Nima Fazeli

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Professional Appointments

University of Michigan:

2022 – Present	Assistant Professor, Robotics Department *(Primary Appointment)*
2024 – Present	Assistant Professor, Computer Science and Engineering, EECS
2020 – Present	Assistant Professor, Mechanical Engineering Department

Education

2020	Postdoc, MIT (Advised by Prof. Alberto Rodriguez)
2019	PhD, MIT Mechanical Engineering (Advised by Prof. Alberto Rodriguez)
2014	MSc, UMD Mechanical Engineering (Advised by Prof. Jin-Oh Hahn)
2012	MSc, University of Alberta, Transferred to UMD to complete MSc
2011	BSc, Amirkabir University of Technology, Mechanical Engineering

Awards and Honors

Academic Awards:

2025	Conference on Robot Learning (CoRL) Early Career Spotlight
2024	NSF CAREER Award
2022	Agilent Early Career Professor Award Finalist
2022	Amazon Research Award – Robotics
2021	Google Faculty Research Award
2014	Rohsenow Fellowship – MIT
2013	Academic Excellence Award – UMD

Paper Awards:

2024	UM AI Symposium 2024 Best Paper – *"RACER"*
2023	RSS Best Student Paper Finalist – *"MultiScope"*
2018	IROS Best Cognitive Robotics Paper – *"Augmenting Physical Simulators .."*
2017	Best Systems Paper (Manipulation) Amazon Robotics Awards *Awarded to "Robotic Pick-and-Place of Novel Objects in Clutter ..."*
2017	ISRR 2017 Doctoral Consortium Award to *"Fundamental Limitations in ..."*
2016	IROS Best Student Paper Finalist – *"More Than a Million Ways..."*
2015	ISRR 2015 Paper Selected for Special Issue of IJRR *Awarded to "Identifiability Analysis of Planar Rigid-Body Frictional Contact"*
2012	DSCC Best Student Paper Finalist – *"Active Non-Intrusive System ..."*

Competitions and Travel Awards:

2017	Sontheimer Travel Award – MIT Mechanical Engineering
2017	1st Place – Amazon Robotics Challenge Stowing Task
2016	3rd and 4th Place – Amazon Picking Challenge
2015	2nd Place – Amazon Picking Challenge
2012	Dynamic Systems and Controls Conference (DSCC) Travel Grant Award

Leadership and Service Activities

University of Michigan:

2022 – Present	Robotics Department Seminar Committee Chair
2020 – Present	Robotics Department Graduate Committee
2024 – present	Robotics Community and Outreach Committee Member
2021 – 2022	Robotics Community and Outreach Committee Chair
2020 – 2024	Mechanical Engineering Seminar Series Committee

Robotics Community:

2023 - 2025	Area Chair – RSS

2023	Associate Editor – IJRR
2022 & 2024	Associate Editor – ICRA
2022 – Present	Orbital Reef Advisory Council
2020	RSS Workshop Organizer - "Good Citizens of Robotics"
2020	Program Committee - Conference on Robot Learning (CoRL)
2020	Associate Editor IROS
2016 & 2017	Organizing Committee of Robocon at MIT
2015	Assistant Organizer of the NSF National Robotics Initiative PI Meeting
2013	Co-chair of Sys. ID. and Therapeutic Control in Bio-Systems Session DSCC

Outreach:

2023	First Robotics Manipulation and Tactile Sensing Visit and Games
2021	UM - LSAMP Robotics Summer Camp
2021	Moorehouse College Mentorship
2015 – 2016	President of the Persian Student Association at MIT
2015 – 2016	Orientation Chair for Graduate Association of Mechanical Engineers at MIT

Review Service Awards:

2016	Elsevier Recognition Certificate: Computers in Biology and Medicine
2015	Elsevier Recognition Certificate: Biomedical Signal Processing and Control

Courses Teaching

University of Michigan – Lead Instructor:

