

## Research Interests and Vision

My research focuses on making robots capable of solving a wide range of tasks without compromising on their performance and reliability. I develop algorithms that learn general models for perception and interaction. Combined with control and planning, these models allow robots to accurately manipulate their environment and meet diverse task requirements.

## Work Experience

- 2022-Present **Google DeepMind**. Senior Research Scientist. My main research focus is on dexterous manipulation. To that end, my work includes research on multi-fingered hands, diverse embodiments, visuo-language models, reinforcement learning, behavioral cloning and sim-to-real transfer.
- Summer 2016 **Google Zurich**. Software Engineer Intern at the SafeSearch team. Research and implementation of deep learning algorithms for a large-scale computer vision problem.

## Education

- 2016–2022 **Massachusetts Institute of Technology (MIT)**, *Cambridge*, United States.
- PhD student at the Mechanical Engineering department of MIT. GPA: 5.0.
  - Advisor: Prof. Alberto Rodriguez.
- 2015–2016 **Massachusetts Institute of Technology (MIT)**, *Cambridge*, United States.
- Visiting student at the MCube Lab supervised by Prof. Alberto Rodriguez.
- 2011–2016 **Polytechnic University of Catalonia (UPC)**, *Barcelona*, Spain.
- Dual Bachelors in **Mathematics** and **Engineering Physics**.

## Fellowships

- 2018 **Facebook Emerging Scholar Award**. Full funding for 2 years, only 21 awardees among more than 900 applications.
- 2018 **NVIDIA Graduate Fellowship**. Awarded to 10 PhD students from more than 230 applications. Declined in favour of Facebook Award.
- 2016 **"La Caixa" Graduate Fellowship**. Recipient of 1 out of the 45 prestigious "La Caixa" scholarships for graduate studies across all Spain. Full funding for 2 years in any graduate program of my choosing.
- 2012 **CFIS Fellowship**. Awarded to only 40 of the top technical students from Spain to simultaneously study two bachelor's degrees.

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## Selected Awards

- 2021 **Rising Stars in Computer Science.** Awarded to 89 graduate and postdoctoral women worldwide in EECS disciplines.
- 2021 **RSS pioneers.** Selected to attend the 2021 RSS Pioneers Workshop which brings together a cohort of the world's top early-career researchers in robotics.
- 2021 **Best Paper Finalist Award** on Service Robotics at ICRA 2021 for the work "Real-time shape and pose estimation from planar pushing using implicit surfaces."
- 2019 **Rising Stars in Mechanical Engineering.** Awarded to 30 graduate and postdoctoral women worldwide doing research in any area related to Mechanical Engineering.
- 2018 **Best Paper Award on Cognitive Robotics** at IROS 2018 for the work "Augmenting Physical Simulators with Stochastic Neural Networks: Case Study of Planar Pushing and Bouncing."
- 2018 Amazon Robotics **Best Systems Paper Award** for the submission "Robotic pick-and-place of novel objects in clutter with multi-affordance grasping and cross-domain image matching."
- 2017 **1st Place Winners** (Stow Task) at the international competition **Amazon Robotics Challenge** (ARC) 2017 with the MIT-Princeton team.
- 2016 **Best Paper Finalist Award** at IROS 2016 for the work "More than a Million Ways to Be Pushed. A High-Fidelity Experimental Data Set of Planar Pushing."

