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EDUCATION	<p><b>Massachusetts Institute of Technology</b>          Ph.D. Candidate, Computer Science          Advisors: Tomas Lozano-Perez, Leslie Kaelbling</p> <p><b>Cornell University</b>          M.Eng., Computer Science</p> <p><b>Massachusetts Institute of Technology</b>          Computer Science, Advisor: Seth Teller</p>
RESEARCH INTERESTS	Randomized Algorithms, Compressive Sensing, Algorithmic Information Theory, Inverse Problems, Knowledge Representation, Nonlinear Control, Planning under Uncertainty, System Identification, Minimum Description Length, Sparse Reconstruction, Optimal Recovery, Manipulation, Machine Learning
PROFESSIONAL EXPERIENCE	<p><b>Stealth</b> <span style="float: right;">2025 - Present</span>          Chief Executive Officer          Research and development of compressive machine learning systems.</p> <p><b>Themis AI</b> <span style="float: right;">Cambridge, MA 2023 - 2024</span>          Chief Technology Officer          Research and development of uncertainty-aware language and vision models.</p> <p><b>Agility Robotics</b> <span style="float: right;">2022</span>          Manipulation Lead          Development of autonomous whole-body manipulation behaviours for humanoid robots.</p> <p><b>Self</b> <span style="float: right;">2015 - 2022</span>          Consultant/Contractor          Safety-critical deployments of machine learning and robotic systems.</p> <p><b>M</b> <span style="float: right;">New York, NY 2018 - 2020</span>          Chief Executive Officer          Research and development of vision models for video generation and real-time recommendation.</p> <p><b>Stealth</b> <span style="float: right;">2017</span>          Algorithms Lead          Development of autonomous docking algorithms for robotic systems.</p> <p><b>Stealth</b> <span style="float: right;">New York, NY 2015</span>          Research Lead          Development of real-time algorithms for depth mapping and pose estimation from single camera streams.</p> <p><b>Mujin Inc.</b> <span style="float: right;">Tokyo, Japan 2014</span>          Motion Planning Lead          Development of real-time motion planners for the grasping and placing of arbitrary manufacturing parts.</p>
AWARDS	<p>National Defense Science and Engineering Graduate Fellowship, 2013          National Science Foundation Graduate Research Fellowship, 2012          MIT Lemelson Engineering Presidential Fellowship, 2012          MIT EECS Great Educators Fellowship, 2012          Outstanding Accomplishments and Contributions as a Teaching Assistant,          Cornell University, Department of Computer Science, 2012          MIT Global Challenge 2011, IDEAS Competition, Top Juried Prize, Assistive Technology Group          White House Fellowship, Nominated, 2010          Google Scholarship, 2010          National Science Foundation S-Stem Scholarship, 2009, 2010          Outstanding Participant Award: Best Overall Demonstrated Excellence in Leadership          and Technical Achievements, NASA GSFC, 2009</p>

RESEARCH  
EXPERIENCE

**MIT Computer Science and Artificial Intelligence Laboratory,** Cambridge, MA  
Ph.D. Candidate 2012 -

Joint work with Prof. Tomas Lozano-Perez and Prof. Leslie Kaelbling on knowledge representation for real-time whole-body manipulation.

**MIT Computer Science and Artificial Intelligence Laboratory** Cambridge, MA  
Undergraduate Researcher May 2011 - August 2011

Joint work with Prof. Tomas Lozano-Perez and Prof. Leslie Kaelbling on optimal sampling-based planning for belief-spaces and underactuated systems.

**MIT Computer Science and Artificial Intelligence Laboratory** Cambridge, MA  
Undergraduate Researcher January 2011 - May 2011

Joint work with Prof. Seth Teller on high-dimensional optimal motion planning algorithms for bimanual manipulation. Development of open-source implementations of the RRT\* algorithm.

**MIT Computer Science and Artificial Intelligence Laboratory** Cambridge, MA  
Undergraduate Researcher 2010

Joint work with Prof. Seth Teller on the Agile Robotics for Logistics project. Development of real-time optimal motion planning algorithms for mobile manipulation tasks along with models to process natural language commands. Deployments on physical robots including autonomous rear-wheel steered robotic forklifts.

