Kaelbling, J. Tenenbaum, and A. Rodriguez  
[IROS 2018 Best Cognitive Paper Award](#)
- [C38] 2018 IROS *Tactile Regrasp: Grasp Adjustments via Simulated Tactile Transformations*  
Hogan, F., M. Bauza, O. Canal, E. Donlon and A. Rodriguez
- [C37] 2018 IROS *Realtime State Estimation with Tactile and Visual Sensing for Inserting a Suction-held Object*  
Yu, K.-T. and A. Rodriguez
- [C36] 2018 IROS *Learning Synergies between Pushing and Grasping with Self-supervised Deep Reinforcement Learning*  
Zeng, A., S. Song, S. Welker, J. Lee, A. Rodriguez, and T. Funkhouser

- [C35] 2018 IROS [IROS 2018 Finalist Best Cognitive Paper Award](#)  
*GelSlim: A High-Resolution, Compact, Robust, and Calibrated Tactile-sensing Finger*  
 Donlon, E., S. Dong, M. Liu, J. Li, E. Adelson and A. Rodriguez  
[Finalist Amazon Best Technical Paper Award in Manipulation](#)
- [C34] 2018 CASE *Regrasping by Fixtureless Fixturing*  
 Chavan-Dafle N. and A. Rodriguez
- [C33] 2018 CASE *Pneumatic Shape-shifting Fingers to Reorient and Grasp*  
 Chavan-Dafle N., K. Lee and A. Rodriguez
- [C32] 2018 RSS *In-Hand Manipulation via Motion Cones*  
 Chavan-Dafle, N., R. Holladay and A. Rodriguez  
[RSS 2018 Best Student Paper Award](#)
- [C31] 2018 ICRA *Stable Prehensile Pushing: In-Hand Manipulation with Alternating Sticking Contacts*  
 Chavan-Dafle, N. and A. Rodriguez
- [C30] 2018 ICRA *Realtime State Estimation with Tactile and Visual sensing. Planar Manipulation*  
 Yu, K.-T. and A. Rodriguez
- [C29] 2018 ICRA *Reactive Planar Manipulation with Convex Hybrid MPC*  
 Hogan, F., E. Romo and A. Rodriguez
- [C28] 2018 ICRA *Robotic Pick-and-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching*  
 Zeng, A., S. Song, K.-T. Yu, E. Donlon, F. Hogan, M. Bauza, D. Ma, O. Taylor, M. Liu, E. Romo, N. Fazeli, F. Alet, N. Chavan-Dafle, R. Holladay, I. Morona, P. Nair, D. Green, I. Taylor, W. Liu, T. Funkhouser and A. Rodriguez  
[Amazon Best System Paper Award in Manipulation](#)
- [C27] 2017 ISRR *Fundamental Limitations in Performance and Interpretability of Common Planar Rigid-Body Contact Models*, Fazeli, N., S. Zapolsky, E. Drumwright and A. Rodriguez
- [C26] 2017 ISRR *Sampling-based Planning of In-Hand Manipulation with External Pushes*  
 Chavan-Dafle, N. and A. Rodriguez
- [C25] 2017 CoRL *Learning Data-Efficient Rigid-Body Contact Models: Case Study of Planar Impact*  
 Fazeli, N., S. Zapolsky, E. Drumwright and A. Rodriguez
- [C24] 2017 Human. *The Complexities of Grasping in the Wild*  
 Nakamura, Y., D. Troniak, A. Rodriguez, M. Mason and N. Pollard
- [C23] 2017 RSS *Optimal Shape and Motion Planning for Dynamic Planar Manipulation*  
 Taylor O. and A. Rodriguez
- [C22] 2017 ICRA *Empirical Evaluation of Common Impact Models on a Planar Impact Task*  
 Fazeli N., E. Donlon, E. Drumwright and A. Rodriguez A
- [C21] 2017 ICRA *A Probabilistic Data-Driven Model for Planar Pushing*  
 Bauza, M. and A. Rodriguez
- [C20] 2017 ICRA *Multi-view Self-supervised Deep Learning for 6D Pose Estimation in the Amazon Picking Challenge*  
 Zeng, A., K.T. Yu, S. Song, D. Suo, E. Walker Jr., A. Rodriguez, and J. Xiao
- [C19] 2016 WAFR *Feedback Control of the Pusher-Slider System: A Story Hybrid and Underactuated Contact Dynamics*  
 Hogan, F. and A. Rodriguez
- [C18] 2016 ISER *Experimental Validation of Contact Dynamic Models for In-hand Manipulation*  
 Kolbert, R., N. Chavan-Dafle and A. Rodriguez
- [C17] 2016 IROS *More than a Millions Ways to be Pushed. A Comprehensive and High-Fidelity Data Set of Planar Pushing*  
 Yu, K.T., M. Bauza, N. Fazeli and A. Rodriguez  
[IROS 2016 Finalist Best Paper Award](#)
- [C16] 2015 ISRR *Identifiability Analysis of Rigid Body Frictional Contact*  
 N. Fazeli, R. Tedrake and A. Rodriguez
- [C15] 2015 IROS *Shape and Pose Recovery from Planar Pushing*  
 Yu, K.T., J. Leonard and A. Rodriguez
- [C14] 2015 IROS *A Novel Nonlinear Compliant Link on Simple Grippers*