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## Publications

- [26] Z. Si, J. Chen, E. Karagozler, A. Bronars, J. Hutchinson, T. Lampe, N. Gileadi, T. Howell, S. Saliceti, L. Barczyk, I. Correa, T. Erez, M. Shridhar, M. Martins, K. Bousmalis, N. Heess, F. Nori, **M. Bauza**. "ExoStart: Efficient learning for dexterous manipulation with sensorized exoskeleton demonstrations", *submitted to ICRA 2026*.
- [25] **Gemini Team**. "Gemini 2.5: Pushing the frontier with advanced reasoning, multimodality, long context, and next generation agentic capabilities", *Technical Report*.
- [24] **Gemini Robotics Team**. "Gemini robotics: Bringing ai into the physical world", *Technical Report*.
- [23] A. Chen, P. Brakel, A. Bronars, A. Xie, S. Huang, O. Groth, **M. Bauza**, et al. "Exploiting Policy Idling for Dexterous Manipulation", *IROS 2025*.
- [22] **M. Bauza**, J. Chen, V. Dalibard, N. Gileadi, et al. "DemoStart: Demonstration-led auto-curriculum applied to sim-to-real with multi-fingered robots", *ICRA 2025*.
- [21] **M. Bauza**, T. Bronars, Y. Hou, I. Taylor, N. Chavan-Dafle, A. Rodriguez. "simPLE: a visuotactile method learned in simulation to precisely pick, localize, regrasp, and place objects", *Science Robotics 2024*.
- [20] Jacky Liang, Fei Xia, Wenhao Yu, Andy Zeng, Montserrat Gonzalez Arenas, Maria Attarian, **Maria Bauza**, et al. "Learning to learn faster from human feedback with language model predictive control", *RSS 2024*.
- [19] K. Bousmalis, G. Vezzani, D. Rao, C. Devin, A. Lee, **M. Bauza**, et al. "RoboCat: A Self-Improving Foundation Agent for Robotic Manipulation", *TMLR 2023*.
- [18] J. Zhao, **M. Bauza**, E. Adelson. "FingerSLAM: Closed-loop Unknown Object Localization and Reconstruction from Visuo-tactile Feedback", *ICRA 2023*.

- [17] **M. Bauza**, T. Bronars, A. Rodriguez. "Tac2Pose: Tactile Object Pose Estimation from the First Touch", *IJRR* 2023.
- [16] F. Alet, **M. Bauza**, K. Kawaguchi, N. Kuru, T. Lozano-Perez, L. Kaelbling. "Tailoring: Encoding Inductive Biases by Optimizing Unsupervised Objectives at Prediction Time", *NeurIPS* 2021.
- [15] S. Suresh, **M. Bauza**, A. Rodriguez, J. Mangelson, M. Kaess. "Real-time shape and pose estimation from planar pushing using implicit surfaces", *ICRA* 2021.
- [14] **M. Bauza**, E. Valls, B. Lim, T. Sechopoulos, A. Rodriguez. "Tactile Object Pose Estimation from the First Touch with Geometric Contact Rendering", *CoRL* 2020.
- [13] A. Kloss, **M. Bauza**, J. Wu, J. Tenenbaum, A. Rodriguez, J. Bohg. "Accurate Vision-based Manipulation through Contact Reasoning", *ICRA* 2020.
- [12] Y. Lin, **M. Bauza**, P. Isola. "Experience-Embedded Visual Foresight", *CoRL* 2019.
- [11] F. Alet, A. Jeewajee, **M. Bauza**, A. Rodriguez, T. Lozano-Perez, L. Kaelbling. "Graph Element Networks: adaptive, structured computation and memory", *ICML* 2019.
- [10] **M. Bauza**, O. Canal, A. Rodriguez. "Tactile Mapping and Localization from High-Resolution Tactile Imprints", *ICRA* 2019.
- [9] **M. Bauza**, F. Alet, Y. Lin, T. Lozano-Perez, L. Kaelbling, P. Isola, A. Rodriguez. "Omnipush: accurate, diverse, real-world dataset of pushing dynamics with RGB-D video", *IROS* 2019.
- [8] A. Ajay, **M. Bauza**, J. Wu, N. Fazeli, J. Tenenbaum, A. Rodriguez, L. Kaelbling. "Combining Physical Simulators and Object-Based Networks for Control", *ICRA* 2019.
- [7] **M. Bauza**, A. Rodriguez. "GP-SUM. Gaussian Processes Filtering of non-Gaussian Beliefs", *WAFR* 2018.
- [6] **M. Bauza**<sup>\*</sup>, F. Hogan<sup>\*</sup>, A. Rodriguez. "Learning vs. physics-based control of a planar push system", *CoRL* 2018.
- [5] **M. Bauza**<sup>\*</sup>, F. Hogan<sup>\*</sup>, A. Rodriguez. "Tactile Regrasp: Grasp Adjustments via Simulated Tactile Transformations", *IROS* 2018.
- [4] A. Ajay, J. Wu, N. Fazeli, **M. Bauza**, L. Kaelbling, J. Tenenbaum, A. Rodriguez. "Augmenting Physical Simulators with Stochastic Neural Networks: Case Study of Planar Pushing and Bouncing", *IROS* 2018.
- [3] A Zeng, S Song, K. Yu, E. Donlon, F. Hogan, **M. Bauza**, et al. "Active Perception of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching" in *ICRA 2018, IJRR 2019*.
- [2] **M. Bauza**, A. Rodriguez. "A Probabilistic Data-Driven Model for Planar Pushing", in *ICRA 2017*.
- [1] K. 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," in *IROS 2016*.

