

Stanford



Mark Cutkosky

Fletcher Jones Professor in the School of Engineering
Mechanical Engineering

CONTACT INFORMATION

- **Administrator**

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Bio

BIO

Cutkosky applies analyses, simulations, and experiments to the design and control of robotic hands, tactile sensors, and devices for human/computer interaction. In manufacturing, his work focuses on design tools for rapid prototyping.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Presidential Young Investigator Award, National Science Foundation (1986)
- Anderson Faculty Scholar, Stanford University (1989)
- Charles M. Pigott Professorship, Stanford University (1994-2001)
- Fulbright Distinguished Faculty Chair, SSSA Pisa, Italy (2002)
- Best Inventions of 2006, Time Magazine (2006)
- Fletcher Jones Chair II, Stanford School of Engineering (2011)
- IEEE Fellow, IEEE (2012)
- ASME Fellow, ASME (2014)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Editorial board, Bioinspiration & Biomimetics (2019 - present)

PROFESSIONAL EDUCATION

- PhD, Carnegie Mellon (1985)

PATENTS

- Mark Cutkosky. "United States Patent US 7762362 B2 Climbing with dry adhesives"
- Mark Cutkosky. "United States Patent US 8066088 B2 Biologically inspired climbing device"
- Mark Cutkosky. "United States Patent US 8491665 B2 Skin stretch tactile feedback device"
- Mark Cutkosky. "United States Patent US9517610 B2 Grippers based on opposing van der Waals adhesive pads"
- Cutkosky, M.R., Ruotolo, W., Roberge, J.P. "United States Patent 10,875,190 Patterned and instrumented directional adhesives for enhanced gripping with industrial manipulators", Leland Stanford Junior University, Dec 29, 2020
- Mark Cutkosky. "United States Patent 10,647,004 Air-bladder enhanced with gecko-adhesive for grasping applications", Leland Stanford Junior University, May 12, 2020
- Hawkes, Elliot W., David L. Christensen, Srinivasan Arul Suresh, Mark R. Cutkosky. "United States Patent 10,316,220 Controllable adhesive on conformable film for non-flat surface", Leland Stanford Junior University, Jun 11, 2019
- Wu, Xin Alice, John V. Ulmen, Mark R. Cutkosky. "United States Patent 10,267,690 Capacitive force/torque sensor", Leland Stanford Junior University, Apr 23, 2019
- Mark R. Cutkosky, Paul S Day, Eric V. Eason. "United States Patent US 9908266 B2 Mold Fabrication Method for Gecko-Inspired Adhesives", Leland Stanford Junior University, Mar 6, 2018
- Mark Cutkosky, Atsuo Orita. "United States Patent US 9871183 B2 Electrostrictive element", Honda Motor Co Ltd, Leland Stanford Junior University, Jan 16, 2018
- Mark R. Cutkosky, Atsuo Orita. "United States Patent US 9773969 B2 Electrostrictive element manufacturing method", Honda Motor Co Ltd, Leland Stanford Junior University, Sep 26, 2017
- Paul S Day, Mark R Cutkosky. "United States Patent US 8882996 B2 Micro-structure-based adhesives for size-selective particle trapping and sorting", Leland Stanford Junior University, Nov 11, 2014
- Yong-Lae ParkRichard James BlackBehzad Moslehi, Mark R. Cutkosky, Santhi Elayaperumal, Bruce Daniel, Alan Yeung, Vahid Sotoudeh. "United States Patent US8649847B1 Steerable shape sensing biopsy needle and catheter", Intelligent Fiber Optic Systems Inc, Feb 11, 2014
- Yong-Lae Park, Behzad Moslehi, Richard James Black, Mark R. Cutkosky, Kelvin K Chau. "United States Patent US7903907B1 Force and deflection sensor with shell membrane and optical gratings and method of manufacture", Intelligent Fiber Optic Systems Inc, Mar 8, 2011
- Pratik Kumar Nahata, Tjarko Leifer, Edwin T. Li, Tejas B. Desai, Susan A. Johnson, Mark R. Cutkosky. "United States Patent US6825752B2 Effortless entry system and method", Continental Automotive Systems Inc, Nov 30, 2004
- Mark R. Cutkosky, Eiki Kurokawa. "United States Patent US4545722A Flexible Robot Gripper for Irregular Shapes", Westinghouse Electric Corp, Oct 8, 1985
- Mark R. Cutkosky, Paul K. Wright. "United States Patent 4,458,424 Compliance System for Industrial Manipulators", Westinghouse Electric Corp, Jul 10, 1984