2024 Annually	ROB 215 - Robot Dynamics and Simulation
2022 Annually	ROB 498 - Robot Learning for Planning and Controls
2020 Annually	ROB 498 - Introduction to Robotic Manipulation
2021/2022	MECHENG 360 - Modeling, Analysis, and Control of Dynamical Systems

Publications

Under Submission:

U1 S. Zhong, N. Fazeli, and D. Berenson, "Rumi: Rummaging using mutual information," *IEEE Robotics and Automation Letters (RA-L)*, 2024

Refereed Conference Proceedings:

C1 J. Lee and N. Fazeli, "Vitascope: Visuo-tactile implicit representation for in-hand pose and extrinsic contact estimation," *Robotic Sciences and Systems (RSS)*, 2025

C2 X. Yi and N. Fazeli, "Vib2move: In-hand object reconfiguration via fingertip micro-vibrations," *Robotic Sciences and Systems (RSS)*, 2025

C3 Y. Dai, J. Lee, N. Fazeli, and J. Chai, "Racer: Rich language-guided failure recovery policies for imitation learning," *IEEE International Conference on Robotics and Automation (ICRA)*, 2024

C4 B. Wang, N. Sridhar, C. Feng, M. Van der Merwe, A. Fishman, N. Fazeli, and J. J. Park, "This&that: Language-gesture controlled video generation for robot planning," *IEEE International Conference on Robotics and Automation (ICRA)*, 2024

C5 S. Rodriguez, Y. Dou, W. van den Bogert, M. Oller, K. So, A. Owens, and N. Fazeli, "Contrastive touch-to-touch pretraining," *IEEE International Conference on Robotics and Automation (ICRA)*, 2024

C6 S. Li, S. Rodriguez, Y. Dou, A. Owens, and N. Fazeli, "Tactile functasets: Neural implicit representations of tactile datasets," *IEEE International Conference on Robotics and Automation (ICRA)*, 2024

C7 Y. Wi, J. Lee, and N. Fazeli, "Neural inverse source problems," 8^{th} *Conference on Robot Learning*, 2024

C8 M. Oller, D. Berenson, and N. Fazeli, "Tactile-driven non-prehensile object manipulation via extrinsic contact mode control," *Robotic Sciences and Systems (RSS)*, 2024

C9 M. Oller, D. Berenson, and N. Fazeli, "Tactilevad: Geometric aliasing-aware dynamics for high-resolution tactile control," in *7th Annual Conference on Robot Learning*, 2023

C10 Y. Wi, M. Van der Merwe, P. Florence, A. Zeng, and N. Fazeli, "Calamari: Contact-aware and language conditioned spatial action mapping for contact-rich manipulation," in *7th Annual Conference on Robot Learning*, 2023

C11 X. Yi and N. Fazeli, "Precise object sliding with top contact via asymmetric dual limit surfaces," *Robotic Sciences and Systems (RSS)*, 2023

C12 M. Van der Merwe, Y. Wi, D. Berenson, and N. Fazeli, "Integrated object deformation and contact patch estimation from visuo-tactile feedback," *Robotic Sciences and Systems (RSS)*, 2023

C13 A. Sipos and N. Fazeli, "Multiscope: Disambiguating in-hand object poses with proprioception and tactile feedback," *Robotic Sciences and Systems (RSS)*, 2023, **Best Student Paper Finalist**

C14 S. Zhong, N. Fazeli, and D. Berenson, "Chsel: Producing diverse plausible pose estimates from contact and free space data," *Robotic Sciences and Systems (RSS)*, 2023

C15 N. A. Dvorak, X. Yi, N. Fazeli, and P.-C. Ku, "Characterizations of gan nano-led-based tactile sensors for robotics applications," in *Gallium Nitride Materials and Devices XVIII*, SPIE, 2023

C16 Y. Wi, A. Zeng, P. Florence, and N. Fazeli, "Virdo++: Real-world, visuo-tactile dynamics and perception of deformable objects," *Conference on Robot Learning*, 2022

C17 M. Oller, D. Berenson, and N. Fazeli, "Manipulation via membranes: High-resolution and highly deformable tactile sensing and control," *Conference on Robot Learning*, 2022