**NASA Goddard Space Flight Center** Greenbelt, MD  
Undergraduate Researcher 2009

Joint work with Tom Flatley on the development of real-time path planning and coverage algorithms for future lunar robotic missions. Field testing at the Multipurpose Exo-terrain for Robotic Studies (MERS) field.

CONFERENCE  
PUBLICATIONS

Gustavo Goretkin, Alejandro Perez, Robert Platt Jr., George Konidaris. *Optimal Sampling-Based Planning for Linear-Quadratic Kinodynamic Systems*. Proceedings of the IEEE International Conference on Robotics and Automation. Karlsruhe, Germany 2013.

Alejandro Perez, Robert Platt Jr., George Konidaris, Leslie Kaelbling, Tomas Lozano-Perez. *LQR-RRT\*: Automatically Deriving Extension Heuristics for Sampling-Based Optimal Motion Planning*. Proceedings of the IEEE International Conference on Robotics and Automation. St. Paul, MN, 2012.

Alejandro Perez, Sertac Karaman, Matthew R. Walter, Alexander Shkolnik, Emilio Frazzoli, Seth Teller. *Asymptotically-optimal Manipulation Planning using Incremental Sampling-based Algorithms*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots, San Francisco, CA, September 2011.

Sertac Karaman, Matthew R. Walter, Alejandro Perez, Emilio Frazzoli, Seth Teller. *Anytime Motion Planning using the RRT\**. Proceedings of the IEEE International Conference on Robotics and Automation, Shanghai, China, May 2011.

WORKSHOP  
PUBLICATIONS

Qi Yang, Shreya Ravikumar, Fynn Schmitt-Ulms, Satvik Lolla, Ege Demir, Iaroslav Elistratov, Alex Lavaee, Sadhana Lolla, Elaheh Ahmadi, Daniela Rus, Alexander Amini, Alejandro Perez. *Uncertainty-aware Language Modeling for Selective Question Answering*. AAAI 2024, Responsible Language Modeling (ReLM), Vancouver, Canada, February 2024.

Sadhana Lolla, Iaroslav Elistratov, Alejandro Perez, Elaheh Ahmadi, Daniela Rus, Alexander Amini. *Capsa: A Unified Framework for Quantifying Risk in Deep Neural Networks*. NeurIPS 2022, 5th Robot Learning Workshop: Trustworthy Robotics, New Orleans, LA, December 2022.

Alejandro Perez, Sertac Karaman, Matthew R. Walter, Emilio Frazzoli, Seth Teller. *Asymptotically optimal Manipulation Planning using Incremental Sampling-based Algorithms*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots, The PR2 Workshop, San Francisco, CA, September 2011.

REPORTS

Alejandro Perez. *RF-Based Material Detection*. Internal report, MIT Computer Science and Artificial Intelligence Laboratory, 2014.

Alejandro Perez. *Towards Active Reflectometry for Segmentation*. Internal report, MIT Computer Science and Artificial Intelligence Laboratory, 2013.

Alejandro Perez. *On Randomized Path Coverage of Configuration Spaces*. MIT-CSAIL-TR-2013-027. <http://dspace.mit.edu/handle/1721.1/82462>. Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, 2013.

Matthew Jordan, Alejandro Perez. *Optimal Bidirectional Rapidly-Exploring Random Trees*. CSAIL Tech Report MIT-CSAIL-TR-2013-021. <http://dspace.mit.edu/handle/1721.1/79884>. Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, 2013.

Alejandro Perez, Sertac Karaman. *Computationally-Efficient Asymptotically-Optimal Manipulation Planning using the RRT\**. Internal report, MIT Computer Science and Artificial Intelligence Laboratory, 2011.

Alejandro Perez, Seth Teller. *Optimal Motion Planning for Agile Autonomous Vehicles using RRT\**. Internal report, MIT Computer Science and Artificial Intelligence Laboratory, 2010.

Alejandro Perez. *Object Recognition and Learning for Planetary Rovers*. Internal report, NASA Goddard Space Flight Center, 2009.

## PATENTS

Alejandro Perez. *Model training framework for generating modified executable risk-aware variant of models*. 19/358,399, February 2026.

Alejandro Perez, et al. *Robotic Manipulation With Bimanual And Nonprehensile Aspects and Related Technology*. 12,552,606, February 2026.

