

# Rohan Chitnis

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<b>Education</b>	<p><b>Massachusetts Institute of Technology</b>, Cambridge, MA <b>GPA: 4.8 / 5.0.</b> Minor: Econometrics. Doctor of Philosophy in Electrical Engineering and Computer Science, 2022 (expected). Master of Science in Electrical Engineering and Computer Science, May 2018. <i>Relevant Coursework:</i> Advanced Algorithms, Randomized Algorithms, Advanced Natural Language Processing, Econometrics, Time Series Analysis.</p> <p><b>University of California, Berkeley</b>, Berkeley, CA <b>Graduated with Highest Honors (GPA in top 3%). GPA: 3.95 / 4.0.</b> Bachelor of Science in Electrical Engineering and Computer Sciences, May 2016. <i>Relevant Coursework:</i> Advanced Robotics, Machine Learning, Deep Reinforcement Learning, Artificial Intelligence, Computer Vision, Optimization, Graphics, Computational Geometry, Image Processing, Probability and Random Processes, Algorithms, Data Structures.</p>
<b>Research Experience</b>	<p><b>MIT Learning &amp; Intelligent Sys. Lab</b> (Adviser: Leslie Kaelbling) 09/16 - Present</p> <ul style="list-style-type: none"><li>• Conduct research in artificial intelligence for robotics, toward a PhD.</li><li>• Focus on inference, planning, and learning for human-robot interactive settings.</li></ul> <p><b>Facebook AI Research, Robotics</b> (Research Intern with Abhinav Gupta) 06/19 - 09/19</p> <ul style="list-style-type: none"><li>• Researched formulations of intrinsic motivation for emergence of synergistic behavior in robotics via deep reinforcement learning.</li><li>• Built and tested my algorithms in bimanual manipulation environments, both in simulation and on real Sawyer robot arms.</li></ul> <p><b>Google Brain, Robotics</b> (Research Intern with Sergey Levine) 05/17 - 09/17</p> <ul style="list-style-type: none"><li>• Researched methods for speeding up deep reinforcement learning for robotics, by regressing on event outcomes to improve exploration.</li><li>• Designed and implemented a stand-alone framework for learning-based manipulation.</li></ul> <p><b>UC Berkeley Robot Learning Lab</b> (Adviser: Pieter Abbeel) 02/13 - 05/16</p> <ul style="list-style-type: none"><li>• Performed work in hierarchical combined task and motion planning for execution of long-horizon robotic tasks such as laundry.</li><li>• Integrated reinforcement learning to improve existing approaches.</li><li>• Lead coordinator of lab outreach program, providing tours to visitors of varied ages.</li></ul> <p><b>UC Berkeley Oscii Lab</b> (Adviser: John DeNero) 04/15 - 05/16</p> <ul style="list-style-type: none"><li>• Conducted research in Natural Language Processing.</li><li>• Improved performance of neural machine translation using Huffman code compression.</li></ul>
<b>Journal Publications</b>	<p><b>Integrated Task and Motion Planning</b> Caelan Reed Garrett, <b>Rohan Chitnis</b>, Rachel Holladay, Beomjoon Kim, Tom Silver, Leslie Pack Kaelbling, Tomás Lozano-Pérez. Annual Review of Control, Robotics, and Autonomous Systems, Volume 4, 2021.</p>
<b>Conference Publications</b>	<p><b>Learning Symbolic Operators for Task and Motion Planning</b> Tom Silver*, <b>Rohan Chitnis</b>*, Joshua Tenenbaum, Leslie Pack Kaelbling, Tomás Lozano-Pérez. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.</p> <p><b>GLIB: Efficient Exploration for Relational Model-Based Reinforcement Learning via Goal-Literal Babbling</b> <b>Rohan Chitnis</b>*, Tom Silver*, Joshua Tenenbaum, Leslie Pack Kaelbling, Tomás Lozano-Pérez. AAAI Conference on Artificial Intelligence (AAAI), 2021.</p> <p><b>Planning with Learned Object Importance in Large Problem Instances using Graph Neural Networks</b></p>

Tom Silver\*, **Rohan Chitnis\***, Aidan Curtis, Joshua Tenenbaum, Tomás Lozano-Pérez, Leslie Pack Kaelbling.  
AAAI Conference on Artificial Intelligence (AAAI), 2021.

**CAMPs: Learning Context-Specific Abstractions for Efficient Planning in Factored MDPs**

**Rohan Chitnis\***, Tom Silver\*, Beomjoon Kim, Leslie Pack Kaelbling, Tomás Lozano-Pérez.  
Conference on Robot Learning (CoRL), 2020.

**Efficient Bimanual Manipulation Using Learned Task Schemas**

**Rohan Chitnis**, Shubham Tulsiani, Saurabh Gupta, Abhinav Gupta.  
IEEE International Conference on Robotics and Automation (ICRA), 2020.

**Intrinsic Motivation for Encouraging Synergistic Behavior**

**Rohan Chitnis**, Shubham Tulsiani, Saurabh Gupta, Abhinav Gupta.  
International Conference on Learning Representations (ICLR), 2020.

**Learning Compact Models for Planning with Exogenous Processes**

**Rohan Chitnis**, Tomás Lozano-Pérez.  
Conference on Robot Learning (CoRL), 2019.

**Learning Quickly to Plan Quickly Using Modular Meta-Learning**

**Rohan Chitnis**, Leslie Pack Kaelbling, Tomás Lozano-Pérez.  
IEEE International Conference on Robotics and Automation (ICRA), 2019.