C18 M. van der Merwe, D. Berenson, and N. Fazeli, "Learning the dynamics of compliant tool-environment interaction for visuo-tactile contact servoing," *Conference on Robot Learning*, 2022

C19 Y. Chen, A. Sipos, M. van der Merwe, and N. Fazeli, "Visuo-tactile transformers for robotic manipulation," *Conference on Robot Learning*, 2022

C20 A. Sipos and N. Fazeli, "Simultaneous contact location and object pose estimation using proprioceptive tactile feedback," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2022

C21 Y. Wi, P. Florence, A. Zeng, and N. Fazeli, "Virdo: Visio-tactile implicit representations of deformable objects," *IEEE International Conference on Robotics and Automation (ICRA)*, 2022

C22 A. Ajay, M. Bauza, J. Wu, N. Fazeli, J. B. Tenenbaum, A. Rodriguez, and L. P. Kaelbling, "Combining Physical Simulators and Object-Based Networks for Control," *IEEE International Conference on Robotics and Automation (ICRA)*, 2019

C23 A. Ajay, J. Wu, N. Fazeli, M. Bauza, L. P. Kaelbling, J. B. Tenenbaum, and A. Rodriguez, "Augmenting Physical Simulators with Stochastic Neural Networks: Case Study of Planar Pushing and Bouncing," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2018, **Best Cognitive Robotics Paper**

C24 A. Zeng *et al.*, "Robotic Pick-and-Place of Novel Objects in Clutter with Multi-affordance Grasping and Cross-domain Image Matching," *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 1–8, 2018, **Best Systems Paper – Amazon Manipulation Awards**

C25 N. Fazeli, S. Zapolsky, E. Drumwright, and A. Rodriguez, "Learning Data-efficient Rigid-body Contact Models: Case Study of Planar Impact," *Conference on Robotic Learning (CoRL)*, vol. 78, 2017

C26 N. Fazeli, S. Zapolsky, E. Drumwright, and A. Rodriguez, "Fundamental Limitations in Performance and Interpretability of Common Planar Rigid-Body Contact Models," *International Symposium of Robotic Research (ISRR)*, 2017

C27 N. Fazeli, E. Donlon, E. Drumwright, and A. Rodriguez, "Empirical evaluation of common contact models for planar impact," *IEEE International Conference on Robotics and Automation (ICRA))*, pp. 3418–3425, 2017

C28 K.-T. Yu, M. Bauza, N. Fazeli, and A. Rodriguez, "More than a Million Ways to be Pushed. A High-Fidelity Experimental Data Set of Planar Pushing," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2016, (Best Paper Finalist)

C29 K.-T. Yu, N. Fazeli, N. Chavan-Dafle, O. Taylor, E. Donlon, G. D. Lankenau, and A. Rodriguez, "A Summary of Team MIT's Approach to the Amazon Picking Challenge 2015," *arXiv preprint arXiv:1604.03639*, 2016

C30 N. Fazeli, R. Tedrake, and A. Rodriguez, "Identifiability Analysis of Planar Rigid-body Frictional Contact," *Robotics Research/International Symposium of Robotic Research 2015*, pp. 665–682, 2015, **Selected for Special Issue of IJRR**

C31 M. Abdollahzade, C.-S. Kim, N. Fazeli, J.-O. Hahn, M. S. McMurtry, and B. Finegan, "Lossy Transmission Line Modeling of of Arterial Tree in Time Domain," *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 2014

C32 M. Rashedi, N. Fazeli, A. Chappell, S. Wang, R. MacArthur, M. S. McMurtry, B. Finegan, and J.-O. Hahn, "Modeling and System Identification of Arterial Hemodynamics in Humans," *ASME Dynamic Systems and Control Conference (DSCC)*, 2013

C33 N. Fazeli and J.-O. Hahn, "Active Non-Intrusive System Identification for Cardiovascular Monitoring: Part II Development of System Identification Algorithm," *ASME Dynamic Systems and Control Conference (DSCC)*, 2013