LINKS

- Biomimetics and Dexterous Manipulation Lab: <http://bdml.stanford.edu>

Research & Scholarship

CLINICAL TRIALS

- Gait Retraining to Reduce Knee Osteoarthritis Pain, Not Recruiting

Teaching

COURSES

2022-23

- Global Engineering Design Thinking, Innovation, and Entrepreneurship: ME 310A (Aut)
- Global Engineering Design Thinking, Innovation, and Entrepreneurship: ME 310B (Win)
- Global Engineering Design Thinking, Innovation, and Entrepreneurship: ME 310C (Spr)

2021-22

- Global Engineering Design Thinking, Innovation, and Entrepreneurship: ME 310C (Spr)
- Introduction to Mechanical Engineering: ME 1 (Spr)

2020-21

- Global Engineering Design Thinking, Innovation, and Entrepreneurship: ME 310A (Aut)
- Global Engineering Design Thinking, Innovation, and Entrepreneurship: ME 310B (Win)
- Global Engineering Design Thinking, Innovation, and Entrepreneurship: ME 310C (Spr)
- Introduction to Mechanical Engineering: ME 1 (Win)

2019-20

- Engineering Design Entrepreneurship and Innovation: exploring the problem space: ME 310A (Aut)
- Engineering Design Entrepreneurship and Innovation: exploring the solution space: ME 310B (Win)
- Foundations of Product Realization: ME 102 (Spr)
- Topics in Multi-Limbed Manipulation: ME 319 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Brian Do, Erez Krinsky, Michael Lin, Stephanie Newdick, Adrian Piedra, Guan Rong Tan, Kyle Yoshida

Postdoctoral Faculty Sponsor

Veronika Domova

Doctoral Dissertation Advisor (AC)

Dane Brouwer, Tony Chen, Hojung Choi, Julia Di, Lawrence Domingo, Amar Hajj-Ahmad, Kenneth Hoffmann, Ali Kight, XinYi Liang, Rachel Thomasson

Master's Program Advisor

Jiawen Bao, Athena Chang, Rohith Chintala, Wesley Guo, Max Hunter, Juan Jimenez, Marion Lepert, Daniel Morton, Edan Reches, Emilio Reyes, Elsa Schweizer, Genggeng Zhou

Doctoral Dissertation Co-Advisor (AC)

Arielle Berman, Wesley Guo, Bo Kim, Marion Lepert, Jun En Low, Jerome Nowak, Oriana Peltzer, Adrian Piedra, Olaoluwa Shorinwa, Crystal Winston, Connor Yako

Doctoral (Program)

Savannah Cofer, Saehui Hwang, Crystal Winston

Publications

PUBLICATIONS

- **Testing Gecko-Inspired Adhesives with Astrobee Aboard the International Space Station: Readying the Technology for Space** *IEEE ROBOTICS & AUTOMATION MAGAZINE*
Chen, T. G., Cauligi, A., Suresh, S., Pavone, M., Cutkosky, M.
2022
- **RVEX: Right Ventricular External Device for Biomimetic Support and Monitoring of the Right Heart** *ADVANCED MATERIALS TECHNOLOGIES*
Pirozzi, I., Kight, A., Shad, R. A., Han, A., Dual, S. A., Fong, R., Jia, A., Hiesinger, W., Yock, P., Cutkosky, M.
2022
- **From grasping to manipulation with gecko-inspired adhesives on a multifinger gripper.** *Science robotics*
Ruotolo, W., Brouwer, D., Cutkosky, M. R.
1800; 6 (61): eabi9773
- **Bird-inspired dynamic grasping and perching in arboreal environments** *SCIENCE ROBOTICS*
Roderick, W. T., Cutkosky, M. R., Lentink, D.
2021; 6 (61): eabj7562

