Aalok Patwa

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Education

University of Pennsylvania Philadelphia, PA (Expected May 2025)
Intended BSE in Computer Science with Concentrations in AI/Computational Biology, Minor in Entrepreneurship from the Wharton School
Honors: Benjamin Franklin Scholar (awarded to top entering students for strengths in academics and research)

Stanford University Stanford, CA (August 2020) **Grade: A**
Dual enrolled in STATS202: Data Mining and Analysis through Stanford Summer Session as the only high school student. Placed in the top 10% of the class in the final Kaggle competition for ML-based prediction of response to schizophrenia treatment.

Archbishop Mitty High School San José, CA (May 2021) **GPA 4.76/4.00**
Honors: 3-time recipient of the General Excellence Award, given to the student ranked in the top 1% in at least 3 subjects (received for Science, English, Foreign Languages, Social Studies, and Religious Studies), National Merit Scholar (top 0.5% of PSAT takers), National AP Scholar (5/5 on all 10 exams).
Scores: 1580/1600 SAT, 1520/1520 PSAT, 800/800 SAT Biology, 800/800 SAT Chemistry, 800/800 Math Level 2.

Johns Hopkins University CTY Baltimore, MD (August 2018 – May 2019) **GPA 4.00/4.00**
Dual enrolled in AP Computer Science A and AP Statistics in my first two years of high school.

Work Experience

Research Intern, Rubin Lab, Stanford University Stanford, CA **(June 2019 - Present)**
Projects: Built computational pipeline for robust analysis of the triple-negative breast cancer tumor-immune microenvironment. Developed deep learning-based tool for handwritten patient survey recognition (given to Stanford Hospital). Performed nuclei segmentation of gigapixel histopathological images using deep learning.
Honors: First author of *Nature Communications Biology* paper accepted 5/18. Regeneron Science Talent Search Scholar (2021). Regeneron ISEF Finalist (2020). Synopsys Science Fair Grand Prize Winner (2020). International BioGENEius Challenge Regional Finalist (2020). Commended by U.S. Rep. Zoe Lofgren.

Projects

Self-directed Research **(December 2018 – March 2019)**
Built a deep learning model for real-time colon polyp detection and segmentation during colonoscopy. Adapted UNET architecture to manage high-resolution input and achieve minimum latency.
Honors: Invited speaker at the O'Reilly TensorFlow World Conference (2019). 1st in Category at Synopsys Science Fair (2019).

Founder, FindOurPets.com **(January 2018 - Present)**
Developed an AI-enabled service to reunite lost pets with their families by matching images of stray pets with images submitted by owners.
Honors: 1st in Category at Synopsys Science Fair. ASEI Emerging Technology Certificate of Achievement.

Activities

President, Archbishop Mitty Computer Science Club San José, CA **(2018 - 2021)**
Grew club from 4 to 110 members over 3 years as President. Organized project-based "subgroup" structure to mentor club members. Personally led the "Artificial Intelligence" subgroup; curriculum from this is being used for Mitty's first-ever data science class (planned Fall 2021). Based on its growth, the Club received its first-ever grant from Mitty administration in 2020.

Captain, Archbishop Mitty Speech and Debate Team San José, CA **(2017 - 2021)**
Led the policy debate team and tripled squad size. Coached argumentation, speaking, and philosophy to 40+.
Honors: Ranked 2nd in the nation by the National Debate Coaches Poll (2020). School's first-ever policy debate qualifier to the invite-only Tournament of Champions, where I placed top 16 in the country (2021, 2020). 2nd place Speaker at the invite-only National Speech and Debate Association National Tournament (2020). NSDA Academic All-American (top 2%).

Skills

Machine Learning: Strong expertise in TensorFlow, Keras, scikit-learn, scikit-image, numpy, and pandas. Experience with OpenCV and PIL.
Programming: Proficient in Python, Java, and R. Working knowledge of MATLAB.
Imaging: Strong expertise in multiplexed biomedical imaging modalities (MIBI, CODEX), flow cytometry, and digital pathology. Experience with thresholding, tessellation, and tiling.