

Karan Gupta

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EDUCATION

Amador Valley High School

2020 – 2024

Relevant Coursework: AP Computer Science A, Advanced Computer Science, AP Calculus BC, AP Statistics, AP Physics C, AP Psychology, AP English Lang/Comp, AP World History

GPA: 4.44/4.0

College Courses (taken externally):

Las Positas College: MATH 3: Multivariable Calculus

Fall 2023 & Spring 2024

DeAnza College

Summer 2023 & Summer 2021

CIS 56: Network Security, CIS 44F: Big Data and Analytics

Foothill College

Spring & Summer 2022

CIS 53C: Ethical Hacking, ECON 1B: Microeconomics

HarvardX: CS50's Introduction to Computer Science

Spring & Fall 2020

LEADERSHIP & EXPERIENCE

Cybersecurity Curriculum and Learning Platform for Students (cyber.csignited.org)

Founder, CEO

Oct 2021 – Present

- Working with PUSD teachers to develop Cyber@CSIgnited, a lucid curriculum and learning platform to teach cybersecurity to middle and high school students
- Driving team of 5 in creating a web platform, guides, and hands-on demos and labs
- Dedicated 100+ hours to content and platform development, including:
 - Modules teaching Linux, networking, web exploitation, cryptography
 - Web platform (front-end/back-end)
 - Browser-based simulated bash terminal, encoding/decoding tools
 - Vulnerable webpages
- Marketed and held introductory workshop, drawing 100+ sign-ups
- Curriculum currently used in 3 schools (1 local middle school, 2 high schools in India); in talks to begin piloting in 3 others
- Publishing [blog series](#) (*We Don't Byte! A Cybersecurity Digest*) breaking down latest cybersecurity news for beginners
- Recognized for my efforts with a [feature](#) in AmadorValleyToday

Purdue University

Student Researcher

May 2023 – Oct 2023

- Conducted research on agent sampling in federated learning under the guidance of a postdoc at Purdue
- Self-learned multivariable calculus, studied math foundations of neural networks (e.g., backpropagation, SGD)
- Coded federated-learning network for testing, conducted trials, and designed a novel performance metric to analyze results
- Identified key patterns in data that prompted advisor to reformulate research questions
- Documented findings in a [formal research paper](#) (SSRN ID# 4620297), responsible for writing Abstract, Introduction, Related Works, Methodology, and Findings sections

Machaa (buildgpt.ai)

Software Engineering Intern

Jul 2023 – Sept 2023

- Company builds tools to host and enable next-generation Generative-AI applications
- Initiated and currently spearheading company-sponsored hackathon project to enhance product visibility and usership in target student demographic
- Programmed front-end for BookBot product; built new company website from scratch to better communicate vision, portfolio, usership to investors
- Implemented exception handling for primary product; changes rolled out to 100k+ users

CSIgnited (csignited.org)

Founder

Jun 2021 – Present

- Established nonprofit organization to provide free CS- and cybersecurity-related education
- Developed and taught curriculum with 60+ hours of content (slides, demos, and interactive activities) introducing Python, web, and mobile development to 50+ middle and high school students
- Managed a team of 3 instructors teaching classes in ML, Python, and Java and reviewed content to ensure consistent quality

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AV CyberSecurity Club

President

Vice President

Amador Valley High School

Jun 2022 – Present

Aug 2021 – Jun 2022

- Among 3 to reestablish the club, recruited 30+ active members
- Created and taught material for 40+ club meetings (and counting) on topics including networking, Linux, CTF skills (e.g., web, cryptography), pen-testing skills
- Placed 88th (top 6%) out of 1498+ middle and high school teams competing in CMU's 2023 PicoCTF
- Organized two digital-safety seminars at Pleasanton Senior Center, reaching 40+ seniors

AV Fencing Club

Vice President

Amador Valley High School

Aug 2021 – Present

- Responsible for club finances (totaling \$300) and marketing
- Taught new members the basics of fencing footwork and blade skills
- Recruited new beginners' group for my fencing gym outside of school

AmadorUAVs (amadoruavs.com)

Member, UAV Software Team

Amador Valley High School

Apr 2021 – May 2023

- Part of the software team responsible for development of a competition drone
- Redesigned team website (amadoruavs.com)
- Co-developed a prototype ground control system for the drone
 - Worked with UAVCAN protocol to allow lightweight publish-subscribe messaging between GCS plugins and onboard drone components
 - Wrote middleman node to convert messages between MavLink and UAVCAN protocols and enable communication with drone
- Presented on the design of the ground control system at 2021 [PX4 Dev Summit](#)
- Developed a prototype image transport system using latest protocols (HTTP3/QUIC) to improve reliability
- Our team went on to win 2nd place globally in 2022 collegiate AUVSI SUAS competition

Cisco High School Internship Program

Participant, Awardee

Amador Valley High School

Summer 2022

- Learned about and worked with software tools (i.e., Docker) and Cisco technologies (i.e., SD-WAN, NFV)
- Developed Hybridge: an ML-based meeting recommendation tool
- Won 2nd place in Cisco BridgeHacks hackathon among 30 teams

ACE Coding (acecoding.org)

Coding Instructor

Amador Valley High School

Aug 2020 – May 2022

- Prepared and taught C++ curriculum for 16 classes spanning 25+ hours to offer middle schoolers advanced learning opportunities
- Curriculum has now been used by 5 other instructors to teach 40+ students to date
- Helped design website for and taught a workshop at ACE Code Day hackathon reaching 20 students

InspiritAI Student Scholars Program

Selected Participant

Summer 2021

- Studied the fundamentals behind common ML algorithms (e.g., linear/logistic regression, neural networks, CNNs, NLP)
- Used Python ML libraries (e.g., NumPy, Pandas, PyPlot) to build an object detection model for vehicles

MISCELLANEOUS

Technical Skills

- Advanced proficiency in C, Java, Python; Proficient in C++
- Full-Stack Software Development - Mobile/Web Development (HTML/CSS/JS, Android Framework)
- Networking, Cybersecurity
- Machine Learning (NumPy, Torch, Pandas, TensorFlow)

Other Interests

- Fencing (Epee) - Competitive Epee fencer for 6+ years; placed 29th at the 2023 Div-III National Championship