

ISHA PURI

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EDUCATION

HARVARD UNIVERSITY	Cambridge, MA
BA, Applied Mathematics and Computer Science, GPA: 3.94 / 4.0	May 2023
(Minor: Statistics) Advisors: Professor Hima Lakkaraju (Research), Professor Salil Vadhan (Academic)	
MASSACHUSETTS INSTITUTE OF TECHNOLOGY	Cambridge, MA
Courses: Machine Learning, AI for Law, GPA: 5.0 / 5.0	Cross Registered Student
COLUMBIA UNIVERSITY/ HORACE GREELEY HIGH SCHOOL	New York, New York
High School Honors Program, Summa Cum Laude, Valedictorian, GPA: 4.0/4.0 (unweighted)	June 2019

SELECTED AWARDS/HONORS

- Harvard Technology Innovation Fellowship, (Harvard Business School)
- Derek Bok Certificate for Distinction in Teaching, (Harvard University)
- ACM Cutler Bell Prize for Excellence in Computing Research, (Association of Computing Machinery) (4 chosen nationwide)
- Hertz Foundation Fellowship semifinalist (finalist status pending)
- Davidson Fellowship (Recognized by Forbes as “World’s Most Prestigious Undergraduate Scholarship”)
- ThermoFisher Scientific Collegiate Fellowship (6 chosen nationwide)
- NCWIT Collegiate Prize (National Center for Women in Information Technology) (6 selected nationwide)
- Coca Cola Scholarship (250 chosen from > 90,000 applications)
- Forbes, 20 of America’s Brightest Students (2019)
- Elected Co-President of Harvard Women in Computer Science (2022), largest undergrad student org on campus, elected by hundreds of members, involves managing 40+ person board, \$400k budget, 25+ corporate sponsors, 100+ events / year.
- Intel ISEF Grand Award Winner (2nd Place) (2018) (International Science and Engineering Fair)
- National Security Agency Mathematics Honor Award (2018)

RESEARCH INTERESTS

Explainable AI - inherently interpretable architectures. Natural Language Processing - language understanding, generation and reasoning.

RESEARCH EXPERIENCE

IBM RESEARCH	New York, NY
Foundations of Trustworthy AI Team	January 2021 - August 2022
Research Mentors: Dr. Kush Varshney, Dr. Amit Dhurandhar	
<ul style="list-style-type: none">- Developed CoFrNets, a novel, inherently interpretable neural network architecture. Solely wrote code/experiments for 5 researcher team. Open-sourced in IBM’s AIX-360 - AI explainability toolkit.- First-author paper published in NeurIPS 2021, patented through IBM Patenting process	
Quantum Algorithms & Applications Research Team	May 2021 - August 2021
Research Mentor: Dr. Stefan Woerner	
<ul style="list-style-type: none">- Implemented Quantum GAN algorithms in QisKit (IBM’s quantum open-sourced python library)- Awarded a certificate of quantum excellence in quantum computing and quantum machine learning.	
HARVARD UNIVERSITY	Cambridge, MA
AI4LIFE Lab, PI: Professor Hima Lakkaraju	January 2022 - Present
<ul style="list-style-type: none">- Worked on team releasing OpenXAI, an open-sourced framework that evaluates the faithfulness, stability, and fairness of post hoc explanation methods with an easy-to-use API.- Built an entire fairness pipeline and wrote implementations of several post-hoc explanation methods from the ground up. OpenXAI accepted to NeurIPS 2022.- Pursuing thesis research on intersection of Large Language Models and Causal Reasoning	

HARVARD UNIVERSITY
Center for Brain Science, Department of Computer Science
PI: Dr. David Cox

Cambridge, MA
June 2017 – June 2019

- Led research titled “An Accurate Method for Tracking Rodent Eye Movements Using Convolutional Neural Networks for Biomedical Image Segmentation”: Published as first author at IEEE Engineering in Medicine and Biology Conference, 2018.
- Created “DYSCERN, A Scalable and Freely Accessible Machine Learning Based Application for the Early Detection of Dyslexia”. Worked with education specialists, invited to present across the country including Google HQ, Smithsonian, MIT Tech Review, Windward Dyslexia School.

PROFESSIONAL EXPERIENCE

IBM RESEARCH AI
Research Intern, Foundations of Trustworthy AI

New York, NY

January 2021 - August 2022

- Developed CoFrNets, a novel, inherently interpretable neural network architecture. Solely wrote code/experiments for 5 researcher team.
- First-author paper accepted to NeurIPS 2021, selected for IBM Patenting Process.
- Helped guide 2022 summer intern on a follow up project extending CoFrNets to Analog AI.

AMAZON WEB SERVICES
Chief of Staff, AWS University Venture Scout Program

New York, NY

May 2021 – May 2022

- Working and reporting directly to Amazon management to oversee a program of 200+ students from 150 schools. Meet with founders, perform due diligence, present findings to Amazon NY Headquarters.

INSTABASE
Software Engineering Intern, Machine Learning

San Francisco, CA

May 2020 – September 2020

- Developed and integrated novel handwriting detection algorithm with 95% Accuracy into Instabase’s platform. Used in 5 major client POCs (Bank of America, Royal Bank of Canada, etc.)
- Developed document-processing Deep Learning Models in end-to-end workflow for Business Process Automation (BPA) project for financial institutions for 40% increase in document.