C34 N. Fazeli, C.-S. Kim, and J.-O. Hahn, "Non-invasive Estimation of Central Blood Pressure Waveform using a Dual Diametric Cuff System: a Preliminary Study," *ASME Conference on Frontiers in Medical Devices: Applications of Computer Modeling and Simulation*, 2013

C35 N. Fazeli, C. S. Kim, and J.-O. Hahn, "Quantification of Wave Reflection in the Arterial Tree via Diametric Blood Pressure Waveform Measurement," *American Control Conference (ACC), 2013*, 2013

C36 N. Fazeli, M. Rashedi, A. Chappell, S. Wang, R. MacArthur, M. S. McMurtry, B. Finegan, and J.-O. Hahn, "Subject-specific Estimation of Aortic Blood Pressure via System Identification: Preliminary in-human Experimental Study," *American Control Conference (ACC), 2013*, pp. 740–745, 2013

C37 N. Fazeli, H.-C. Kim, and J.-O. Hahn, "Active Non-Intrusive System Identification for Cardiovascular Monitoring: Part I—Excitation and Measurement Protocol Design," *ASME Dynamic Systems and Control Conference (DSCC)*, pp. 543–551, 2012, **Best Paper Finalist**

Refereed Journal Articles:

J1 M. Van der Merwe, M. Oller, D. Berenson, and N. Fazeli, "Estimating deformable-rigid contact interactions for a deformable tool via learning and model-based optimization," *IEEE Robotics and Automation Letters (RA-L)*, 2025

J2 X. Yi, A. Dang, and N. Fazeli, "Precise object sliding via asymmetric dual limit surfaces," *Autonomous Robots Journal*, 2023

J3 A. Sipos and N. Fazeli, "Multiscope: In-hand object pose estimation with proprioception and tactile feedback," *International Journal of Robotics Research*, 2023

J4 W. Van den Bogert, J. Lorenz, X. Yi, A. Shih, and N. Fazeli, "Lumped-parameter modeling and control for robotic high-viscosity fluid deposition," *IEEE Robotics and Automation Letters (RA-L)*, 2023

J5 N. Dvořák, N. Fazeli, and P.-C. Ku, "Direct shear stress mapping using a gallium nitride led-based tactile sensor," *Micromachines*, vol. 14, no. 5, p. 916, 2023

J6 S. Zhong, N. Fazeli, and D. Berenson, "Soft tracking using contacts for cluttered objects to perform blind object retrieval," *IEEE Robotics and Automation Letters*, 2022

J7 S. Zhong, Z. Zhang, N. Fazeli, and D. Berenson, "Tampc: A controller for escaping traps in novel environments," *IEEE Robotics and Automation Letters*, 2021

J8 N. Fazeli, M. Oller, J. Wu, Z. Wu, J. B. Tenenbaum, and A. Rodriguez, "See, feel, act: Hierarchical learning for complex manipulation skills with multisensory fusion," *Science Robotics*, vol. 4, no. 26, 2019

J9 A. Zeng *et al.*, "Robotic Pick-and-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching," *International Journal of Robotic Research (IJRR)*, 2018

J10 N. Fazeli, R. Kolbert, R. Tedrake, and A. Rodriguez, "Parameter and Contact Force Estimation of Planar Rigid-bodies Undergoing Frictional Contact," *The International Journal of Robotics Research (IJRR)*, vol. 36, no. 13-14, pp. 1437–1454, 2017

J11 C.-S. Kim, N. Fazeli, M. S. McMurtry, B. A. Finegan, and J.-O. Hahn, "Quantification of Wave Reflection using Peripheral Blood Pressure Waveforms," *IEEE Journal of Biomedical and Health Informatics*, vol. 19, no. 1, pp. 309–316, 2015

J12 C.-S. Kim, N. Fazeli, and J.-O. H. Hahn, "Data-Driven Modeling of Pharmacological Systems using Endpoint Information Fusion," *Computers in Biology and Medicine*, vol. 61, pp. 36 – 47, 2015

