

Sanjana Singh

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Education

HARVARD UNIVERSITY- Master's in Computer Science

Expected May 2023

HARVARD UNIVERSITY- A.B. Computer Science, Secondary in Studio Art

Cambridge, MA

GPA: 3.98/4.0

Expected May 2023

Honors: **Phi Beta Kappa Senior 48**, Detur Book Prize (awarded to outstanding sophomores), John Harvard

Scholar (top 5% of class).

Relevant Coursework: Cryptography⁺, Artificial Intelligence, Applied Privacy for Data Science⁺, Fairness and Privacy⁺, Data Structures and Algorithms, Computational Complexity⁺, Systems Programming, Theoretical Computer Science⁺, Design of Usable and Useful Systems, Public Speaking. ⁺ denotes a graduate course.

Activities: Peer Advising Fellow, Women in Computer Science, Smart Women Securities, Ghungroo.

MCLEAN HIGH SCHOOL

McLean, VA

GPA: 4.54 W/ 4.0 UW, ACT: 36

June 2019

Honors: PTSA Mathematics Achievement Award, George Washington Medal for Excellence in Math and Science.

Technical Skills

Python, Java, C++, q/KDB+, SQL, CSS, HTML, PHP, PyTorch, Pandas, Keras, Tensorflow.

Experience

MORGAN STANLEY

New York City, NY

Quantitative Finance Intern

June 2022 – August 2022

- Developed machine learning cashflow, spread, and pricing models in Python and q/KDB+ to automatically quote residential mortgage-backed securities.

BANK OF AMERICA

New York City, NY

Sales and Trading Rotational Intern

June 2021 – August 2021

- Augmented data collection process for centralized risk model for Central Risk Book.
- Analyzed impact of new federal rate benchmark for Global Rates- Global Non-Linear desk.

**HARVARD MEDICAL SCHOOL- MASSACHUSETTS GENERAL HOSPITAL
PRISE Fellow**

Cambridge, MA

January 2020 – June 2021

- Predicted 30-day mortality from a chest X-ray with AI for patients undergoing cardiovascular surgery.
- Utilize machine learning methods in Python to distinguish COVID patients from Influenza patients.

**HARVARD RADCLIFFE INSTITUTE FOR ADVANCED STUDY
Radcliffe Research Team Member**

Cambridge, MA

June 2020 – August 2020

- [Project](#): Structural Determinants of COVID “Hot Spots” working in teams with law students to devise short- and long-term interventions using distributional legal analysis and historical research.
- Conducted numerous interviews with legislators and crafted policy proposals for stakeholders.

**NATIONAL INSTITUTES OF HEALTH
Pathways Engineering Student Trainee**

Bethesda, MD

May 2018 – January 2020

- Honors: **2019 National Library of Medicine Special Achievement Group Award** in recognition of landmark contributions applying deep learning for screening cervical cancer using photographic, whole slide liquid Pap smear, and cervical biopsy histopathology images.
- Published 3 papers in peer-reviewed conferences and journals.

UNIVERSITY AT BUFFALO

Buffalo, NY

Research Intern

August 2016 – July 2018

- Employed machine learning and deep learning techniques to detect Parkinson's disease from audio clips with 99.0% accuracy and published the results in a leading, peer-reviewed telemedicine journal.

Leadership & Activities

HARVARD UNIVERSITY

- Teaching Fellow August 2020- Present
 - **Artificial Intelligence** (CS 182)- Fall 2022, **Theoretical Computer Science** (CS 121)- Fall 2021, **Introduction to Probability** (STAT 110)- Fall 2020, Fall 2021.
 - Teach 20 students in a weekly section, write section materials, grade papers, and host office hours.
 - Received a **Certificate of Distinction in Teaching** (student reviews 5.0/5)
- Technology Manager at Harvard Yearbook Publications April 2020 – May 2022
 - Innovated and maintained the organization's website, software, and hardware infrastructure to securely processes over \$250,000 annually.
- Executive Business Board at Harvard Yearbook Publications April 2020 – May 2022
- Executive Finance Board at Make Harvard September 2019 – August 2021
 - Worked in a team of 5 to procure sponsorships to raise \$50,000 for the annual makeathon.

Publications and Presentations

- P Guo*, **S Singh***, Z Xue, LR Long, S Antani, "Deep Learning for Assessing Image Focus for Automated Cervical Cancer Clinical Decision Support," 2019 IEEE Biomedical and Health Informatics Conference. <https://doi.org/10.1109/BHI.2019.8834495>
- Z Xue, P Guo, **S Singh**, P Ganesan, S Rajaraman, LR Long, S K. Antani, "Developing automated image quality assessment methods for cervical cancer screening in low-resource settings," 2019 SPIE Photonics West BIOS (**Invited Paper**).
- P Ganesan, Z Xue, **S Singh**, L R. Long, B Ghoraani, S Antani, "Performance Evaluation of a Generative Adversarial Network for Deblurring Mobile-phone Colposcopy Images," 2019 IEEE Engineering in Medicine and Biology Conference. <https://doi.org/10.1109/EMBC.2019.8857124>
- VK Raghu, P Moonsamy, TM Sundt, CS Ong, **S Singh**, A Cheng, M Hou, L Denning, TG Gleason, AD Aguirre, and MT Lu. "Deep learning to predict mortality after cardiothoracic surgery using preoperative chest radiographs." *Annals of Thoracic Surgery*. 2022.
- **S Singh** and W Xu, "Robust Detection of Parkinson's Disease using Harvested Voice Smartphone Data: A Telemedicine Approach," *Telemedicine and e-Health Journal*, April 2019, <https://doi.org/10.1089/tmj.2018.0271>
- **S Singh**, A Cheng, V Raghu, M Lu, "Deep Learning to Distinguish COVID-19 from Influenza on Chest X-rays," American Thoracic Society 2021 Conference.
- VK Raghu, P Moonsamy, TM Sundt, CS Ong, **S Singh**, A Cheng, M Hou, L Denning, T Gleason, A Aguirre, MT Lu, "Deep learning to predict post-operative mortality after cardiothoracic surgery using pre-operative chest radiographs," 2021 American Heart Association Scientific Sessions.
- **S Singh**, et. al, "Deep learning to predict adverse post-operative outcomes after cardiac surgery from preoperative chest radiographs," 2020 MGH Clinical Research Day.

Course Projects*

- "[The Unique Games Conjecture](#)," CS 221: *Computational Complexity*.
- "[Physical Zero-Knowledge Proofs for Logic Puzzles](#)," CS 227: *Cryptography*.
- "[Guaranteeing Differential Privacy and Fairness: Analyzing the US Census](#)," CS208: *Applied Privacy for Data Science*.
- "[Optimal Opportunity Allocation to Maximize Intergenerational Mobility](#)," CS226r: *Fairness and Privacy Research*.
- "[Fooding](#)" (Figma prototype). CS179: *Design of Usable and Useful Systems*.
- "[A Lower Bound on the Sample Complexity of zCDP](#)," CS229r: *Information Theory*.

* every course project was completed as part of a group.