- **Creating Metal Molds for Directional Gecko-Inspired Adhesives** *JOURNAL OF MICRO AND NANO-MANUFACTURING*
Kerst, C., Suresh, S. A., Cutkosky, M. R.
2020; 8 (1)
- **The Role of Tissue Slip Feedback in Robot-Assisted Surgery** *JOURNAL OF MEDICAL DEVICES-TRANSACTIONS OF THE ASME*
Burkhard, N. T., Steger, J., Cutkosky, M. R.
2019; 13 (2)
- **Spatially variant microstructured adhesive with one-way friction.** *Journal of the Royal Society, Interface*
Suresh, S. A., Kerst, C. F., Cutkosky, M. R., Hawkes, E. W.
2019; 16 (150): 20180705
- **Forceful manipulation with micro air vehicles** *SCIENCE ROBOTICS*
Estrada, M. A., Mintchev, S., Christensen, D. L., Cutkosky, M. R., Floreano, D.
2018; 3 (23)
- **Forceful manipulation with micro air vehicles.** *Science robotics*
Estrada, M. A., Mintchev, S., Christensen, D. L., Cutkosky, M. R., Floreano, D.
2018; 3 (23)
- **Active Sensing for Measuring Contact of Thin Film Gecko-Inspired Adhesives** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Tae Myung Huh, Liu, C., Hashizume, J., Chen, T. G., Suresh, S. A., Chang, F., Cutkosky, M. R.
2018; 3 (4): 3263–70
- **Improving Industrial Grippers With Adhesion-Controlled Friction** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Roberge, J., Ruotolo, W., Duchaine, V., Cutkosky, M.
2018; 3 (2): 1041–48
- **MR-Compatible Haptic Display of Membrane Puncture in Robot-Assisted Needle Procedures.** *IEEE transactions on haptics*
Han, A. K., Bae, J. H., Gregoriou, K. C., Ploch, C. J., Goldman, R. E., Glover, G. H., Daniel, B. L., Cutkosky, M. R.
2018
- **A robotic device using gecko-inspired adhesives can grasp and manipulate large objects in microgravity.** *Science robotics*
Jiang, H., Hawkes, E. W., Fuller, C., Estrada, M. A., Suresh, S. A., Abcouwer, N., Han, A. K., Wang, S., Ploch, C. J., Parness, A., Cutkosky, M. R.
2017; 2 (7)
- **The Ocean One hands: An adaptive design for robust marine manipulation** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
Stuart, H., Wang, S., Khatib, O., Cutkosky, M. R.
2017; 36 (2): 150-166
- **A Multimodal Robot for Perching and Climbing on Vertical Outdoor Surfaces** *IEEE TRANSACTIONS ON ROBOTICS*
Pope, M. T., Kimes, C. W., Jiang, H., Hawkes, E. W., Estrada, M. A., Kerst, C. F., Roderick, W. R., Han, A. K., Christensen, D. L., Cutkosky, M. R.
2017; 33 (1): 38-48
- **Climbing with adhesion: from bioinspiration to biounderstanding** *INTERFACE FOCUS*
Cutkosky, M. R.
2015; 5 (4)
- **Surface and Shape Deposition Manufacturing for the Fabrication of a Curved Surface Gripper** *JOURNAL OF MECHANISMS AND ROBOTICS-TRANSACTIONS OF THE ASME*
Suresh, S. A., Christensen, D. L., Hawkes, E. W., Cutkosky, M.
2015; 7 (2)
- **A Passive Parallel Master-Slave Mechanism for Magnetic Resonance Imaging-Guided Interventions** *JOURNAL OF MEDICAL DEVICES-TRANSACTIONS OF THE ASME*
Elayaperumal, S., Cutkosky, M. R., Renaud, P., Daniel, B. L.
2015; 9 (1)
- **Design of an Optically Controlled MR-Compatible Active Needle** *IEEE TRANSACTIONS ON ROBOTICS*
Ryu, S. C., Quek, Z. F., Koh, J., Renaud, P., Black, R. J., Moslehi, B., Daniel, B. L., Cho, K., Cutkosky, M. R.

