Riya Tyagi
Senior at Phillips Exeter Academy, Exeter, NH
MIT Class of 2028

Hobbies:
Tinkering, Origami, Singing, Hiking

Extracurricular Activities:
Programing Captain of FIRST Robotics Varsity Team; Co-Head and AI Group Lead of Computing Club, Origami Club; AI Research Intern at Harvard Medical School; STEM Intern at NASA; Simons Research Fellow at Stony Brook University; Student Resarcher at Stanford AI4ALL; Creator of STEM Board Game; Founder and Senior Patrol Leader of Scouts BSA Troop; Dorm Proctor

Autobiography:
In ninth grade, I viewed AI as a panacea—capable of improving public health, revolutionizing robotics, and monitoring the planet. That summer, I gained hands-on experience programming AI at the Stanford AI4ALL program, where I developed logistic regression models to map human population density with remote sensing data. After the program, I cold-emailed two Penn State University professors, with whom I worked on a project using machine learning to detect Parkinson's disease from handwriting samples. I first-authored a scientific paper and open-sourced the model. NVIDIA Health featured the research on their blog and social media. My AI experience led me to receive a paid AI research position at Massachusetts General Hospital in tenth grade. During my first lab meeting, I discovered a startling truth: AI could predict a patient's race from their medical images when human experts could not. Disturbed, I scoured published papers for an explanation, but researchers had yet to find one, and with the help of the lab, I began a research investigation. Over 18 months, I trained hundreds of Convolutional Neural Networks, identified image features enabling AI to learn self-reported race, and first-authored a scientific paper.

I presented my findings at a Mass General symposium—placing first in the high school division—and later at The Annual Association for Research in Vision and Ophthalmology (ARVO) meeting, the largest gathering of eye and vision researchers in the world with over 11,000 attendees from 75 countries. I also won first place at the New Hampshire Science and Engineering Exposition, and was a Regeneron Science Talent Search Top-40 Finalist.

I further expanded on my research work as a Simons Research Fellow, developing Generative Adversarial Networks and Diffusion Models to generate synthetic medical images to augment minority classes in datasets, helping mitigate algorithmic bias. I've learned that AI is neither a panacea nor a curse, rather a tool that we must design and use responsibly. Further I have recently discovered my interest in the intersection of AI and sustainability. A passion for environmental science was first sparked through the Science Olympiad, which led me to an internship with NASA's Earth Science team. Here, I coupled AI with Landcover and LANDSAT data to examine the way residential land responds to rising temperatures.

Outside of research, I program for 15534 VERTEX, a World Finalist robotics team. I've been recognized in Science and Computing Olympiads and as NCWIT National Award winner. In 2019, I founded HerComputing, a 501(c)(3) nonprofit, and created a STEM board game used in 100+ schools. I'm grateful to be part of the 2024 U.S. AI Team, and look forward to further exploration and discovery in AI. None of this would have been possible without the help from those who took their time to mentor me through the years. Thank you to Dr. Praveer Singh, Dr. Pete Campbell,