

Nishanth J. Kumar

njk@csail.mit.edu | +1 (781) 588 9735

nishanthjkumar.com | <https://linkedin.com/in/nishanth-kumar/> | github.com/NishanthJKumar/ | <https://scholar.google.com/citations?user=FE512o4AAAAJ&hl=en>

EDUCATION

Massachusetts Institute of Technology – S.M. and Ph.D. in EECS

Cambridge, MA | 09/2021 –

- **GPA: 5.00/5.00.** Research: Integrated learning and planning/reasoning for long-horizon, complex robotics and agentic tasks. Ph.D. minor in Engineering Leadership. Advisors: Tomás Lozano-Pérez and Leslie Kaelbling.
- **Selected Coursework:** Robotic Manipulation, Theory of Computation, Computational Sensorimotor Learning.

Brown University – Sc.B. in Computer Engineering with Honors

Providence, RI | 09/2017 – 05/2021

- **GPA: 3.95/4.00.** Named *Outstanding Senior* for graduating as the top student in my concentration. Research advisors: Stefanie Tellex, George Konidaris, Michael Littman.

INDUSTRY EXPERIENCE

AI Research Intern – FAIR at Meta [\[website\]](#)

New York City, NY | 05/2025 – Present

- Working on self-improving autonomous computer-use agents via finetuning a Vision-Language Model (VLM) to serve as value functions for planning. Developed system capable of autonomous data collection sufficient to achieve SOTA performance on AgentStudio computer use benchmark.
- Conference submission in preparation. Managers: Mary Williamson, Yuandong Tian, Jimmy Yang.

Research Intern – NVIDIA [\[website\]](#)

Seattle, WA | 05/2024 – 01/2025

- Led development and deployment of ‘OWL-TAMP’ – a novel method combining VLM’s and TAMP. Achieved SOTA performance on tasks from the RAVENS suite. Work featured in NVIDIA press release article [\[link\]](#).
- Submitted 3 conference papers [\[1, 2, 3\]](#) to RA-L, RSS and ICLR. Managers: Caelan Garrett, Fabio Ramos, Dieter Fox.

Research Intern – RAI Institute [\[website\]](#)

Cambridge, MA | 11/2022 – 04/2024

- Co-developed ‘EES’ a novel method to enable efficient, reset-free online learning on real Boston Dynamics Spot robots. Paper [\[link\]](#) accepted at RSS 2024. Manager: Jennifer Barry.

Research Intern – Vicarious AI (now part of Google DeepMind) [\[website\]](#)

Remote | Summer 2021

- Led development of an open-source framework [\[link\]](#) for efficient inference on Probabilistic Graphical Models (PGM’s) in JAX. Framework continues to be in active development at DeepMind under the JAX ecosystem.
- Paper accepted at JMLR [\[paper\]](#). Managers: Stannis Zhou, Miguel Lázaro-Gredilla.

Research Intern Uber ATG (now Waabi AI) [\[website\]](#)

Remote | Summer 2020

- Independent research project [\[link\]](#) on Active Learning to improve sample-efficiency and reduce data-labelling costs for a key neural network model. Paper accepted at CoRL 2021. Managers: Sean Segal, Raquel Urtasun.

SELECTED PUBLICATIONS

- **From Pixels to Predicates: Learning Symbolic World Models via Pretrained Vision-Language Models** [\[website\]](#). A. Athalye*, **N. Kumar***, T. Silver, Y. Liang, T. Lozano-Pérez, L.P. Kaelbling. Under Review, 2025.
 - **Open-World Task and Motion Planning via Vision-Language Model Inferred Constraints** [\[website\]](#). **N. Kumar**, F. Ramos, D. Fox, C.R. Garrett. Under Review, 2024.
 - **VisualPredicator: Learning Abstract World Models with Neuro-Symbolic Predicates for Robot Planning**. Y. Liang, **N. Kumar**, H. Tang, A. Weller, J. Tenenbaum, T. Silver, J. Henriques, K. Ellis. ICLR, 2025 (Spotlight).
 - **Trust the PROCS3: Solving Long-Horizon Robotics Problems with LLMs and Constraint Satisfaction**. A. Curtis*, **N. Kumar***, J. Cao, T. Lozano-Pérez, L.P. Kaelbling. CoRL, 2024.
 - **Practice makes Perfect: Planning to Learn Skill Parameter Policies** [\[website\]](#). **N. Kumar***, T. Silver*, W. McClinton, L. Zhao, S. Proulx, T. Lozano-Pérez, L.P. Kaelbling, J. Barry. RSS, 2024.
 - **AHA! A VLM for Detecting and Reasoning over Failures in Robotic Manipulation**. J. Duan, W. Pumacay, **N. Kumar**, Y.R. Wang, S. Tian, W. Yuan, R. Krishna, D. Fox, A. Mandlekar, Y. Guo. ICLR, 2025.
- (* indicates equal contribution)

SKILLS & INTERESTS

- **Programming Skills**
 - **Proficient:** Python. Open-source libraries developed and maintained: [\[1\]](#), [\[2\]](#).
 - **Comfortable:** PyTorch, Numpy, Bash, TeX.
 - **Familiar:** HuggingFace transformers and peft, bitsandbytes, JAX, TensorFlow, OpenCV, C, Robot Operating System (ROS).
- **Miscellaneous Skills and Interests:** Fiction Writing, Blogging, Basketball, Public Speaking, Philosophy.