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: 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 Research: Adaptive Data Analysis+, Data Structures and Algorithms, Computational Complexity+, 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, SQL, CSS, HTML, PHP, PyTorch, Pandas, Keras, Tensorflow.

Experience

MORGAN STANLEY New York City, NY
Quantitative Finance Intern *June 2022 – August 2022*

- Built machine learning cashflow, spread, and pricing models in the Securitized Products Group.

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- MASSACHUSSETTS GENERAL HOSPITAL Cambridge, MA
PRISE Fellow *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 Cambridge, MA
Radcliffe Research Team Member *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 Bethesda, MD
Pathways Engineering Student Trainee *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*
  - Maintained the organization's website, software, and hardware infrastructure- handles $250,000+ annually
- Executive Business Board at Harvard Yearbook Publications *April 2020 – Present*
- Executive Finance Board at Make Harvard *September 2019 – August 2021*
  - Worked in a team of 5 to procure sponsorships to raise $50k 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

- L Golowich, R Hong, **S Singh,** R Xu, "The Unique Games Conjecture," *Harvard CS221: Computational Complexity.*
- J Boyland, D Gutierrez, **S Singh,** D Zhou, "Physical Zero-Knowledge Proofs for Logic Puzzles," *Harvard CS227: Cryptography.*
- A Huang, **S Singh**. "Guaranteeing Differential Privacy and Fairness: Analyzing the US Census," *Harvard CS208: Applied Privacy for Data Science*.
- K Alemu, D Pavlov, **S Singh**, "Optimal Opportunity Allocation to Maximize Intergenerational Mobility," *Harvard CS226r: Fairness and Privacy Research.*
- M Liu, N Kamal, **S Singh**, "Fooding" (Figma prototype). *Harvard CS179: Design of Usable and Useful Systems.*