- [C13] 2015 IROS Zhang, Z., A. Rodriguez and M. Mason  
*Prehensile Pushing: In-hand Manipulation with Push-Primitives*  
Chavan-Dafle, N. and A. Rodriguez
- [C12] 2015 CASE A *Two-Phase Gripper to Reorient and Grasp*  
Chavan-Dafle, N., M. Mason, H. Staab, G. Rossano and A. Rodriguez
- [C11] 2014 ICRA *Extrinsic Dexterity: In-Hand Manipulation with External Forces*  
Chavan-Dafle, N., A. Rodriguez, R. Paolini, B. Tang, S. Srinivasa, M. Erdmann, M. Mason, I. Lundberg, H. Staab and T. Fuhlbrigge  
[ICRA 2014 Finalist Best Video Award](#)
- [C10] 2013 ICRA *A Simple and Compliant Force Sensing Palm for the MLab Simple Hand*  
Zeglin, G., A. Rodriguez and M. Mason
- [C9] 2013 ICRA *Effector Form Design for 1DOF Planar Actuation*  
Rodriguez, A. and M. Mason  
[ICRA 2013 Best Student Paper Award](#)
- [C8] 2012 ISER *A Data-Driven Statistical Framework for Post-Grasp Manipulation*  
Paolini, R., A. Rodriguez, S. Srinivasa, and M. Mason
- [C7] 2011 IROS *Abort and Retry in Grasping*  
Rodriguez, A., M. Mason, S. Srinivasa, M. Bernstein and A. Zirbel
- [C6] 2011 RSS *From Caging to Grasping*  
Rodriguez, A., M. Mason and S. Ferry  
[RSS 211 Best Student Paper Award](#)
- [C5] 2010 ISER *Manipulation Capabilities with Simple Hands*  
Rodriguez, A., M. Mason and S. Srinivasa
- [C4] 2010 WAFR *Grasp Invariance*  
Rodriguez, A. and M. Mason
- [C3] 2010 CASE *Failure Detection in Assembly: Force Signature Analysis*  
Rodriguez, A., D. Bourne, M. Mason, G. Rossano and J. Wang
- [C2] 2008 WAFR *Two Finger Caging: Squeezing and Stretching*  
Rodriguez, A. and M. Mason
- [C1] 2007 ICINCO *RPQ: Robotic Proximity Queries. Development and Applications*  
Hernansanz, A., X. Giral, A. Rodriguez and J. Amat