2015; 31 (1): 1-11

- **Human climbing with efficiently scaled gecko-inspired dry adhesives** *JOURNAL OF THE ROYAL SOCIETY INTERFACE*
Hawkes, E. W., Eason, E. V., Christensen, D. L., Cutkosky, M. R.
2015; 12 (102)
- **Stress distribution and contact area measurements of a gecko toe using a high-resolution tactile sensor.** *Bioinspiration & biomimetics*
Eason, E. V., Hawkes, E. W., Windheim, M., Christensen, D. L., Libby, T., Cutkosky, M. R.
2015; 10 (1): 016013-?
- **Stress distribution and contact area measurements of a gecko toe using a high-resolution tactile sensor.** *Bioinspiration & biomimetics*
Eason, E. V., Hawkes, E. W., Windheim, M., Christensen, D. L., Libby, T., Cutkosky, M. R.
2015; 10 (1): 016013-?
- **An analytic framework for developing inherently-manufacturable pop-up laminate devices** *SMART MATERIALS AND STRUCTURES*
Aukes, D. M., Goldberg, B., Cutkosky, M. R., Wood, R. J.
2014; 23 (9)
- **Dynamic tactile sensing** in *The Human Hand: A Source of Inspiration for Robotic Hands*
Cutkosky, M., R., Ulmen, J.
edited by Balasubramanian, R., Santos, V.
Berlin, Heidelberg: Springer Verlag, in press..2014: 1
- **The Gecko's Toe: Scaling Directional Adhesives for Climbing Applications** *IEEE-ASME TRANSACTIONS ON MECHATRONICS*
Hawkes, E. W., Eason, E. V., Asbeck, A. T., Cutkosky, M. R.
2013; 18 (2): 518-526
- **Biomimetic Robotic Mechanisms via Shape Deposition Manufacturing** *Robotics Research: the Ninth International Symposium*
Bailey, S., A., Cham, J., G., Cutkosky, M., R., Full, R., J.
edited by Hollerbach, J., Koditschek, D.
Springer-Verlag.: 403–410
- **Electrohydraulic Vascular Compression Device (e-VaC) with Integrated Sensing and Controls** *ADVANCED MATERIALS TECHNOLOGIES*
Pirozzi, I., Kight, A., Liang, X., Han, A., Ennis, D. B., Hiesinger, W., Dual, S. A., Cutkosky, M. R.
2022
- **Porous Dielectric Elastomer Based Flexible Multiaxial Tactile Sensor for Dexterous Robotic or Prosthetic Hands** *ADVANCED MATERIALS TECHNOLOGIES*
Ham, J., Huh, T., Kim, J., Kim, J., Park, S., Cutkosky, M. R., Bao, Z.
2022
- **Aerial Grasping and the Velocity Sufficiency Region** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Chen, T. G., Hoffmann, K. W., Low, J., Nagami, K., Lentink, D., Cutkosky, M. R.
2022; 7 (4): 10009-10016
- **DynaRing: A Patient-Specific Mitral Annuloplasty Ring With Selective Stiffness Segments.** *Journal of medical devices*
Frishman, S., Kight, A., Pirozzi, I., Maddineni, S., Imbrie-Moore, A. M., Karachiwalla, Z., Paulsen, M. J., Kaiser, A. D., Woo, Y. J., Cutkosky, M. R.
2022; 16 (3): 031009
- **Perceived Intensities of Normal and Shear Skin Stimuli Using a Wearable Haptic Bracelet** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Sarac, M., Huh, T., Choi, H., Cutkosky, M. R., Di Luca, M., Okamura, A. M.
2022; 7 (3): 6099-6106
- **Bimanual Handling of Deformable Objects With Hybrid Adhesion** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Han, A., Hajj-Ahmad, A., Cutkosky, M. R.
2022; 7 (2): 5497-5503
- **A Stretchable Tactile Sleeve for Reaching Into Cluttered Spaces** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Gruebele, A. M., Lin, M. A., Brouwer, D., Yuan, S., Zerbe, A. C., Cutkosky, M. R.
2021; 6 (3): 5308-5315

