Nur Muhammad "Mahi" Shafiullah

Contact Information

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Education

Courant Institute of Mathematical Sciences — Sep. 2020 – Present
New York University
Ph.D. Candidate in Computer Science (GPA: 4.0/4.0)
Advisor: Prof. Lerrel Pinto

Massachusetts Institute of Technology — Sep. 2015 – Aug. 2020
M.Eng. in Electrical Engineering and Computer Science (GPA: 5.0/5.0) — Jan. '19 – Aug. '20
Advisor: Prof. Aleksander Mądry
S.B. in Mathematics and in Computer Science (GPA: 4.89/5.0) — Sep. '15 – Jun. '19

Research Experience

Hello Robot Inc.; Research Consultant with Dr. Aaron Edsinger — Jan. 2024 – May 2024
GenAI & FAIR @ Meta AI; Visiting Scientist with Dr. Ishan Misra — Oct. 2022 – Oct. 2023
Embodied AI @ Meta AI; Reserach Intern with Dr. Arthur Szlam — May 2022 – Sep. 2022
MIT CSAIL; Research Assistant to Prof. Aleksander Madry — Jul. 2017 – Aug. 2020

Honors and Awards

PhD Communications Award, Amazon Robotics Research Symposium — 2024
Best Paper, Lifelong Learning for Home Robots workshop @ CoRL 2024 — 2024
Outstanding Paper, MFM-EAI workshop @ ICML 2024 — 2024
Best Demo Award (Finalist), International Conference in Robotics and Automation — 2024
Apple Scholars in AI/ML Fellowship, Apple MLR — 2023–25
Two Sigma Fellowship, (Finalist, Declined) — 2023
Jacob T. Schwartz Ph.D. Fellowship, NYU Courant — 2023
AI Mentorship (AIM) Program, Meta & NYU — 2022–23
Best Paper, Language and Robot Learning (LangRob) workshop @ CoRL 2022 — 2022
Henry M. MacCracken Doctoral Fellowship, NYU — 2020–25
Burchard Scholars Program, MIT — 2018–19
AMD Undergraduate Research and Innovation Scholarship, MIT — 2017–18
Silver Medal, International Mathematical Olympiad (IMO) — 2014
Bronze Medal, International Mathematical Olympiad (IMO) $\times 2$ — 2012–13
Bangladesh Natl. Team, International Olympiad in Informatics (IOI) $\times 2$ — 2012, 2015
National Champion, Bangladesh Mathematical Olympiad $\times 6$ — 2009–14

References

1. **Prof. Russ Tedrake**, *Professor of EECS, Aero/Astro, MechE, MIT*. russt@mit.edu
2. **Prof. Abhinav Gupta**, *Professor, CMU Robotics Institute*. abhinavg@cs.cmu.edu
3. **Prof. Rob Fergus**, *Professor of CS, NYU Courant*. fergus@cs.nyu.edu

4. **Dr. Charles C. Kemp**, *Cofounder & Chief Technology Officer, Hello Robot Inc. Previously Associate Professor, Georgia Institute of Technology.* ck@hello-robot.com
5. **Prof. Lerrel Pinto**, *Assistant Professor of CS, NYU Courant.* lerrel@cs.nyu.edu

Preprints

† *Equal Contribution,* ‡ *Equal Advising. Works Presented Reverse Chronologically.*

[1] **DynaMem: Online Dynamic Spatio-Semantic Memory for Open World Mobile Manipulation** DOI: arXiv:2411.04999
International Conference of Robotics and Automation (ICRA) (Under Review)
Live Demo at *Conference on Robot Learning (CoRL) 2024*
Best Paper Award at *CoRL 2024 Workshop on Lifelong Learning for Home Robots*
Liu, P., Guo, Z., Warke, M., Chintala, S., Paxton, C., ***Shafiullah, Nur Muhammad Mahi***‡ & Pinto, L.‡

[2] **Robot Utility Models: General Policies for Zero-Shot Deployment in New Environments** DOI: arXiv:2409.05865
International Conference of Robotics and Automation (ICRA) (Under Review)
Live Demo at *Conference on Robot Learning (CoRL) 2024*
Oral Presentation at *CoRL 2024 Workshop on Language and Robot Learning (LangRob)*
Etukuru, H.†, Naka, N., Hu, Z., Lee, S., Mehu, J., Edsinger, A., Paxton, C., Chintala, S., Pinto, L., ***Shafiullah, Nur Muhammad Mahi***†

[3] **On Bringing Robots Home** DOI: arXiv:2311.16098
International Journal of Robotics Research (Under Review)
Live Demo at *Neural Information Processing Systems (NeurIPS) 2023*
Best Demo Award (Finalist) at *International Conference on Robotics and Automation (ICRA) 2024*
Shafiullah, Nur Muhammad Mahi†, Rai, A.†, Etukuru, H., Liu, Y., Misra, I., Chintala, S., Pinto, L.

