# Rohan Chitnis

ronuchit@gmail.com | www.rohanchitnis.com | https://github.com/ronuchit | (408) 772-2079

| | |
|---|---|
| **Education** | **Massachusetts Institute of Technology**, Cambridge, MA |

**GPA: 4.8 / 5.0.** Minor: Econometrics.
Doctor of Philosophy in Electrical Engineering and Computer Science, May 2022.
Master of Science in Electrical Engineering and Computer Science, May 2018.
*Relevant Coursework*: Advanced Algorithms, Randomized Algorithms, Advanced Natural Language Processing, Econometrics, Time Series Analysis.

**University of California, Berkeley**, Berkeley, CA
**Graduated with Highest Honors (GPA in top 3%). GPA: 3.95 / 4.0.**
Bachelor of Science in Electrical Engineering and Computer Sciences, May 2016.
*Relevant Coursework*: Advanced Robotics, Machine Learning, Deep Reinforcement Learning, Artificial Intelligence, Computer Vision, Optimization, Graphics, Computational Geometry, Image Processing, Probability and Random Processes, Algorithms, Data Structures.

**Research Experience**

**MIT Learning & Intelligent Sys. Lab** (Adviser: Leslie Kaelbling)     09/16 - 05/22
- Conduct research in artificial intelligence for robotics, toward a PhD.
- Focus on integrated learning and planning for solving long-horizon robotic tasks.

**Facebook AI Research, Robotics** (Research Intern with Abhinav Gupta) 06/19 - 09/19
- Researched formulations of intrinsic motivation for emergence of synergistic behavior in robotics via deep reinforcement learning.
- Built and tested my algorithms in bimanual manipulation environments, both in simulation and on real Sawyer robot arms.

**Google Brain, Robotics** (Research Intern with Sergey Levine)     05/17 - 09/17
- Researched methods for speeding up deep reinforcement learning for robotics, by regressing on event outcomes to improve exploration.
- Designed and implemented a stand-alone framework for learning-based manipulation.

**UC Berkeley Robot Learning Lab** (Adviser: Pieter Abbeel)     02/13 - 05/16
- Performed work in hierarchical combined task and motion planning for execution of long-horizon robotic tasks such as laundry.
- Integrated reinforcement learning to improve existing approaches.
- Lead coordinator of lab outreach program, providing tours to visitors of varied ages.

**UC Berkeley Oscii Lab** (Adviser: John DeNero)     04/15 - 05/16
- Conducted research in Natural Language Processing.
- Improved performance of neural machine translation using Huffman code compression.

**Journal Publications**

**Integrated Task and Motion Planning**
Caelan Reed Garrett, **Rohan Chitnis**, Rachel Holladay, Beomjoon Kim, Tom Silver, Leslie Pack Kaelbling, Tomás Lozano-Pérez.
Annual Review of Control, Robotics, and Autonomous Systems, Volume 4, 2021.

**Conference Publications**

**Score Models for Offline Goal-Conditioned Reinforcement Learning**
Harshit Sikchi, **Rohan Chitnis**, Ahmed Touati, Alborz Geramifard, Amy Zhang, Scott Niekum.
International Conference on Learning Representations (ICLR), 2024.

**Decision Transformer is a Robust Contender for Offline Reinforcement Learning**
Prajjwal Bhargava, **Rohan Chitnis**, Alborz Geramifard, Shagun Sodhani, Amy Zhang.
International Conference on Learning Representations (ICLR), 2024.

**Learning Efficient Abstract Planning Models that Choose What to Predict**
Nishanth Kumar, Willie McClinton, **Rohan Chitnis**, Tom Silver, Tomás Lozano-Pérez, Leslie

Pack Kaelbling.
Conference on Robot Learning (CoRL), 2023.

**Predicate Invention for Bilevel Planning**
Tom Silver*, **Rohan Chitnis**\*, Nishanth Kumar, Willie McClinton, Tomás Lozano-Pérez,
Leslie Pack Kaelbling, Joshua Tenenbaum.
AAAI Conference on Artificial Intelligence (AAAI), 2023.

**Learning Neuro-Symbolic Relational Transition Models for Bilevel Planning**
**Rohan Chitnis**\*, Tom Silver*, Joshua Tenenbaum, Tomás Lozano-Pérez, Leslie Pack Kaelbling.
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.