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## Talks

- 2025 Invited talk at LaCaixa Becarios Knowledge Day.
- 2025 Invited talk at IROS Workshop Learning from Teleoperation.
- 2025 Invited talk at IROS Workshop Tactile Sensing Toward Robot Dexterity and Intelligence.

- 2025 Invited talk at [A Robot Touch of AI: London Summer School in Robotics & AI 2025](#).
- 2025 Tech Talk at [ICRA Stage Presentations](#).
- 2025 Invited talk at [ICRA Workshop Beyond Pick and Place](#).
- 2025 Invited talk at [Microsoft Cortex AI Research Talk Series](#).
- 2025 Invited guest lecture at [Oxford Saïd Business School MBA](#).
- 2024 Invited talk at [CoRL Workshop on Learning Robotic Assembly](#).
- 2024 Invited talk at [DevFest Menorca](#).
- 2024 Invited talk at [Forum Illa del Rei on AI](#).
- 2024 Invited talk at [Oxford Business school Analytics and AI class](#).
- 2024 Invited talk at [ICRA Workshop Vitac](#).
- 2024 Invited talk at [ETH lab seminar](#).
- 2023 Invited talk at [Deep Learning Barcelona Symposium](#).
- 2023 Invited talk and panel at [Balearic Ecosystem for AI](#).
- 2023 Guest lecturer at Oxford's MBA class on Machine Learning for Business.
- 2023 Guest interview at [UK Robotics and Autonomous Systems Network's podcast, Robot Talk](#).
- 2022 Invited talk at the RSS 2022 workshop on The Science of Bumping Into Things.
- 2022 Invited talk at [EPFL CS department](#)
- 2022 Invited talk at [Princeton ECE department](#)
- 2022 Invited talk at [CMU Robotics Institute](#)
- 2022 Invited talk at [University of Pennsylvania ECE department](#)
- 2022 Invited talk at [Columbia Mechanical Engineering department](#)
- 2022 Invited talk at [the Autonomy Talks at ETH Zurich](#)
- 2022 Invited talk at [Cornell ECE and CS departments](#)
- 2021 Invited talk at [Washington University robotics colloquium](#).
- 2021 Invited talk at [Stanford](#).
- 2021 Invited talk at [CMU Manipulation Discussion Group \(first external speaker\)](#).
- 2021 Invited talk at [Cornell Robotic Seminar](#).
- 2021 Invited talk at [University of Toronto, AI in Robotics Seminar](#).
- 2020 Invited talk at [University of Pennsylvania, Grasp Seminar](#).
- 2020 Selected talk at SITN (Science In The News). Science talks organized by Harvard for the general public. Machine learning in Robotics: current progress and challenges ahead.
- 2019 Invited talk at [Tec de Monterrey \(Mexico\)](#).
- 2019 Selected presentation at the [MIT College of Computing Launch](#).
- 2019 Selected talk at the [ML across MIT retreat](#).
- 2018 Invited talk at [IROS2018 Workshop on RoboTac: Tactile Perception and Learning in Robotics](#).

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## Advising

### PhD and Master students

Joe Huang: Student researcher at GDM. Scaling tactile solutions.

Antonia Bronars: both at GDM and MIT. Implementation, development, and testing of tactile solutions for hands.

Bryan Lim: implementation of a grasping pipeline in simulation and on a real system.

### **Undergraduate students**

Shreya Skarpoor: active 3D mesh reconstruction for object manipulation.

Claudia Lozano: application of machine learning methods to process tactile information.