- **Exploratory Hand: Leveraging Safe Contact to Facilitate Manipulation in Cluttered Spaces** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Lin, M. A., Thomasson, R., Uribe, G., Choi, H., Cutkosky, M.
2021; 6 (3): 5159-5166
- **Compression Molding and Nickel Molds for Directional Gecko-Inspired Adhesives** *JOURNAL OF MICRO AND NANO-MANUFACTURING*
Kerst, C. F., Cutkosky, M. R.
2021; 9 (2)
- **Cutting to the Point: Directly Machined Metal Molds for Directional Gecko-Inspired Adhesives** *JOURNAL OF MICRO AND NANO-MANUFACTURING*
Hajj-Ahmad, A., Suresh, S. A., Cutkosky, M.
2021; 9 (2)
- **Hybrid electrostatic and gecko-inspired gripping pads for manipulating bulky, non-smooth items** *SMART MATERIALS AND STRUCTURES*
Han, A., Hajj-Ahmad, A., Cutkosky, M. R.
2021; 30 (2)
- **Forcing the issue: testing gecko-inspired adhesives.** *Journal of the Royal Society, Interface*
Suresh, S. A., Hajj-Ahmad, A., Hawkes, E. W., Cutkosky, M. R.
2021; 18 (174): 20200730
- **A Multi-Axis FBG-Based Tactile Sensor for Gripping in Space**
Frishman, S., Di, J., Karachiwalla, Z., Black, R. J., Moslehi, K., Smith, T., Coltin, B., Moslehi, B., Cutkosky, M. R., IEEE
IEEE.2021: 1794-1799
- **PEDOT:PSS Coating Improves Gecko-Inspired Adhesive Performance** *JOURNAL OF MICRO AND NANO-MANUFACTURING*
Kerst, C., Suresh, S. A., Ferro, M., Cutkosky, M.
2020; 8 (3)
- **Haptic Surface Display based on Miniature Dielectric Fluid Transducers** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Han, A., Ji, S., Wang, D., Cutkosky, M. R.
2020; 5 (3): 4021–27
- **Distal Hyperextension Is Handy: High Range of Motion in Cluttered Environments** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Ruotolo, W., Thomasson, R., Herrera, J., Gruebele, A., Cutkosky, M.
2020; 5 (2): 921–28
- **Dynamically Reconfigurable Tactile Sensor for Robotic Manipulation** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Huh, T., Choi, H., Willcox, S., Moon, S., Cutkosky, M. R.
2020; 5 (2): 2562–69
- **A Stretchable Capacitive Sensory Skin for Exploring Cluttered Environments** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Gruebele, A., Roberge, J., Zerbe, A., Ruotolo, W., Huh, T., Cutkosky, M. R.
2020; 5 (2): 1750–57
- **Tactile Sensing and Terrain-Based Gait Control for Small Legged Robots** *IEEE TRANSACTIONS ON ROBOTICS*
Wu, X., Huh, T., Sabin, A., Suresh, S. A., Cutkosky, M. R.
2020; 36 (1): 15–27
- **SELECTIVELY COMPLIANT ANNULOPLASTY RING TO ENABLE ANNULAR DYNAMICS IN MITRAL VALVE REPAIR EVALUATED BY IN-VITRO STEREOVISION**
Frishman, S., Imbrie-Moore, A. M., Cutkosky, M. R., Kight, A., Pirozzi, I., Paulsen, M. J., Woo, J. Y., Am Soc Mech Eng
AMER SOC MECHANICAL ENGINEERS.2020
- **Enabling In-Bore MRI-Guided Biopsies With Force Feedback** *IEEE TRANSACTIONS ON HAPTICS*
Frishman, S., Kight, A., Pirozzi, I., Coffey, M. C., Daniel, B. L., Cutkosky, M. R.
2020; 13 (1): 159–66
- **Mitral chordae tendineae force profile characterization using a posterior ventricular anchoring neochordal repair model for mitral regurgitation in a three-dimensional-printed ex vivo left heart simulator.** *European journal of cardio-thoracic surgery : official journal of the European Association for Cardio-thoracic Surgery*