Refereed Publications

[4] **OK-Robot: What Really Matters in Integrating Open-Knowledge Models for Robotics**
Robotics: Science and Systems (RSS) 2024
Live demo at *International Conference on Robotics and Automation (ICRA) 2024*
Liu, P.†, Orru, Y.†, Vakil, J., Paxton, C., ***Shafiullah, Nur Muhammad Mahi***‡ & Pinto, L.‡

[5] **Behavior Generation with Latent Actions**
Spotlight (3.5%) at *International Conference of Machine Learning (ICML) 2024*
Outstanding Paper Award at *Multi-modal Foundation Models for Embodied AI workshop, ICML 2024*
Lee, S., Wang, Y., Etukuru, H., Kim, H., ***Shafiullah, Nur Muhammad Mahi***‡ & Pinto, L.‡

[6] **Open X-Embodiment: Robotic learning datasets and RT-x models**
Best Paper Award at *International Conference in Robotics and Automation (ICRA) 2024*
Open X-Embodiment Collaboration

[7] **CLIP-Fields: Weakly Supervised Semantic Fields for Robotic Memory**
Robotics: Science and Systems (RSS) 2023
Best Paper Award at *CoRL Workshop on Language and Robot Learning 2023*
Shafiullah, Nur Muhammad Mahi, Paxton, C., Pinto, L., Chintala, S., Szlam, A.

[8] **From Play to Policy: Conditional Behavior Generation from Uncurated Robot Data**
Oral Presentation (5%) at *Intl. Conference on Learning Representations (ICLR) 2023*
Cui, Zichen, Wang, Yibin, ***Shafiullah, Nur Muhammad Mahi***, Pinto, Lerrel

[9] **Behavior Transformers: Cloning k Modes with One Stone**
Neural Information Processing System (NeurIPS) 2022
Shafiullah, Nur Muhammad Mahi, Cui, Zichen, Altanzaya, Ariuntaya, Pinto, Lerrel

[10] **The Surprising Effectiveness of Representation Learning for Visual Imitation**
Robotics: Science and Systems (RSS) 2022
Pari, J.†, ***Shafiullah, Nur Muhammad Mahi***†, Arunachalam, S.P., Pinto, L.

[11] **One After Another: Learning Incremental Skills for a Changing World**
International Conference on Learning Representations (ICLR) 2022
Shafiullah, Nur Muhammad Mahi, Pinto, Lerrel

[12] **Training for Faster Adversarial Robustness Verification via Inducing ReLU Stability**
International Conference on Learning Representations (ICLR) 2019
Xiao, K. Y., Tjeng, V., ***Shafiullah, Nur Muhammad Mahi***, Mądry, A.

Tutorials

[13] **Supervised Policy Learning for Real Robots**
Robotics: Science and Systems (RSS) 2024
https://supervised-robot-learning.github.io/
Shafiullah, Nur Muhammad Mahi, Feng, Siyuan, Pinto, Lerrel & Tedrake, Russ

Invited Talks

On Building General, Zero-Shot Robot Policies

Harvard Computational Robotics Group	Oct. 2024
MIT Embodied Intelligence Seminar	Oct. 2024
OpenAI Robotics Reading Group	Oct. 2024
CMU Manipulation Group Seminar	Sep. 2024

Behavior Generation with Latent Actions

HuggingFace LeRobot Research Talks	Aug. 2024

On Bringing Robots Home

Apple AI/ML Research	May 2024
UMich EECS 598: Action & Perception	Mar. 2024
Google Deepmind Robotics	Mar. 2024
Berkeley Robot Learning Lab	Feb. 2024
Meta Embodied AI Seminar	Jan. 2024
NYU CILVR Seminar	Dec. 2023

Robot Learning in a Post-Turing World

Honda Research, Tokyo	Jul. 2023
REAL Lab @ Columbia (now Stanford)	Nov. 2022

Press Coverage

Robot Utility Models: General Policies for Zero-Shot Deployment in New Environments
MIT Technology Review, The Robot Report, Elektropraktiker (Germany), IndiaAI.gov (India)

