

Abhinav Narayan Harish

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EDUCATION

- **University of Wisconsin-Madison** Madison, Wisconsin
PhD in Computer Science August 2023 - August 2028 (expected)
Courses: Foundation Models, Computer Vision, Non-Linear Optimization
- **Georgia Institute of Technology** Atlanta, Georgia
Master's in Electrical and Computer Engineering GPA: 4.0/4.0 August 2021 - August 2023
Courses: Deep-Learning, Statistical ML, Online Decision Making in ML
- **Indian Institute of Technology Gandhinagar** Gujarat, India
Bachelor's in Electrical Engineering (CS minor)- GPA: 9.41/10 - Institute Silver Medal July 2016 - August 2020
Courses: Machine Learning, 3-D Computer Vision

PUBLICATIONS

- **Why DDIM Hallucinates More than DDPM: A Theoretical Analysis of Reverse Dynamics**[pdf]
Muhammad H. Ashiq, Samanyu Arora, **Abhinav N Harish**, Ishaan Kharbanda, Hung Yun Tseng, Grigorios Chrysos
International Conference of Machine Learning (ICML 2026)
- **Reinforcement Learning via Auxillary Task Distillation**[pdf]
Abhinav N Harish, Larry Heck, Josiah P Hanna, Zsolt Kira, Andrew Szot
European Conference of Computer Vision (ECCV 2024)
- **Skill-Chaining for Long-Horizon Rearrangement** [pdf]
Abhinav N Harish, Zsolt Kira
Master's thesis at Georgia Tech (August'2023)
- **RGL-NET: A Recurrent Graph Learning Framework for Progressive Part Assembly** [pdf]
Abhinav N Harish, Rajendra Nagar, Shanmuganathan Raman
Winter Conference on Applications of Computer Vision - (WACV 2022)
- **Reinforcement Learning Within the Classical Robotics Stack: A Case Study in Robot Soccer** [pdf]
Adam Labiosa, Zhihan Wang, Siddhant Agarwal, William Cong, Geethika Hemkumar, **Abhinav N Harish**, Benjamin Hong, Josh Kelle, Chen Li, Yuhao Li, Zisen Shao, Peter Stone, Josiah P. Hanna
International Conference of Robotics and Automation (ICRA) 2025
- **Replacing Implicit Regression with Classification in Policy Gradient Reinforcement Learning** [pdf]
Josiah Hanna, Brahma Pavse, **Abhinav N Harish**
Finding the Frame Workshop @ RLC 2024
- **Double JPEG Compression Detection of Distinguishable Blocks in Images Compressed with Same Quantization Matrix** [pdf]
Abhinav N Harish*, Vinay Verma*, Nitin Khanna
International Workshop on Machine Learning for Signal Processing (MLSP-2020)

EXPERIENCE

- **NVIDIA Corporation — Santa Clara, USA**
Research Intern with Dr. Jonathan Tremblay May 2022 – August 2022
 - Built a Sim2Real workflow for object detection using Detectron2, focusing on generating synthetic training data and validating models in the Omniverse Replicator
 - Experimented with domain randomization—lighting, pose, camera view, and backgrounds—to study its effect on improving model robustness and generalization.
- **Georgia Institute of Technology — Atlanta, Georgia**
Graduate Research Assistant with Prof. Zsolt Kira January 2022 – May 2022
 - Set up a Habitat 2.0 simulation environment around a reconstructed Hubble Telescope scene to support research on remote repair and maintenance tasks.
 - Assisted in testing LoCoBot navigation developed by the planning team, focusing on integrating sensing for obstacle detection and control for obstacle avoidance.
- **Indian Institute of Technology — Gujarat, India**
Research Fellow with Prof. Shanmuganathan Raman August 2020 – August 2021
 - Investigated whether robots can autonomously assemble complex 3D objects from their component parts, formulating the task as sequential shape assembly from part point clouds.
 - Developed a bi-directional RNN architecture integrated with a graph neural network to capture both top-down assembly structure and bottom-up part relationships.
 - Evaluated the approach on the PartNet dataset, achieving a **10% improvement** in part placement accuracy and **15% improvement** in predicting inter-part connectivity over prior baselines.

ACADEMIC ACHIEVEMENTS

- Member of WisTex-United, the winning team of the RoboCup SPL 2024 Challenge Shield division.
- Recipient of the *Summer RA Award* from UW–Madison for research conducted under *Dr. Josiah Hanna*.
- Awarded *Best Poster* (out of ≈ 75 posters) at the Summer Research Internship Program 2017, IIT Gandhinagar.
- Received the *Sabarmati Bridge Fellowship* (9 awardees across IIT Gandhinagar) for the year 2020–21.
- Secured an A^+ (11/10) grade in Machine Learning for exceptional performance (top < 5 among ≈ 80 students).
- Selected for the Youth Scientist Encouragement Scheme (*KVPY*¹), supported by the Government of India; ranked 420th out of $\approx 20,000$ applicants.

TEACHING EXPERIENCE

- **Introduction to Artificial Intelligence (CS-540)**
Dr. Young Wu & Dr. Blerina Gkotse at UW-Madison *January'26-present*
- **Data Science and Programming-I (CS 220)**
Dr. Mike Doescher at UW-Madison *August'24 - May'24*
- **Deep Learning (CS 7643)**
Dr. Zsolt Kira at Georgia Tech *August'22 - August'23*
- **Machine Learning (ES-654)**
Dr. Nipun Batra at IIT Gandhinagar *Jan'20 - May'20*

SKILLS SUMMARY

- **Languages:** Python, C++
- **Libraries:** PyTorch, Gymnasium, Numpy, Scipy, OpenCV
- **Simulation:** Habitat 2.0, Stable-Baselines3, PyGame

¹Kishore Vaigyanik Protsahan Yojana