**Learning What Information to Give in Partially Observed Domains**

**Rohan Chitnis**, Leslie Pack Kaelbling, Tomás Lozano-Pérez.  
Conference on Robot Learning (CoRL), 2018.

**Integrating Human-Provided Information Into Belief State Representation Using Dynamic Factorization**

**Rohan Chitnis**, Leslie Pack Kaelbling, Tomás Lozano-Pérez.  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2018.

**Finding Frequent Entities in Continuous Data**

Ferran Alet, **Rohan Chitnis**, Leslie Pack Kaelbling, Tomás Lozano-Pérez.  
International Joint Conference on Artificial Intelligence (IJCAI), 2018.

**Sequential Quadratic Programming for Task Plan Optimization**

Dylan Hadfield-Menell, Christopher Lin, **Rohan Chitnis**, Stuart Russell, Pieter Abbeel.  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2016.

**Guided Search for Task and Motion Plans Using Learned Heuristics**

**Rohan Chitnis**, Dylan Hadfield-Menell, Abhishek Gupta, Siddharth Srivastava, Edward Groshev, Christopher Lin, Pieter Abbeel.  
IEEE International Conference on Robotics and Automation (ICRA), 2016.

**Variable-Length Word Encodings for Neural Translation Models**

**Rohan Chitnis**, John DeNero.  
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2015.

**Modular Task and Motion Planning in Belief Space**

Dylan Hadfield-Menell, Edward Groshev, **Rohan Chitnis**, Pieter Abbeel.  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2015.

**Combined Task and Motion Planning Through an Extensible Planner-Independent Interface Layer**

Siddharth Srivastava, Eugene Fang, Lorenzo Riano, **Rohan Chitnis**, Stuart Russell, Pieter

	<p>Abbeel. IEEE International Conference on Robotics and Automation (ICRA), 2014.</p>
<b>Honors / Awards</b>	<p><b>Facebook Fellowship Finalist, 2020.</b> Top 4% of applicants for the Facebook Fellowship, Machine Learning track.</p> <p><b>NSF GRFP Fellow, 2016. Awarded NDSEG Fellowship (declined).</b></p> <p><b>Hertz Fellowship Finalist, 2016.</b> One of 40 finalists for the Hertz Fellowship, a highly reputable fellowship for student researchers in the physical, biological, and engineering sciences.</p> <p><b>Runner-up for the Computing Research Association (CRA) Outstanding Undergraduate Researcher Award (Male, PhD-granting institution), 2016.</b> Highly prestigious award recognizing North American undergraduate students who show outstanding research potential in a field of computing.</p> <p><b>Sole recipient of the EECS Mark D. Weiser Excellence in Computing Scholarship, 2015.</b> Merit-based scholarship awarded to one student in the Berkeley EECS department each year for excellence in research.</p> <p><b>Member of the EECS Honors Degree Program, concentration in Mathematics.</b> Honors program with 20-30 students. Requirements include research and extended studies in concentration outside EECS.</p> <p><b>UC Berkeley Outstanding Graduate Student Instructor (OGSI) Award recipient, 2015.</b> Awarded to top 10% of Teaching Assistants across the university each year.</p> <p><b>UC Berkeley Regents' and Chancellor's Scholar.</b> Merit-based scholarship awarded to top 1.5% of applicants to UC Berkeley each year.</p> <p><b>National Merit Scholar.</b> Merit-based scholarship awarded to high-achieving high school students for partial college tuition payment.</p>
<b>Teaching Assistantships</b>	<p><b>CS106A: Code In Place.</b> <i>Stanford, free online course during COVID-19.</i> Summer 2020.</p> <p><b>6.036: Introduction to Machine Learning.</b> <i>MIT.</i> Fall 2018.</p> <p><b>CS189: Introduction to Machine Learning.</b> <i>UC Berkeley.</i> Spring 2016.</p> <p><b>CS188: Introduction to Artificial Intelligence.</b> <i>UC Berkeley.</i> Fall 2015.</p> <p><b>CS61A: Structure and Interpretation of Computer Programs.</b> <i>UC Berkeley.</i> Spring 2015, Spring 2014, Summer 2013.</p> <p><b>CS61C: Great Ideas in Computer Architecture.</b> <i>UC Berkeley.</i> Fall 2014.</p>
<b>Industry</b>	<p><b>Airbnb Inc., Search Ranking</b> (Software Engineering Intern) 06/16 - 08/16</p> <ul style="list-style-type: none"> <li>• Worked on incorporating mobile data into machine learning models used by the Search Ranking team. Collected and organized data using tools in Hive, Presto, and Scala.</li> </ul> <p><b>eBay Inc., Checkout</b> (Software Engineering Intern) 05/14 - 08/14</p> <ul style="list-style-type: none"> <li>• Developed an end-to-end pipeline to create a model that classifies checkout transactions.</li> <li>• Collected data using Hadoop MapReduce under the Apache Pig framework.</li> </ul>
<b>Technical Skills</b>	<p><b>Languages:</b> Python, C++, Java, Scala, LaTeX.</p> <p><b>Software:</b> PyTorch, TensorFlow, Theano, Unix/Linux, Robot Operating System (ROS), OpenCV, Apache Pig, Apache Spark, Hadoop MapReduce.</p>