Esha Karlekar

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EDUCATION

University of California, Berkeley *Graduating: Dec 2025*

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

GPA: 3.7/4.0; **Relevant Courses**: CS61C (Computer Architecture/Machine Structures), CS61B (Data Structures/Algorithms), CS70 (Discrete Math/Probability), EECS 16A & 16B (Electrical Engineering & Linear Algebra), CS61A (CS Fundamentals)

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, Incoming Software Engineering/Machine Learning Intern *Incoming May 2024*

- Incoming Summer 2024 Software Engineering/Machine Learning Intern on the Trust & Safety Team

SpaceX, Software Engineering/Machine Learning Intern *Jan 2024 – Present*

- Using machine learning (DNNs, XGBoost) and parallelizable heuristic decision tree search methods (MCTS) applied to the fundamentals of orbital dynamics to create flight path trajectories for Starship and speed up mission planning

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

- Using 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%
- Utilizing object detection CV models (YOLO, Tensorflow) to track vehicles in satellite imagery data with >98% accuracy

PUMA, Tech Consultant (Contract) *Sep 2023 – Jan 2024*

- Identifying 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

AWARDS/LEADERSHIP

Cal Alumni Association Leadership Award; Fannie Mae College Scholar Award (x2); National Merit Finalist; AP Scholar Award