Barnett Yang

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EDUCATION

University of California, Berkeley *Expected: May 2024*
B.A. Computer Science and Mathematics *GPA: 4.0/4.0*
Relevant Coursework

- **Computer Science:** Neural Networks and Deep Learning, Artificial Intelligence, Efficient Algorithms and Intractable Problems, Data Structures, Computer Security, Machine Structures, Foundations of Data Science, Information Devices and Systems
- **Mathematics:** Discrete Mathematics and Probability Theory, Multivariable Calculus, Linear Algebra, Differential Equations, Real Analysis, Mathematical Economics

TECHNICAL SKILLS

Languages: Python, Java, C, Go, SQL, JavaScript, HTML/CSS, LaTex, RISC-V
Data Science/Machine Learning: Pandas, Matplotlib/Seaborn, NumPy, Scikit-learn, Bayes Server, Tensorflow
Web Development: Node.js, Express, React, MongoDB, MySQL, Bootstrap, EJS, Heroku, General REST API Development
Software Engineering: Git, Postman, VS Code, IntelliJ, PyCharm, Figma, Notion

WORK AND LEADERSHIP EXPERIENCE

Amazon *San Francisco, CA*
Software Development Engineer Intern *May 2022 – Present*

- Ideated and developed AWS full-stack services for repair operation eligibility (ROE) transparency, thereby helping developers and vendors verify ROE proactively, reducing tech team workloads, and improving item repair efficiency. Work requires integrating several existing AWS services and tools, including AWS Lambda, AWS CDK, and inventory and database services.
- Improved and refactored manifest validation logic by incorporating item condition, quantity, owner, and item identifier variables.

Sandia National Laboratories *Albuquerque, NM*
Machine Learning R&D Intern – Math Analysis and Decision Science *May 2021 – May 2022*

- Investigated novel techniques in feature selection, random forest MDI discretization, and structural learning for Bayesian network training and development, improving statistical robustness metrics by over 15% on imbalanced red-team cybersecurity datasets.
- Reduced the prior Bayesian network manual workflow by 90% and allowed accelerated machine learning development for corporate network anomaly detection by constructing a Java to Python extension library that streamlined Bayesian network creation and testing pipelines, with applications and use across multiple labs/projects at Sandia.
- Performed machine learning research culminating in a first-authored publication under review for HICSS 2023 presenting applications of Bayesian networks and their relevant methodologies, best practices, and heuristics in cyber-attack detection.

UC Berkeley PlexTech *Berkeley, CA*
External Vice President *December 2021 – May 2022*

- Reformed semester recruitment processes of over 100 applicants via detailed recruitment timelines and member accountability measures, and decreased deliberation man-hours by over 50% through the creation of objective score-based assessment tools.
- Organized UC Berkeley "Cal Intro to Tech," a joint recruitment drive for nine student tech organizations with over 200 attendees.
- Led planning of inter-organization networking and publicity events, including speaker events by LinkedIn managers.

Project Manager – Tassel and Scholarhub *February 2021 – December 2021*

- Coordinated the creation of back-end routes, set up MERN development frameworks and database models, and led project ideation for ScholarHub Gather to create a sustainable online education platform API with plans to pilot at UC Berkeley.
- Established project scope and API designs with startup CEOs, formulated developer onboarding and agile development sprints.
- Helped manage client sourcing and onboarding processes.

PROJECTS, PUBLICATIONS, AND AWARDS

Pathfinding and Sorting Visualizers
User-interactive Node.js teaching aid for Dijkstra's, A*, and bidirectional pathfinding algorithms and comparison and radix sorting algorithms. The pathfinder includes a recursive division maze generator and functionality to add wall and weighted nodes.

COVID-19 Data Analysis Exercise
Data analysis study analyzing the economic effects of the COVID-19 pandemic on the racial achievement gap using BLS and HSLS data. Findings were compiled into a research report and published on *Towards Data Science* Editors' Picks with nearly 2000 views.

Yang, B., Hoffman, M., Brown, N.: Bayesian Networks for Interpretable Cyberattack Detection. Sandia National Laboratories, 2022. – Submitted for review: HICSS 2023.

Yang, B.: Impacts of the COVID-19 Pandemic on the American Socioeconomic Academic Achievement Gap Through the Perspective of Race, Income, Unemployment, and Poverty. Towards Data Science, 2020.

Twice American Invitational Mathematics Examination (AIME) Qualifier