

Nur Muhammad “Mahi” Shafiullah

CONTACT	E-mail: mahi@cs.nyu.edu Homepage: mahis.life	Phone: (617) 909-3049
EDUCATION	New York University Doctor of Philosophy in Computer Science	Sep 2020 – Present New York, NY
	Massachusetts Institute of Technology Masters of Engineering in Computer Science Thesis: <i>The Anatomy of Visual Pattern Acquisition in Deep Learning</i>	Jan 2019 – Aug 2020 Cambridge, MA
	Massachusetts Institute of Technology Bachelor of Science in Mathematics and in Computer Science Cumulative GPA 4.9 out of 5.0	Sep 2015 – Jun 2019 Cambridge, MA
RESEARCH EXPERIENCE	Graduate Research Assistant, New York University Supervised by Prof. Lerrel Pinto Researching robot intelligence geared towards household settings – diverse environments with multi-modal solutions to hundreds of possible tasks – through learning from humans, modeling a prior from their behaviors, and harnessing those priors to learn in the real world.	Sep 2020 – Present
	Visiting Research Scientist, Meta Fundamental AI Research (FAIR) Supervised by Ishan Misra Contributing to a unified model for understanding multiple modalities, like vision, language, video, audio, and integrate human behavior priors in such models to accelerate robot learning in the real world.	Oct 2022 – Present
	Research Scientist Intern, Meta Fundamental AI Research (FAIR) Supervised by Arthur Szlam Built an implicit three-dimensional scene model using only an iPhone and pretrained Vision-Language Models (VLM) and Large Language Models (LLM)s. Such models can act as a geometric database and a source for truth for household robotics that supports positional queries and responses.	May 2022 – Sep 2022
	Research Assistant, MIT CSAIL Supervised by Prof. Aleksander Mądry Built co-designing methods that accelerate formal verification of deep neural networks, designed differential privacy based defenses against backdoor attacks, investigated layerwise training of deep neural networks and detecting outliers and distribution shifts at test time.	Jul 2017 – Aug 2020
PUBLICATIONS	7) <u>NMM. Shafiullah</u> , C. Paxton, L. Pinto, S. Chintala and A. Szlam, “CLIP-Fields: Weakly Supervised Semantic Fields for Robotic Memory,” under review in <i>International Conference in Robotics and Automation (ICRA)</i> , London, UK, May 2023.	
	6) Z. Cui, Y. Wang, <u>NMM Shafiullah</u> and L. Pinto “From Play to Policy: Conditional Behavior Generation from Uncurated Robot Data,” under review in <i>International Conference on Learning Representations (ICLR)</i> , Rwanda, May 2023.	
	5) <u>NMM Shafiullah</u> , Z. Cui, A. Altanzaya and L. Pinto “Behavior Transformers: Cloning k Modes with One Stone,” in <i>Neural Information Processing Systems (NeurIPS)</i> , New Orleans, LA, USA, Dec 2022.	
	4) J. Pari*, <u>NMM Shafiullah</u> *, SP Arunachalam and L. Pinto “The Surprising Effectiveness of Representation Learning for Visual Imitation,” in <i>Robotics: Science and Systems (RSS)</i> , New York, NY, USA, Jun 2022.	
	3) <u>NMM Shafiullah</u> and L. Pinto “One After Another: Learning Incremental Skills for a Changing World,” in <i>International Conference on Learning Representations (ICLR)</i> , Virtual, Apr 2022.	
	2) <u>NMM Shafiullah</u> , S. Santurkar, D. Tsipras and A. Mądry “Preventing backdoor attacks via Student-Teacher Ensemble Training,” in <i>International Conference on Learning Representations (ICLR)</i> , <i>Workshop on Towards Trustworthy ML: Rethinking Security and Privacy for ML</i> , Virtual, Jun 2020.	
	1) K. Xiao, V. Tjeng, <u>NMM Shafiullah</u> and A. Mądry “Training for Faster Adversarial Robustness Verification via Inducing ReLU Stability,” in <i>International Conference on Learning Representations (ICLR)</i> , New Orleans, LA, USA, May 2019.	

HONORS AND AWARDS	HackMIT – Hackathon Finalist (Top 10)	2019
	Burchard Scholar, MIT School of HASS	2018
	Silver Medal for Bangladesh, International Mathematical Olympiad	2014
	Bronze Medal for Bangladesh, International Mathematical Olympiad	2012, 2013
WORK EXPERIENCE	D. E. Shaw & Co., L.P.	
	Quantitative Developer Intern – Quantitative Options Team	May 2018 – Aug 2018
	Studied options market micro-structures and their predictive power over market makers' delta hedging strategies. Used the research results to design a low-latency model for predicting trade directions, and implemented a prototype model able to perform real-time trading.	
	Quora Inc.	
	Software Engineering Intern – Platform Team	May 2017 – Aug 2017
	Implemented a error transpiler on top of the Javascript error reporting pipeline to decode and delegate unintelligible stack traces at web scale. Additionally, designed and implemented a developer tool that enabled developers to adopt another user's settings and variables for debugging.	
TEACHING EXPERIENCE	Kensho Technologies Inc.	
	Software Engineering Intern	May 2016 – Aug 2016
	Designed the abstraction and implementation of unit-aware timeseries with S-expression support into the product backbone. Created a new lab feature using automated feature selection, linear transformation and KNN to predict currency exchange rates and implemented it in collaboration with the research team.	
	Graduate TA, <i>Deep Reinforcement Learning</i> , NYU CIMS	Jan 2021 – Jun 2021
	Graduate TA, <i>Introduction to Machine Learning</i> , MIT EECS	Jan 2019 – Dec 2019
	Grader, <i>Principles of Discrete Applied Mathematics</i> , MIT Mathematics	Sep 2018 – Dec 2018
VOLUNTEER & LEADERSHIP EXPERIENCES	Grader, <i>Introduction to Machine Learning</i> , MIT EECS	Feb 2017 – May 2017
	Tutor, <i>Design and Analysis of Algorithms</i> , HKN Honor Society	Sep 2015 – Dec 2017
	Trainer & Mentor, Bangladesh National Math Camps	Jun 2011 – Jul 2015
	National Data Analytics Task Force, Bangladesh	
	COVID-19 Modeling Research Team	Apr 2020 – Jan 2021
	Developed a Bayesian model of the COVID-19 reproduction rate, R_0 , in every district of Bangladesh that is robust to the lack of testing and the poorly reported test data, which was used by the Bangladeshi cabinet to make governing decisions. Alongside top Bangladeshi epidemiologists, developed a technical report with simulations advocating for adoption of Rapid Antigen Testing which lead to the government's approval of said method.	
	The Tech – MIT's Oldest and Largest Newspaper	
	Departmental Editor, Photography	Oct 2017 – Jan 2019
	Lead a team of almost a dozen photographers year-round to collect necessary photos for the weekly publication. Additionally, collaborated with News, Features, and Science departments on featured projects and getting accompanying photos. Finally, kept an inventory of the Photography department's equipment and optimized the lending procedure to make them accessible to student photographers.	
	Bangladeshi Students Association at MIT	
	Co-president	Sep 2016 – Sep 2018
	Led the community of Bangladeshi students to win <i>Organization of the Year, 2017</i> award and <i>Engineering Community Award, 2016</i> award by organizing events aimed towards introducing fellow students at MIT to Bangladeshi culture, and collaborating with other organizations on campus to initiate cross-cultural bonding events.	