**Reinforcement Learning for Classical Planning: Viewing Heuristics as Dense Reward Generators**
Clement Gehring*, Masataro Asai*, **Rohan Chitnis**, Tom Silver, Leslie Pack Kaelbling,
Shirin Sohrabi, Michael Katz.
International Conference on Automated Planning and Scheduling (ICAPS), 2022.

**Towards Optimal Correlational Object Search**
Kaiyu Zheng, **Rohan Chitnis**, Yoonchang Sung, George Konidaris, Stefanie Tellex.
IEEE International Conference on Robotics and Automation (ICRA), 2022.

**Learning Symbolic Operators for Task and Motion Planning**
Tom Silver*, **Rohan Chitnis**\*, Joshua Tenenbaum, Leslie Pack Kaelbling, Tomás Lozano-Pérez.
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.

**GLIB: Efficient Exploration for Relational Model-Based Reinforcement Learning via Goal-Literal Babbling**
**Rohan Chitnis**\*, Tom Silver*, Joshua Tenenbaum, Leslie Pack Kaelbling, Tomás Lozano-Pérez.
AAAI Conference on Artificial Intelligence (AAAI), 2021.

**Planning with Learned Object Importance in Large Problem Instances using Graph Neural Networks**
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 Abbeel.
IEEE International Conference on Robotics and Automation (ICRA), 2014.

**Honors / Awards**

**Facebook Fellowship Finalist, 2020.** Top 4% of applicants for the Facebook Fellowship, Machine Learning track.

**NSF GRFP Fellow, 2016. Awarded NDSEG Fellowship (declined).**

**Hertz Fellowship Finalist, 2016.** One of 40 finalists for the Hertz Fellowship, a highly reputable fellowship for student researchers in the physical, biological, and engineering sciences.

**Runner-up for the Computing Research Association (CRA) Outstanding Undergraduate Researcher Award (Male, PhD-granting institution), 2016.** Highly prestigious award recognizing North American undergraduate students who show outstanding research potential in a field of computing.

**Sole recipient of the EECS Mark D. Weiser Excellence in Computing Scholarship, 2015.** Merit-based scholarship awarded to one student in the Berkeley EECS department each year for excellence in research.

**Member of the EECS Honors Degree Program, concentration in Mathematics.**

Honors program with 20-30 students. Requirements include research and extended studies in concentration outside EECS.

**UC Berkeley Outstanding Graduate Student Instructor (OGSI) Award recipient, 2015.** Awarded to top 10% of Teaching Assistants across the university each year.

**UC Berkeley Regents' and Chancellor's Scholar.** Merit-based scholarship awarded to top 1.5% of applicants to UC Berkeley each year.

**National Merit Scholar.** Merit-based scholarship awarded to high-achieving high school students for partial college tuition payment.

| | |
|---|---|
| **Teaching Assistantships** | **CS106A: Code In Place.** *Stanford, free online course during COVID-19.* Summer 2020.<br>**6.036: Introduction to Machine Learning.** *MIT.* Fall 2018.<br>**CS189: Introduction to Machine Learning.** *UC Berkeley.* Spring 2016.<br>**CS188: Introduction to Artificial Intelligence.** *UC Berkeley.* Fall 2015.<br>**CS61A: Structure and Interpretation of Computer Programs.** *UC Berkeley.* Spring 2015, Spring 2014, Summer 2013.<br>**CS61C: Great Ideas in Computer Architecture.** *UC Berkeley.* Fall 2014. |

**Industry**

**Nuro Inc., Planning** (Software Engineering Intern)      06/21 - 09/21
- Explored integrated data-driven and rule-based reasoning to improve planning stack.
- Developed a synergistic approach that improves behavior in 20-40% of challenge scenes.

**Airbnb Inc., Search Ranking** (Software Engineering Intern)      06/16 - 08/16
- 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.

**eBay Inc., Checkout** (Software Engineering Intern)      05/14 - 08/14
- Developed an end-to-end pipeline to create a model that classifies checkout transactions.
- Collected data using Hadoop MapReduce under the Apache Pig framework.

**Technical Skills**

**Languages**: Python, C++, Java, Scala, LaTeX.
**Software**: PyTorch, TensorFlow, Theano, Unix/Linux, Robot Operating System (ROS), OpenCV, Apache Pig, Apache Spark, Hadoop MapReduce.