ISHA PURI

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EDUCATION

HARVARD UNIVERSITY — Cambridge, MA
BA, Applied Mathematics and Computer Science, GPA: 3.93 / 4.0 — May 2023
(Minor: Statistics) Advisors: Professor Hima Lakkaraju, Professor Salil Vadhan

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

- Roberts Family 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)
- 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 600 members, involves managing 40+ person board, $400k budget, 25+ corporate sponsors, 100+ events / year.

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

- 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

- 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

- 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 — Cambridge, MA
Center for Brain Science, Department of Computer Science — June 2017 – June 2019
PI: Dr. David Cox

- 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 — New York, NY
Research Intern, Foundations of Trustworthy AI — 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 — New York, NY
Chief of Staff, AWS University Venture Scout Program — 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 — San Francisco, CA
Software Engineering Intern, Machine Learning — 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 — New York, NY
Data Analyst — 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 — Cambridge, MA
Technology Case Analyst — 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. — New York, NY
Software Engineering Intern, Fintech Focus Fellow — 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 — May 2020 - Present
Harvard's Derek Bok Certificate for Distinction in Teaching

LEADERSHIP AND SERVICE

HARVARD WOMEN IN COMPUTER SCIENCE (WICS) — Cambridge, MA
Co-President — September 2019 - Present

- 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 Department of Computer Science 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 almost 15 freshmen and sophomores a year.

HARVARD TECH FELLOWS PROGRAM — Cambridge, MA
Cohort President, Harvard Undergraduate Technology Innovation Fellows — May 2022 - Present

- 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

- 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

- 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.