Meenakshi Singh: simulation of a dual-arm in Pybullet with visuo-tactile sensing.

Eric Valls: implementation and development of tactile localization methods.

Max Thomsen: learning graph neural networks to optimize the shape of robotic fingers.

Oleguer Canals: implementation and testing of tactile algorithms for grasping and localization.

Jasmine Zeng: implementation of tactile sensing in a MuJoCo multi-fingered hand.

Theo Sechopoulos: implementation and comparison of registration techniques for tactile data.

Ashay Athalye: object tracking from RGB-D by extending a single-pose estimation algorithm.

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## Service

- 2022 Co-organized the workshop at ICRA 2022 Bi-manual Manipulation: Addressing Real-world Challenges.
- 2020, 2021 Guest lecturer at MIT graduate course *Touching and Grasping with Soft Fingers* led by Professor Ted Adelson.
- 2020 Program committee member of CoRL 2020.
- 2020 Co-organized the workshop at ICRA 2020 Uncertainty in Contact-Rich Interactions (canceled due to CoVID19).
- 2019 Organized and lead a hands-on robotic activity for the Women's Technology Program (WTP) in Mechanical Engineering.
- 2017 Co-organized the workshop at RSS 2017 Data-Driven Robotic Manipulation.
- 2016-present Journal reviewer: TRO, IJRR, RA-L.
- 2016-present Conference reviewer: RSS, CoRL, ICRA, IROS.
- 2011-2016 Class representative

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## Other Awards

- 2019 Selected to attend **Path of Professorship**. Awarded to distinguished MIT graduate students.
- 2019 Selected to attend the **Global Young Scientists Summit**. Awarded to no more than 5 PhD students throughout all MIT departments.
- 2019 **DeFlorez Travel Award in Design and Manufacturing**. Awarded to 1 MIT Mechanical Engineering Graduate Student annually.
- 2018 Travel Award to attend RSS 2018. The award is founded by the Women in Robotics Workshop.
- 2018 **Best Poster Award** at ICRA 2018 workshop on Active touch for perception and interaction.
- 2016 3rd Place at the 2016 Amazon Robotics Challenge with the MIT-Princeton team.
- 2016 IROS 2016 NSF Travel Grant.

- 2015 UPC-Internship Program Grant to do research for one year at MIT.
- 2015 Google Grace Hopper Travel Award to attend the conference with all expenses paid.
- 2011 6th position at the regional math tests: Kangourou sans frontieres.
- 2009 4th position at the regional math tests: Kangourou sans frontieres.

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## Press Coverage and Outreach

- 2024 The New Yorker. [A Revolution in How Robots Learn.](#)
- 2024 The Guardian. [Why aren't humanoids in our homes yet?.](#)
- 2024 MIT News Front page. [A new model offers robots precise pick-and-place solutions.](#)
- 2024 Diari Menorca interview. [Lo más importante es seguir conectados con el progreso.](#)
- 2023 Diari Mallorca interview. [Los robots harán los trabajos que no queremos para nuestros hijos.](#)
- 2022 Cornell News. [Creating Our Robotic Allies.](#)
- 2021 TechXplore. [A technique that allows robots to estimate the pose of objects by touching them.](#)
- 2021 La Vanguardia (Spanish newspaper). [Sensitive Robots.](#)
- 2019 MIT news article. [Pushy robots learn the fundamentals of object manipulation.](#)
- 2019 El Mundo (Spanish newspaper). [Una mano robotica inteligente.](#)
- 2019 El Iris (Spanish newspaper, front page). [Una ciutadellenca en el camp de la intelligencia artificial.](#)
- 2018 MIT News Front page. [Teaching robots how to move objects.](#)
- 2018 Invited talk for broad audience (100+ attendees). [First summer talk at Mercadal: Maria Bauza.](#)
- 2018 MIT MechEConnects. [Student Spotlight: Maria Bauza, PhD Candidate.](#)
- 2018 MIT News Front page. [Robo-picker grasps and packs.](#)
- 2018 Express News (Spanish version). [Maria Bauza, a Spanish woman who makes history.](#)
- 2018 La Vanguardia (Spanish newspaper). [MIT: the science paradise.](#)