## INVITED TALKS

*“In-Hand Manipulation with Tactile and Extrinsic Dexterity”*

2023 Oct IROS 2023, Workshop on RoboTac, Detroit, USA

*“Contact Regulation with Tactile and Force feedback”*

2023 Jun ICRA 2023, Workshop on Embracing Contact, London, UK

2023 Feb Boston Dynamics AI Institute, Cambridge, USA

*“Robotic Manipulation with Tactile Dexterity”*

2022 Mar GelSight, Webinar The Future of Tactile Sensing in Robotics and AI, (virtual)

2021 Nov Autodesk, Robotics Research Seminar Series, (virtual)

2021 Jun Science Robotics, Neobay Robotics Forum, (virtual)

*“The Role of Manipulation Primitives in Building Dexterous Robotic Systems”*

2021 Oct Northwestern, Center for Robotics and Biosystems Seminar, (virtual)

2021 Sep UPenn, MEAM Seminar, (virtual)

2021 Jun TU Berlin, Robotics Colloquium, (virtual)

2021 Feb CMU, Robotics Institute Seminar, (virtual)

2020 Dec MIT, Mechanical Engineering Colloquium, (virtual)

2020 Dec Berkeley, DREAM/CPAR Seminar, (virtual)

*“Planning and Learning for Predictability”*



2021 Jul RSS 2021, Workshop on integrating planning and learning (WIPL), (virtual)

*“Certified Grasping”*

2021 Jun ICRA 2021, Workshop Competitions and Benchmarks for robotic manipulation, (virt.)

2019 Nov IROS 2019, Workshop Manipulation Through Contacts, Macao

*“From Crafting to Dexterous Robots”*

2021 Feb MIT, Keynote at Laureates and Leaders induction ceremony, (virtual)

*“Good Practices for Good Writing”*

2020 Jul RSS 2020, Workshop Good Citizens of Robotics Research

*“Tactile-Driven Dexterity”*

2020 Jul RSS 2020, Visuo-tactile Sensors for Robust Manipulation: From Perception to Control

2020 May ICRA 2020, ViTac: Closing the Perception-Action Loop with Vision and Tactile

2020 May ICRA 2020, Workshop on Learning of Manual Skills in Humans and Robots

2020 Apr ILP - Autonomy Symposium, MIT, USA

2019 Nov IROS 2019, Workshop RoboTac, Macao

*“Robot Automation. Why is Robotic Grasping not a Solved Problem?”*

2019 Nov Canon, ILP, Executive Briefing, MIT, USA

2019 Aug ABInBev Tech Training Workshop, New York, USA

2019 Jun Seminar in Digital Transformation, RCC Harvard, USA

*“A Vision for Tactile Dexterity and Reactive Manipulation”*

2019 Oct Humanoids 2019, Workshop Humanoid Grasping and Manipulation, Toronto, Canada

2019 Oct Amazon Research Awards Symposium, Boston, USA

2019 Sep SENSE.nano Symposium, MIT, USA

2019 Sep Mitsubishi Electric Research Laboratories, Cambridge, USA

2019 Jun Lincoln Labs, USA

2019 Jun Workshop on Adaptive Control, Learning, and Robotics, Yale, USA

2019 Jun Mathworks, USA

2019 May ICRA 2019, Workshop on Integrating Vision and Touch, Montreal, Canada

2019 Apr Robotics Jam Sessions, University of Pisa, Italy

*“Manipulation Skills that I Wish my Robots Had”*

2019 Oct Boston Dynamics, Waltham, USA

2019 Apr KTH, Rootics Seminar, Stockholm, Sweden

2018 Oct MIT, Mechanical Engineering Colloquium, USA

2018 Oct Keynote at IROS 2018, Madrid, Spain

2018 Aug Keynote at World Robot Conference, Beijing, China

2018 May MIT, Mechanical Engineering Department Area Seminar, USA

2018 Feb Berkeley, Peoples and Robots Seminar, USA

2018 Jan HKUST, Robotics Institute Seminar, Hong Kong

2017 Oct NERC 2017, Northeastern University, Boston, USA

2017 Sep IROS 2017, Workshop on Contact Frontiers, Vancouver, Canada

*“Why Do We Like Benchmarks?”*

2019 Aug Facebook Workshop on Benchmarks in Robotics, Pittsburgh, USA

*“Robot Manipulation Planning: A Hierarchy of Problems to Solve and Decisions to Make”*

2019 Jun RSS 2019, Workshop on Learning vs. Reasoning, Freiburg, Germany

*“Robotic Dexterous Picking”*

2019 Jan ILP Symposium, Shenzhen, China  
 2019 Jan SUSTech, Shenzhen, China  
 2018 Nov ILP Symposium, MITSUI, Boston, USA

*“Embrace Frictional Contact in Manipulation”*

2018 Dec Boston Dynamics, Waltham, USA

*“Adventures on Tactile Sensing”*

2018 Oct Amazon Grant Symposium, Boston, USA.  
 2018 May ICRA 2018, Workshop Active Touch for Perception and Interaction, Australia  
 2017 Jul RSS 2017, Workshop Tactile Sensing for Manipulation, Cambridge, USA

*“Fundamentals of Robotic Manipulation”*

2018 Jul Summer School on Cognitive Robotics, Cambridge, USA  
 2017 Jul Summer School on Soft Robotics, Lake Chiemsee, Germany  
 2017 Jun Summer School on Cognitive Robotics, Cambridge, USA

*“Affordances for Picking, Pushing, and their Synergies”*

2018 Jun RSS 2018, Workshop on Computational Models of Affordance, PA, USA

*“Reactive Robotic Manipulation”*

2017 Jul RSS 2017, Workshop Contact - Turning a problem into a solution, Cambridge, USA  
 2017 May ICRA 2017, Workshop Sensor-based Object Manipulation for Assembly, Singapore  
 2017 May University of Washington, Robotics Colloquia, Seattle, USA  
 2017 May MIT, School of Engineering, Junior faculty luncheon, Cambridge, USA

