

# Sahit Chintalapudi

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## Education

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### Massachusetts Institute of Technology

*Ph.D Candidate, EECS, [M.S. 2024]*

Advised by Dr. Leslie Pack Kaelbling and Dr. Tomás Lozano-Pérez

**Boston**

*2020–Present*

### Georgia Institute of Technology

*B.S Computer Science, GPA: 3.94*

Concentrations in Intelligence and Theory

**Atlanta**

*2016–2019*

## Publications

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Sahit Chintalapudi, Leslie Kaelbling, and Tomás Lozano-Pérez. Bi-level belief space search for compliant part mating under uncertainty. *Workshop on the Algorithmic Foundations of Robotics (WAFR)*, 2024.

Keshav Kolar\*, Sahit Chintalapudi\*, Byron Boots, and Mustafa Mukadam. Online motion planning over multiple homotopy classes with gaussian process inference. *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*, 2019.

Vinitha Ranganeni, Sahit Chintalapudi, Oren Salzman, and Maxim Likhachev. Effective footstep planning using homotopy-class guidance. *Artificial Intelligence*, 286:103346, 2020.

## Research Experience

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### DeepMind

*Research Engineering Intern*

**London**

*March 2020–August 2020*

- o Experimented with curricula generation methods for RL agents in the context of autonomous stacking.
- o Developed internal infrastructure for collecting human demonstrations of manipulation in simulated environments.

### Georgia Institute of Technology: Robot Learning Lab

*Undergraduate Research Assistant, advised by Dr. Byron Boots*

**Atlanta**

*2017–2019*

- o Used C++, MATLAB, and the GTSAM toolbox to model the planning problem with a factor graph that adapted in real time to environment changes. In an environment with randomly moving obstacles, this algorithm reduced collision intensity by at least 37% compared to other approaches.
- o Extending existing implementations of Model Predictive Control algorithms to run on the AutoRally platform and log data for Value Function Approximation.

### University of Washington: Human-Centered Robotics Lab

*Undergraduate Research Assistant, advised by Dr. Maya Cakmak*

**Seattle**

*May 2019–Aug 2019*

- o Implemented a Jacobian-Based Full-Body Controller for the Fetch Robot to perform research on mobile manipulation with ROS and C++.
- o Researched Task Decomposition to facilitate high dimensional planning in the context of autonomous cleaning.

## Carnegie Mellon University: Searched Based Planning Lab

Pittsburgh

Robotics Institute Summer Scholar, advised by Dr. Maxim Likhachev

June 2018–Aug 2018

- o Developed C++ Software for a humanoid footstep planner which plans 16-128 times faster than the baseline approach in environments with many obstacles

## Skills

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**Languages:** Python, C++, MATLAB, Java

**Tools:** Drake, ROS, Tensorflow, PyTorch, NumPy, Linux, L<sup>A</sup>T<sub>E</sub>X, MuJoCo, Eigen, GTSAM

## Awards

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**2019 President's Undergraduate Research Award:** Georgia Tech Grant

**1st Place:** Google Tech Challenge 2019

**Best Collegiate Speed Demons Team:** Sparkfun Autonomous Vehicle Competition 2018

## Projects

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### Transformer Policies that Reason Under Uncertainty

*Machine Learning Final Project*

*Fall 2021*

- o Trained a transformer to perform decision making for long-horizon tasks with discrete action spaces
- o Used label smoothing and temperature scaling to improve model calibration

### Control with Sums-Of-Squares Polynomials for Hybrid Autonomous Systems

*Underactuated Robotics Final Project*

*Spring 2021*

- o Solved a relaxation of the HJB equation for a multimodal cartpole variant

### MeleeML

*Interactive Robot Learning Final Project*

*Fall 2019*

- o Trained a Generative Adversarial Imitation Learning (GAIL) agent to learn how to play Super Smash Brothers Melee (SSBM) from Human Demonstration using PyTorch
- o Designed and implemented an advantage actor-critic model to play SSBM by training against CPUs

### RoboRacing: Autonomous RC Vehicles

*Software Lead*

*2016–2018*

- o Prototyped deep network architectures in Keras for learning steering angles from images of the road.
- o Developed and Tuned the plant PID controller on an Arduino

## Relevant Coursework

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**MIT:** Algorithms for Inference, Underactuated Robotics, Optimization Methods, Machine Learning

**Georgia Tech:** Interactive Robot Learning (Graduate Course), Computer Vision, Honors Probability and Statistics, Robotics and Perception, Machine Learning

## Service

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**Robotics and Automation Letters (RA-L) 2021:** Reviewer

**Graduate Application Assistance Program Mentor 2020-2023:** Mentored 4 students, providing feedback and advice on graduate school applications

**Robotics, Science and Systems (RSS) 2018:** Student Volunteer