OK Robot: What Really Matters in Integrating Open-Knowledge Models for Robotics
MIT Technology Review, Fox News, VentureBeat, TechXplore, Notebookcheck, Digital Information World (Pakistan)

On Bringing Robots Home
MIT Technology Review, New Scientist, TechXplore, TV Tokyo (Japan), Neue Zürcher Zeitung (Switzerland), NDTV (India), MarkTechPost, Washington Square News

Open X-Embodiment: Robotic Learning Datasets and RT-X Models
VentureBeat, Tech Times, Synced Review (Canada), TechForge (UK)
Analytics India Magazine (India)

The Surprising Effectiveness of Representation Learning for Visual Imitation
TechXplore

Teaching Experience

Graduate Deep Reinforcement Learning (CSCI-GA 3033-090) Fall 2021
New York University
Graduate Teaching Assistant with Prof. Lerrel Pinto

Introduction to Machine Learning (6.036) $\times 2$
Jointly Instructed with Applied Machine Learning (6.862) Spring & Fall 2019
Massachusetts Institute of Technology
Graduate Teaching Assistant with Prof. Leslie P. Kaelbling

Principles of Discrete Applied Mathematics (18.200) Fall 2018
Massachusetts Institute of Technology
Teaching Assistant (Grading) with Prof. Andrej Risteski

Design and Analysis of Algorithms (6.046/18.410) $\times 4$ Fall 2015 – Spring 2017
Massachusetts Institute of Technology
Volunteer Student Tutor with Eta Kappa Nu (HKN) Honor Society

Combinatorics and Euclidean Geometry 2010–15, 2022–23
Bangladesh Mathematical Olympiad National Camps
Instructor under Dr. Mahbub A. Majumdar

Research Mentoring

Current Students
Haritheja Etukuru (2023 – Present, BS @ New York University; *Graduating '25*)
Omar Rayyan (2024 – Present, BS @ New York University (Abu Dhabi); *Graduating '25*)
Zhanqiu "Jack" Guo (2024 – Present, BS @ New York University; *Graduating '25*)
Lisa Kondrich (2024 – Present, MS @ New York University; *Graduating '26*)
Norihito Naka (2023 – Present, MS @ New York University; *Graduating '25*)
Yibin Wang (2022 – Present, BS, MS @ New York University; *Graduating '25*)

Past Students
Seungjae Lee (2023 – 24, MS @ Seoul National University; Next Ph.D. at UMD)
Peiqi Liu (2023 – 24, BS @ New York University; Next at Hello Robot Inc.)
Anant Rai (2022 – 23, MS @ New York University; Next at 1X.tech)
Zichen "Jeff" Cui (2022 – 24, MS @ New York University; Next Ph.D. at NYU GRAIL)
Yaswanth Orru (2023 – 24, MS @ New York University; Next at Fauna Robotics)
Ariuntaya Altanzaya (2022–23, MS @ New York University; Next at Roboflow)
Sridhar Pandian Arunachalam (2021–22, MS @ New York University; Next at 1X.tech)
Jyothish Pari (2020 – 21, BS @ New York University; Next Ph.D. at MIT)

Service

Workshop and Tutorial Organization
7th Workshop on Robot Learning @ ICLR '25 (proposed)
Tutorial on Supervised Policy Learning for Real Robots @ RSS '24

1st Workshop on Vision-Language Models for Navigation and Manipulation @ ICRA '24
1st Workshop on Learning Dexterous Manipulation @ RSS '23

Peer Reviewing

Robotics — RSS, CoRL, RA-L, ICRA, T-RO, IROS, IJRR
Machine Learning — ICLR, NeurIPS, ICML
Computer Vision — T-PAMI
Workshops at the intersection of ML, CV, and Robotics.

Volunteering, Outreach, and Social Good

Mentor, Ph.D. Application Advising, NYU GRAIL	2021–Present
Mentor, Collegiate Research Initiative, NYU	2023
Deputy Leader, Bangladesh National Math Team, IMO 2023 Japan	2023
Consultant, Bangladesh National Data Analytics Task Force (COVID-19)	2020–22
Online Learning Transition Consultant, Brac University Bangladesh	2020–21
Internal Relations Chair, MIT HKN Honor Society	2019–20
MIT Global Teaching Lab, Stuttgart, Germany	2018
MIT Peer Mentoring Program	2017–18
Volunteer Tutor, MIT HKN Honor Society	2015–17
Mentor, Bangladesh Olympiad in Informatics	2014–2015
Mentor, Bangladesh Mathematical Olympiad	2010–2015