*“Team MIT-Princeton’s Approach to the Amazon Robotics Challenge”*

2018 Jun ABB Inc. US Corporate Research Center, Bloomfield, CT, USA  
 2018 May ICRA 2018, Workshop Advances in Robot Warehouse Automation.  
 2018 Jan MIT, Mechanical Engineering Department Faculty Retreat, USA  
 2017 May ICRA Workshop Warehouse Picking Automation, Singapore  
 2016 Jul ABB Inc. US Corporate Research Center, Bloomfield, CT, USA

*“Dexterous Manipulation with non-Dexterous Manipulators”*

2017 Jun ICRA 2017, Workshop AI in Automation, Singapore  
 2016 Oct IROS 2016, Workshop Dexterity acquisition in object manipulation, Daejeon, S. Korea  
 2016 May ABB Inc. Corporate Research Center, Vasteras, Sweden  
 2016 May ICRA 2016, Workshop Contact and Dynamics in Manipulation, Stockholm, Sweden  
 2016 Mar Northwestern University, NxR Lab, Evanston, USA  
 2015 Oct TATA Consultancy Services, Noida, India.  
 2015 Aug MIT, LIDS, Summer Dynamics and Information Lunches, Boston, USA  
 2015 Jul Delta Corporation, Taipei, Taiwan  
 2015 Jul EPOCH Symposium - The Future of Robotics and Machine Learning, Taipei, Taiwan  
 2015 Jul EPOCH Foundation, Garage+, Taipei, Taiwan  
 2014 Apr Locomotion Group, MIT-CSAIL, Boston, USA

*“Experiments with Frictional Contact”*

2016 Dec SIMPAR 2016, Workshop Grand Challenges in Robot Simulation, San Francisco, USA

*“The Pusher-Slider: A Story of Hybrid and Underactuated Contact Dynamics”*

2016 Oct IROS 2016, Workshop Closed-loop Object Manipulation, Daejeon, S. Korea  
 2016 Oct MIT Robotics Seminar, Cambridge, USA  
 2016 Oct Mathworks, Natick, USA

*“Robots in a low labor cost economy”*

- 2015 Oct TATA Consultancy Services, Noida, India
- 2015 Oct MIT Alumni Club, Pune, India
- 2015 Oct NASSCOM Engineering Summit, Keynote, Pune, India

*“Prehensile Pushing: In-hand Manipulation with External Forces”*

- 2015 May ICRA 2015, Workshop Robotic Hands, Grasping, and Manipulation, Seattle, USA

*“Primer on Manipulation”*

- 2014 Apr MIT, Mechanical Engineering, Course 2.165 Robotics, Boston, USA

*“Shape for Contact”*

- 2013 Sep Massachusetts Institute of Technology, CSAIL, Locomotion Group, Boston, USA
- 2013 Jul Carnegie Mellon University, CFR Seminar, Robotics Institute, CMU, Pittsburgh, USA

*“Contacting the World with Mechanical and Data-Driven Intelligence”*

- 2014 Apr WPI, Computer Science, Worcester, USA
- 2014 Mar MIT, Mechanical Engineering, Graduate program Open House, Boston, USA
- 2013 Apr Georgia Tech, School of Interactive Computing, Atlanta, USA
- 2013 Mar MIT, Mechanical Engineering, Boston, USA
- 2013 Mar UMASS, Computer Science, Amherst, USA
- 2013 Mar Stanford, Computer Science, Stanford, USA
- 2013 Mar University of Maryland, Mechanical Engineering, College Park, USA
- 2013 Feb USC, Department of Computer Science, Los Angeles, USA

*“Data-Driven Manipulation with a Simple Hand”*

- 2012 Nov Georgia Tech, RIM Center, Atlanta, USA

*“Grasp Invariance”*

- 2011 Feb LAAS-CNRS, Toulouse, France
- 2010 Nov CMU, CFR Seminar, Pittsburgh, USA

*“From Caging to Grasping”*

- 2011 Jun RSS 2011, Full oral presentation, Los Angeles, USA
- 2011 May ICRA 2011 Workshop “Uncertainty in Automation”, Shanghai, China
- 2008 May CMU, Human Sensing Laboratory, Pittsburgh, USA
- 2006 Dec UPC, ESAII, Barcelona, Spain