- Paulsen, M. J., Imbrie-Moore, A. M., Wang, H., Bae, J. H., Hironaka, C. E., Farry, J. M., Lucian, H. J., Thakore, A. D., MacArthur, J. W., Cutkosky, M. R., Woo, Y. J.
2019
- **Birds land reliably on complex surfaces by adapting their foot-surface interactions upon contact.** *eLife*
Roderick, W. R., Chin, D. D., Cutkosky, M. R., Lentink, D.
2019; 8
 - **Ex Vivo Biomechanical Study of Apical Versus Papillary Neochord Anchoring for Mitral Regurgitation**
Imbrie-Moore, A. M., Paulsen, M. J., Thakore, A. D., Wang, H., Hironaka, C. E., Lucian, H. J., Farry, J. M., Edwards, B. B., Bae, J., Cutkosky, M. R., Woo, Y.
ELSEVIER SCIENCE INC.2019: 90–97
 - **Tunable Contact Conditions and Grasp Hydrodynamics Using Gentle Fingertip Suction** *IEEE TRANSACTIONS ON ROBOTICS*
Stuart, H. S., Wang, S., Cutkosky, M. R.
2019; 35 (2): 295–306
 - **Low-Cost, Continuously Variable, Strain Wave Transmission Using Gecko-Inspired Adhesives** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Naclerio, N. D., Kerst, C. F., Haggerty, D. A., Suresh, S. A., Singh, S., Ogawa, K., Miyazaki, S., Cutkosky, M. R., Hawkes, E. W.
2019; 4 (2): 894–901
 - **Load-Sharing in Soft and Spiny Paws for a Large Climbing Robot** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Ruotolo, W., Roig, F. S., Cutkosky, M. R.
2019; 4 (2): 1439–46
 - **Long-Stroke Rolling Diaphragm Actuators For Haptic Display of Forces in Teleoperation** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Gruebele, A., Frishman, S., Cutkosky, M. R.
2019; 4 (2): 1478–84
 - **Capacitive Sensing for a Gripper With Gecko-Inspired Adhesive Film** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Hashizume, J., Huh, T., Suresh, S. A., Cutkosky, M. R.
2019; 4 (2): 677–83
 - **Ex vivo biomechanical study of apical versus papillary neochord anchoring for mitral regurgitation.** *The Annals of thoracic surgery*
Imbrie-Moore, A. M., Paulsen, M. J., Thakore, A. D., Wang, H., Hironaka, C. E., Lucian, H. J., Farry, J. M., Edwards, B. B., Bae, J. H., Cutkosky, M. R., Woo, Y. J.
2019
 - **Development and ex vivo validation of novel force-sensing neochordae for measuring chordae tendineae tension in the mitral valve apparatus using optical fibers with embedded Bragg gratings.** *Journal of biomechanical engineering*
Paulsen, M. J., Bae, J. H., Imbrie-Moore, A. n., Wang, H. n., Hironaka, C. n., Farry, J. M., Lucian, H. n., Thakore, A. n., Cutkosky, M. R., Woo, Y. J.
2019
 - **HoloNeedle: Augmented Reality Guidance System for Needle Placement Investigating the Advantages of Three-Dimensional Needle Shape Reconstruction** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Lin, M. A., Siu, A. F., Bae, J., Cutkosky, M. R., Daniel, B. L.
2018; 3 (4): 4156–62
 - **Efficient Equilibrium Testing Under Adhesion and Anisotropy Using Empirical Contact Force Models** *IEEE TRANSACTIONS ON ROBOTICS*
Hauser, K., Wang, S., Cutkosky, M. R.
2018; 34 (5): 1157–69
 - **Slip Sensing for Intelligent, Improved Grasping and Retraction in Robot-Assisted Surgery** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Burkhard, N. T., Cutkosky, M. R., Steger, J.
2018; 3 (4): 4148–55
 - **Approximating gecko setae via direct laser lithography** *SMART MATERIALS AND STRUCTURES*
Tricinci, O., Eason, E. V., Filippeschi, C., Mondini, A., Mazzolai, B., Pugno, N. M., Cutkosky, M. R., Greco, F., Mattoli, V.
2018; 27 (7)
 - **Stochastic models of compliant spine arrays for rough surface grasping** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
Jiang, H., Wang, S., Cutkosky, M. R.

