

# Nikhil Barhate

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## EDUCATION

### University of Colorado Boulder

*Master of Science in Computer Science*

Boulder, CO

Aug 2022 – May 2024

### University of Mumbai

*Bachelor of Technology in Electronics Engineering*

Mumbai, India

Sep 2017 – Jun 2021

## PUBLICATIONS

**Adaptive Guidance Accelerates Reinforcement Learning of Reasoning Models.** Vaskar Nath, Elaine Lau, Anisha Gunjal, Manasi Sharma, **Nikhil Barhate**, Sean Hendryx. Arxiv preprint (under review at NeurIPS), 2025. <https://arxiv.org/abs/2506.13923>

**Agent-RLVR: Training Software Engineering Agents via Guidance and Environment Rewards.** Jeff Da, Clinton Wang, Xiang Deng, Yuntao Ma, **Nikhil Barhate**, Sean Hendryx. Arxiv preprint (under review at NeurIPS), 2025. <https://arxiv.org/abs/2506.11425>

## EXPERIENCE

### Scale AI

*Machine Learning Research Engineer*

San Francisco, CA

Jun 2024 – Present

- Designed and implemented distributed training framework for large scale reinforcement learning, streamlining research experiments on reasoning language models.
- Designed abstractions to add user modifiable code to RL training pipeline accelerating research experiments.
- Created a framework for large scale LLM inference for math and coding evaluations.
- Trained and deployed LLM as judge models for automatic quality control for human data.
- Tech Stack: Python, PyTorch, vLLM, Ray, kubernetes, AWS

### AMD

*Machine Learning Intern*

Longmont, CO

May 2023 – Aug 2023

- Developed Machine Learning models to predict the most efficient CPU-GPU matrix partitioning for Sparse Matrix-Vector Multiplication (SpMV) on **AMD MI250X** AI accelerator
- The final method **improved performance by 24%** on a subset of test matrices on the rocSPARSE benchmark.
- Created and taught ML curriculum and tutorials on a Xilinx FPGA AI accelerator for a week-long bootcamp.
- Tech Stack: Python, C++, scikit-learn, PyTorch, StableBaselines3, ROCm, SLURM

### Mila - Quebec AI Institute

*Research Visitor*

Remote

Sep 2021 – May 2022

- Advised by **Anirudh Goyal** and Professor **Yoshua Bengio**
- Research in memory retrieval and trajectory modeling for **Retrieval Augmented Reinforcement Learning**
- Implemented cross attention mechanisms to retrieve trajectory embeddings and incorporate retrieved information into an online reinforcement learning agent to improve training efficiency
- Tech Stack: Python, PyTorch, Singularity, SLURM

### Indian Institute of Science

*Research Intern*

Remote

Dec 2020 – Jun 2021

- Advised by Jogendra Nath Kundu and Professor R. Venkatesh Babu
- Research in Unsupervised Domain Adaptation for **Semantic Segmentation in Computer Vision**
- Developed methods to incorporate edge detection and domain confusion in Deeplab-v2 architecture to induce domain invariant features and explored Adversarial Domain Search methods for style transfer to improve efficiency
- Tech Stack: Python, PyTorch, NumPy, OpenCV, Nvidia Docker, SLURM

## TECHNICAL SKILLS

**Languages:** Python, C++

**Frameworks:** PyTorch, Ray, vLLM, NumPy, OpenCV, MPI, gRPC, Redis, PySpark

**Tooling:** Linux, Git, Docker, Kubernetes, SLURM, AWS, Google Cloud Platform