Alejandro Perez. *Electronic File Protection*. 63/748,279, January 2025.

Alejandro Perez. *Detecting Whether A Machine Learning Model Was Trained On A Given Datapoint*. 63/738,452, December 2024.

Alejandro Perez, et al. *Uncertainty-aware Sequence Modeling*. 18/959,839, November 2024.

Alejandro Perez, et al. *Systems And Methods for Uncertainty-aware Input Optimization in Generative Neural Networks*. 18/902,107, September 2024.

Alejandro Perez, et al. *Uncertainty-aware Language Modeling for Selective Question Answering*. 63/602,637, November 2023.

Alejandro Perez, et al. *Robot-implemented Object Relocation Methods Including Object-picking Strategies Based On Destination*. 63/565,454, March 2024.

Alejandro Perez, et al. *Systems And Methods For Automated Risk Assessment In Machine Learning*. 18/478,301, October 2023.

Alejandro Perez, et al. *Systems, Methods, And Computer-based Algorithms For Risk Aware Learning And Training*. 63/581,544, October 2023.

Alejandro Perez, et al. *Systems And Methods For Uncertainty-aware Generative Models*. 63/586,185, October 2023.

Alejandro Perez, et al. *Systems And Methods For Deep Learning Model Optimization*. 18/902,335, October 2023.

Alejandro Perez, et al. *Differential Communication With Robots In A Fleet And Related Technology*. 18/451,559, August 2023.

Alejandro Perez, et al. *Robot Method For Disengaging A Bimanually Held Object And Related Technology*. 18/451,604, August 2023.

Alejandro Perez, et al. *Coordinating Dynamic Balancing with Object Manipulation by A Robot And Related Technology*. 18/451,620, August 2023.

Alejandro Perez, et al. *Remote Disablement of A Deployed Robot*. 18/188,079, April 2023.

Alejandro Perez, et al. *Grippers for Robotic Manipulation of Objects And Related Technology*. 18/163,742, February 2023.

ACADEMIC  
SERVICE

**Reviewer**

Robotics and Autonomous Systems  
Journal of Intelligent and Robotic Systems  
IEEE Transactions on Robotics  
IEEE Transactions on Aerospace and Electronic Systems  
Annual Reviews in Control  
IEEE International Conference on Robotics and Automation  
IEEE/RSJ International Conference on Intelligent Robots and Systems

MEDIA COVERAGE

Uncertainty Quantification:  
MIT News  
  
Whole-body Manipulation at Agility Robotics:  
MIT Tech Review, Amazon News, IEEE Spectrum, Robotics247, CNET  
  
LQR-RRT\* / ReSWARM:  
MIT News, ISS Research, NASA Status Report, NASA News  
  
Bimanual Manipulation:  
MIT News, ABC News, New Scientist, Communications of the ACM, Gizmag

HOMEPAGE

<https://people.csail.mit.edu/aperez/>  
<https://web.mit.edu/atperez/www>  
<https://alum.mit.edu/www/atperez>

PUBLICATIONS

Scholar

REFERENCES

- **Tomas Lozano-Perez**, School of Engineering Professor in Teaching Excellence; MIT
- **Leslie Kaelbling**, Panasonic Professor of Computer Science and Engineering; MIT
- **Sertac Karaman**, Director, LIDS; Associate Professor of Aeronautics and Astronautics; MIT
- **Adam Bry**, CEO; Skydio
- **Michael Fleder**, CEO; Covariance
- **Been Kim**, Senior Staff Research Scientist; Google DeepMind
- **Scott Kuindersma**, Sr. Director of Robotics Research; Boston Dynamics
- **Albert Huang**, Principal Scientist; Waymo
- **Will Grathwohl**, Member of Technical Staff; Anthropic
- **William Li**, Machine Learning Engineering Manager; Apple
- **George Konidaris**, Chief Roboticist; Realtime Robotics
- **Huan Liu**, President; Mujin China
- **Matthew Estrada**, Research Scientist; Robotics and AI Institute
- **Jared Glover**, CEO; Capsen Robotics
- **Tom Flatley**, Head, Science Data Processing Branch; NASA GSFC
- **Will Foss**, Co-founder; Actuator Capital