J13 M. Abdollahzade, C.-S. Kim, N. Fazeli, B. A. Finegan, M. S. McMurtry, and J.-O. Hahn, "Data-driven Lossy Tube-load Modeling of Arterial Tree: In-human Study," *Journal of Biomechanical Engineering*, vol. 136, no. 10, p. 101011, 2014

J14 N. Fazeli, C.-S. Kim, M. Rashedi, A. Chappell, S. Wang, R. MacArthur, M. S. McMurtry, B. Finegan, and J.-O. Hahn, "Subject-specific Estimation of Central Aortic Blood Pressure via System Identification: Preliminary In-human Experimental Study," *Medical & Biological Engineering & Computing*, vol. 52, no. 10, pp. 895–904, 2014

J15 M. Rashedi, N. Fazeli, A. Chappell, S. Wang, R. MacArthur, M. S. McMurtry, B. A. Finegan, and J.-O. Hahn, "Comparative Study on Tube-load Modeling of Arterial Hemodynamics in Humans," *Journal of Biomechanical Engineering*, vol. 135, no. 3, p. 031005, 2013

J16 N. Fazeli and J.-O. Hahn, "Estimation of Cardiac Output and Peripheral Resistance using Square-wave Approximated Aortic Flow Signal," *Frontiers in Physiology*, vol. 3, p. 298, 2012

Preprints and Reports (Not Refereed):

P1 A. Sipos, W. van den Bogert, and N. Fazeli, "Gelslim 4.0: Focusing on touch and reproducibility," *IEEE International Conference on Robotics and Automation (ICRA)*, 2024

P2 J. A. Eyzaguirre, M. Oller, and N. Fazeli, "Tactile neural de-rendering," *IEEE International Conference on Robotics and Automation (ICRA)*, 2024

P3 A. Dang, J. Lorenz, X. Yi, and N. Fazeli, "Bimanual in-hand manipulation using dual limit surfaces," *IEEE International Conference on Robotics and Automation (ICRA)*, 2024

Patents:

1 W. van Den Bogert, A. Shih, N. Fazeli, "Adjustable Inner-diameter Soft Nozzle to Achieve Variable Bead Dize for Direct Ink Writing Additive Manufacturing"

Invited Talks:

T1 N. Fazeli, "Sensing the unseen: Dexterous tool manipulation through touch and vision," *MIT Worldwide Robotics*, 2025

T2 N. Fazeli, "Sensing the unseen: Dexterous tool manipulation through touch and vision," *CMU Robotics Seminar Series*, 2025

T3 N. Fazeli, "Sensing the unseen: Dexterous tool manipulation through touch and vision," *Northeastern Robotics Seminars*, 2025

T4 N. Fazeli, "Sensing the unseen: Dexterous tool manipulation through touch and vision," *Amazon AI Symposium*, 2025

T5 N. Fazeli, "Sensing the unseen: Dexterous tool manipulation through touch and vision," *University of Michigan, Control Seminar Series*, 2025

T6 N. Fazeli, "Sensing the unseen: Dexterous tool manipulation through touch and vision," *IRIM Fall 2024 Seminar Georgia Tech*, 2024

T7 N. Fazeli, "No modaltiy left behind," *Next-Gen Robot Learning Symposium TU Darmstadt*, 2024

T8 N. Fazeli, "Dexterous multimodal robotic tool-use: From compliant tool representations to high-resolution tactile perception," *Cornell Robotics Seminar Series*, 2023

T9 N. Fazeli, "Dexterous multimodal robotic tool-use: From compliant tool representations to high-resolution tactile perception," *MIT Robotics Seminar Series*, 2023

T10 N. Fazeli, "Model-based tactile control with high resolution and highly compliant tactile sensors," *IROS – RoboTac 2023 Visuo-Tactile Perception, Learning, Control for Manipulation and HRI*, 2023