2018; 37 (7): 669–87

- **A Soft Robotic Gripper With Gecko-Inspired Adhesive** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Glick, P., Suresh, S. A., Ruffatto, D., Cutkosky, M., Tolley, M. T., Parness, A.
2018; 3 (2): 903–10
- **Grasping Without Squeezing: Design and Modeling of Shear-Activated Grippers** *IEEE TRANSACTIONS ON ROBOTICS*
Hawkes, E., Jiang, H., Christensen, D. L., Han, A. K., Cutkosky, M. R.
2018; 34 (2): 303–16
- **Quadratic Model of Reciprocal Causation for Monitoring, Improving, and Reflecting on Design Team Performance** *DESIGN THINKING RESEARCH: MAKING DISTINCTIONS: COLLABORATION VERSUS COOPERATION*
Sonalkar, N., Mabogunje, A., Cutkosky, M., Plattner, H., Meinel, C., Leifer, L.
2018: 43–57
- **Design of Materials and Mechanisms for Responsive Robots** *ANNUAL REVIEW OF CONTROL, ROBOTICS, AND AUTONOMOUS SYSTEMS, VOL 1*
Hawkes, E. W., Cutkosky, M. R., Leonard, N. E.
2018; 1: 359–84
- **Continuous Movement Tracking Performance for Predictable and Unpredictable Tasks with Vibrotactile Feedback** *IEEE TRANSACTIONS ON HAPTICS*
Shull, P. B., Zhu, X., Cutkosky, M. R.
2017; 10 (4): 466–75
- **Touchdown to take-off: at the interface of flight and surface locomotion** *INTERFACE FOCUS*
Roderick, W. R., Cutkosky, M. R., Lentink, D.
2017; 7 (1)
- **Haptic Feedback of Membrane Puncture with an MR-Compatible Instrumented Needle and Electroactive Polymer Display**
Bae, J., Han, A., Ploch, C. J., Daniel, B. L., Cutkosky, M. R., Gerling, G., Otaduy, M. A., Ryu, J. H.
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- **Sensing slip of grasped wet, conformable objects**
Burkhard, N., Steger, R., Cutkosky, M., Bicchi, A., Okamura, A.
IEEE.2017: 5744–49
- **Comparing Haptic and Audio Navigation Cues on the Road for Distracted Drivers with a Skin Stretch Steering Wheel**
Ploch, C. J., Bae, J., Ploch, C. C., Ju, W., Cutkosky, M. R., Gerling, G., Otaduy, M. A., Ryu, J. H.
IEEE.2017: 448–53
- **Ocean One A Robotic Avatar for Oceanic Discovery** *IEEE ROBOTICS & AUTOMATION MAGAZINE*
Khatib, O., Yeh, X., Brantner, G., Soe, B., Kim, B., Ganguly, S., Stuart, H., Wang, S., Cutkosky, M., Edsinger, A., Mullins, P., Barham, M., Voolstra, et al
2016; 23 (4): 20-29
- **Scalable Electroactive Polymer for Variable Stiffness Suspensions** *IEEE-ASME TRANSACTIONS ON MECHATRONICS*
Orita, A., Cutkosky, M. R.
2016; 21 (6): 2836-2846
- **Novel Foot Progression Angle Algorithm Estimation via Foot-Worn, Magneto-Inertial Sensing.** *IEEE transactions on bio-medical engineering*
Huang, Y., Jirattigalachote, W., Cutkosky, M. R., Zhu, X., Shull, P. B.
2016; 63 (11): 2278-2285
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