SHIFT7
Data Analyst

New York, NY

November 2019 – January 2020

- Shift7 is a nonprofit founded by former CTO of the USA, Megan Smith.
- Analyzed news feeds for environmental equity. Presented findings to Megan Smith, former USA CTO.

HARVARD CONSULTING ON BUSINESS AND THE ENVIRONMENT
Technology Case Analyst

Cambridge, MA

September 2019 – September 2020

- Worked w/ world’s leading furniture retailer (IKEA) to integrate scalable solutions to supply chain and information digitization/management.
- Worked w/ global pharmaceutical giant (B. Braun) to propose AI-driven technologies for future product. Presented recommendations to CEO.

JP MORGAN CHASE AND CO.
Software Engineering Intern, Fintech Focus Fellow

New York, NY

July – August 2019

- Built full-stack web application to empower JPMC customers to quickly find the closest bank.
- Demoed in front of the Head of AI.

PUBLICATIONS

1. **Isha Puri** and David Cox, "A System for Accurate Tracking and Video Recordings of Rodent Eye Movements using Convolutional Neural Networks for Biomedical Image Segmentation," 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2018, pp. 3590-3593.
2. **Isha Puri**, Amit Dhurandhar, Tejaswini Pedapati, Kartikeyan Shanmugam, Dennis Wei, and Kush R. Varshney, ‘CoFrNets: Interpretable Neural Architecture Inspired by Continued Fractions’, in Advances in Neural Information Processing Systems, 2021, vol. 34, pp. 21668–21680.
3. Chirag Agarwal, Satyapriya Krishna, Eshika Saxena, Martin Pawelczyk, Nari Johnson, **Isha Puri**, Marinka Zitnik, and Himabindu Lakkaraju. ‘OpenXAI: Towards a Transparent Evaluation of Model Explanations’, in Advances in Neural Information Processing Systems, 2022.
4. **Isha Puri**, Neil Sehgal, Usha Bhalla. ‘Reconsidering the Algorithmic Fairness of Race Adjustment in Pulmonary Function Equations’, AI for Social Good Workshop, AAAI Conference on Artificial Intelligence, 2023.
5. **Isha Puri**, Eric Horvitz, and Himabindu Lakkaraju, “Evaluating Causal Reasoning Capabilities of Language Models”, Planned Submission to International Conference on Machine Learning, 2023.

PRESENTATIONS

- NeurIPS 2021, Main Conference Presentation – Virtual (December 2021)
- IEEE Engineering in Medicine and Biology Conference - Hawaii, HI (July, 2019)
- Machine Intelligence Conference – Cambridge, MA (September, 2019)
- Columbia University AI4ALL - New York, NY (September, 2019)
- Google Headquarters – Mountain View, CA (August, 2019)
- International Society for Technology in Education – Virtual (March, 2019)
- MIT Tech Review Emerging Technologies Conference – San Francisco, CA (March 2018)

TEACHING EXPERIENCE

HARVARD UNIVERSITY	Cambridge, MA
3rd Year Teaching Fellow, AM 120 - Linear Algebra and Big Data	May 2020 - Present
Harvard’s Derek Bok Certificate for Distinction in Teaching	
Peer Concentration Advisor - Applied Mathematics Department	May 2021 - Present

LEADERSHIP AND SERVICE

HARVARD WOMEN IN COMPUTER SCIENCE (WICS)	Cambridge, MA
Co-President	September 2019 - Present
<ul style="list-style-type: none">- Leading a 40-person board managing a ~\$400k budget for hundreds of members.- Source and secure sponsorships from over 25 tech companies ranging from FANG companies to startups.- Run over 100 social, academic, mentorship, career, sponsorship events yearly.- Liaise with the School of Engineering to pilot diversity and inclusion programs- Organizing a first-of-its-kind mentorship program for racially underrepresented minorities at Harvard that pairs Black, Hispanic, and Native American underclassmen with mentors in the tech industry to provide support, mentorship, and advice throughout their careers (Stripe, Facebook, Bloomberg).- Runs an under-upperclassman-mentorship program, through which I personally mentor 15 students / year.	

HARVARD TECH FELLOWS PROGRAM	Cambridge, MA
Cohort President, Harvard Undergraduate Technology Innovation Fellows	May 2022 - Present
<ul style="list-style-type: none">- One of 12 students selected per year to work and learn at the intersection of technology, business, and entrepreneurship under the mentorship of HBS professors, VC leaders, and founders.- Elected Cohort Co-President.	

CREAITE	New York, NY
Co-Founder	May 2016 - Present
<ul style="list-style-type: none">- Co-founded an organization called CreAIte that reached almost 600 girls nationwide with the goal of inspiring young women to pursue AI by immersing them in its artistic and humanistic impacts. CreAIte ran workshops around the country (from NYC and Chicago to San Francisco) and created a partnership program with the YMCA and AI4ALL.- Presented at conferences and created a curriculum that was used by the NYC Public School System!	

IEEE ETHICS COMMITTEE	San Francisco, California
Student Lead	May 2018 – May 2019
<ul style="list-style-type: none">- 1 of 20 students worldwide, developed ethical guidelines for Artificial Intelligence applications, co-authored paper that appeared in IEEE Journal.	

SCHOLARLY PEER REVIEWS

- NeurIPS - Neural Information Processing Systems Conference 2022
- AAAI - Conference on Artificial Intelligence 2022
- Cell Magazine - Patterns Journal

REFERENCES

Dr. Kush Varshney, Professor Hima Lakkaraju, Dr. Amit Dhurandhar, Dr. David Cox, Professor Eli Tziperman.