T11 N. Fazeli, "Limit surfaces: A tutorial and recent advances," *IROS – Workshop on Leveraging Models for Contact-Rich Manipulation*, 2023

T12 N. Fazeli, "Recent advances in learning multimodal implicit representations for deformable objects," *RSS at KAIST*, 2023

T13 N. Fazeli, "Recent advances in learning multimodal implicit representations for deformable objects," *3rd Workshop on Deformable Objects – ICRA*, 2023

T14 N. Fazeli, "Tactile control for contact rich tool-use," *4th Annual CNU-HYU Joint Symposium*, 2023

T15 N. Fazeli, "Deformable object representations and tactile control for contact rich tool-use," *UIUC Robotics Seminar*, 2022

T16 N. Fazeli, "Tactile dexterity and deformable object manipulation for osam," *AFRL/AgMan UNM*, 2022

T17 N. Fazeli, "Visio-tactile object representations for forceful tool use," *Sony AI*, 2021

T18 N. Fazeli, "Learning implicit representations for perception and manipulation of deformable objects," *Google Robotics*, 2020

T19 N. Fazeli, "Visio-tactile object representations for forceful tool use," *Samsung AI*, 2020

T20 N. Fazeli, "Towards robotic manipulation - understanding the world through contact," *University of Pennsylvania, Electrical and Systems Engineering Department*, 2019

T21 N. Fazeli, "Towards robotic manipulation - understanding the world through contact," *University of Michigan, Ann Arbor, Robotics Insitute and Mechanical Engineering*, 2019

T22 N. Fazeli, "Towards robotic manipulation - understanding the world through contact," *University of Southern California, Aerospace and Mechanical Engineering Department*, 2019

T23 N. Fazeli, "Combining physical simulators and object-based networks for prediction and control," *Conference on Neural Information Processing Systems (NeurIPS) – Workshop on Modeling the Physical World: Learning, Perception, and Control*, 2018

T24 N. Fazeli, "See, Feel, Act: Learning Complex Manipulation Skills using Causal Structure and Multi-Sensory Fusion," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) – Workshop on Examining Sensing Modalities for Robust and Dexterous Object Manipulation*, 2018

T25 N. Fazeli, "Towards High Fidelity Stochastic Simulators with Data-Augmented Models," *Robotic Sciences and Systems – Workshop on Learning and Inference in Robotics: Integrating Structure, Priors and Models*, 2018

T26 N. Fazeli, "Empirical Evaluation of Common Contact Models for Planar Impact," *New England Manipulation Symposium (NEMS)*, 2017

T27 N. Fazeli, "Identifiability Analysis of Planar Rigid-Body Frictional Contact," *New England Manipulation Symposium (NEMS)*, 2015

Students

Current PhD Students:

1. Youngsun Wi
2. Mark van Der Merwe (co-advised by Dmitry Berenson)
3. Xili Yi
4. Samanta Rodriguez
5. William van Den Bogert
6. James Lorenz (co-advised by Albert Shih)
7. Jayjun Lee
8. An Dang
9. Julianne Bartec (co-advised by Bernadette Bucher)
10. Yunhao Luo (co-advised by JJ Park)

Graduated PhD Students:

1. Miquel Oller (2025) – Now a Postdoc with the MMint Lab
2. Andrea Sipos (2024) – DLR (German NASA)
3. Sheng (Johnson) Zhong (2024) – Cruise

Media Coverage

2022	Chess Playing Robot Breaks Child's Finger in Russian Chess Tournament *Appeared on CNN and CNN New Day Podcast to comment on the topic.*
2018	See, Feel, Act: Hierarchical Learning for Complex Manipulation Skills with Multisensory Fusion *Covered in BBC, CNN, CBS, Tech Crunch, The Tech Review, The Times, Washington Post, Wired ...*
2015 – 2017	Amazon Picking Challenge *Covered in MIT Technology Review, MIT News, BetaBoston, EPR Retail ...*
2016	Fundamental Limitations of Rigid-body Contact Models *Feature on MIT's Mechanical Engineering Website and Twitter.*