

# Esha Karlekar

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## EDUCATION

University of California, Berkeley

Graduating: December 2025

**B.S. Electrical Engineering and Computer Sciences (EECS); Minor in Public Policy**

**GPA:** 3.7/4.0; **Relevant Coursework:** CS170 (Efficient Algorithms/Intractable Problems), CS188 (Intro to AI), CS61C (Computer Architecture/Machine Structures), CS61B (Data Structures/Algorithms), CS70 (Discrete Math/Probability), EECS 16A & 16B (Electrical Engineering & Linear Algebra), CS61A (CS Fundamentals), CS195 (Ethics of Computer Technology)

**Thomas Jefferson High School for Science and Technology**

**GPA:** 4.52/4.00; **Relevant Coursework:** Mobile/Web App Development, Machine Learning 1 & 2, Artificial Intelligence 1 & 2, AP Computer Science/Data Structures, AP Statistics, Multivariable Calculus, Linear Algebra, Discrete Math

## EXPERIENCE

**Netflix, Software Engineering/Machine Learning Intern**

May 2024 – Present

- Leveraging ML to pinpoint anomalies in time series data of authentication requests, preventing account takeover & fraud

**SpaceX, Software Engineering/Machine Learning Intern**

Jan 2024 – Apr 2024

- Used machine learning (DNNs, XGBoost) and parallelizable heuristic decision tree search methods (MCTS) applied to the fundamentals of orbital dynamics to create flight path trajectories and speed up mission planning
- Resulted in a 10x speedup in trajectory computation and a 50-75% increase in the accuracy of a given neural net guess

**MITRE, Applied Machine Learning Intern (Transitioned to Part Time Engineer Fall 2023)**

May 2023 – Dec 2023

- Used generative AI large language models (BART, GPT-J, LLaMA) to create summarization/query tools for government satellite records, impacting 3 governmental organizations; created optimization methods to decrease runtimes by 99.9%
- Utilized object detection CV models (YOLO, Tensorflow) to track vehicles in satellite imagery data with >98% accuracy

**PUMA, Tech Consultant (Contract)**

Sep 2023 – Jan 2024

- Identified how AI (content generation, predictive analytics) can be incorporated into PUMA's marketing scheme

**Bluebonnet Data, Data Fellow Volunteer**

April 2023 – Jul 2023

- Data analysis for progressive campaigns, conducted analysis using R, Python, ArcGIS, SQL for data on 60,000+ voters

**Airbnb, Tech Consultant (Contract)**

Feb 2023 – April 2023

- Researched artificial intelligence techniques to combat deepfakes, social engineering, and other hacking methods

**Valley Consulting Group, Technology Consultant**

Feb 2023 – Present

- Consultant for Berkeley's premiere tech-consulting group; works with Fortune 500's and industry-leading tech companies

**Cardiac Vision Laboratory at UCSF, Machine Learning Research Apprentice**

Sep 2022 – Aug 2023

- Designed novel deep learning architectures to remove illumination/motion artifacts from optical imaging of heart tissues
- Utilized variety of computer vision techniques to create synthetic video data and build PWC-Net (CNN) pipeline

**HHMI Janelia Research Campus Funke Lab, Laboratory Assistant/Intern**

May 2020 – Jul 2022

- Designed, implemented, and tested a machine learning system for protein identification in electron microscopy images
- Created computer vision simulations to render marker proteins in fly brain data, created training pipeline for U-Net
- Visualized key metrics (distance, density, vesicle type) in Python for secondary paper to be published in Nature

**TJHSST Computer Systems Senior Research Laboratory, Student Researcher**

Aug 2021 – Jun 2022

- Implemented system to translate eye blinks detected from electroencephalograms to Morse code to English text-to-speech

**George Mason University ASSIP, Full-Stack Development Research Intern**

Jun 2021 – Aug 2021

- Built mobile app to parse through geospatial environmental data to inform users about water supply/farmland viability
- Worked on server-side and backend in JavaScript, Python, Flask, and ArcGIS (to parse through map data)

**US Naval Research Laboratory, Reinforcement Learning Research Intern**

Oct 2020 – Dec 2020

- Researched/implemented reinforcement learning techniques in application to imperfect information gaming for US Navy
- Built multiple bots (using MCTS, Minimax, etc.) to play reconnaissance blind chess, achieved final win rate of above 97%

## SKILLS

**Languages:** Python, Java, JavaScript, HTML C, C++, Scheme, Swift, RISC-V, SQL **AI/ML:** PyTorch, TensorFlow, OpenCV

**Tools:** Git, NumPy, SciPy, Scikit-Learn, Pandas, jQuery, Arduino, Matplotlib, Flask, ArcGIS, MATLAB, JSON, Figma

**Areas of Experience:** Object-Oriented Programming, Artificial Intelligence, Computer Vision, Big Data, Data Structures, Neural Networks, Web/Mobile App Dev, Statistical Analysis, Public Speaking, Research, Decking, Image Processing, NLP