

# Adnan Ashraf

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## EDUCATION

### UC Berkeley

Berkeley, CA

*Bachelor of Arts in Computer Science — GPA: 3.96*

*Expected Graduation: Dec 2024*

**Coursework** *Data Structures (A+), Efficient Algorithms (A), Operating Systems (\*)*

*Machine Structures (A+), Optimization Models (A-), Computer Security (\*)*

*Techniques of Data Science (A+), Discrete Mathematics & Probability (A)*

## EXPERIENCE

### Research Computing Intern

August 2024 - Present

*UC Berkeley Research IT*

- Gaining experience with high-performance computing, systems administration, and research support technologies
- Assisting in the maintenance and optimization of the Savio HPC cluster, ensuring efficient execution of large-scale computational tasks critical for research projects
- Providing technical support to researchers, helping them optimize their code for HPC environments and troubleshoot issues to maximize resource utilization

### AI Engineering Intern

May 2024 - August 2024

*World Salon*

- Led a team of 3 to develop a sophisticated AI-based data collection and processing pipeline utilizing python and OpenAI to streamline business operations increasing the bandwidth to handle 100 times more customers
- Developed and deployed software automating email sending, tracking, and responding for business and marketing, handling 10,000+ emails a week utilizing AI techniques such as retrieval augmented generation for handling queries
- Wrote data collection scripts to successfully gather high quality data, increasing model output quality by 56%
- Optimally designed and managed AWS RDS Postgresql database to support and scale all automated systems

### NASA Research Fellowship

May 2022 – Aug 2022

*National Aeronautics and Space Administration*

- Led the design and implementation of a data visualization platform using leaflet.js, enabling real-time, dynamic heat maps for geographical radiation analysis
- Built a sophisticated data pipeline to convert raw radioactivity data into actionable visual metric
- Visualized geographical radioactivity using a dynamically updated heat map built using leaflet.js
- Leveraged Firebase back-end data storage for efficient data storage, retrieval, and visualization, which resulted in enhanced data management capabilities as well as increased scalability

## PROJECTS

### Efficient Convolver | C, OpenMP, OpenMPI, Intel Intrinsics (SIMD)

- Created an optimized program to efficiently convolve sets of large matrices together using C
- Implemented SIMD vector operations to cut the number of operations required resulting in a 417% speedup
- Utilized OpenMP multithreading to parallelize operations to execute simultaneously, reducing the runtime by 43%
- Optimized code to take advantage of CPU cache, lowering memory retrieval time resulting in extra 11% speedup
- Concluded with a 10.69 time speedup after strategically unrolling dense loops to avoid CPU control hazards

### Spam Classification API | Python, Numpy, Pandas, Scikit-Learn, Matplotlib, Regex, node.js, express.js, AWS Lambda

- Created an SVM classifier based machine learning model to classify an email as spam using the text of the email
- Achieved a test accuracy of 95.4% through effective feature engineering and tokenization of email content
- Improved model performance with regularization techniques, attaining 90% precision and 96% recall
- Developed and deployed a RESTful API with Node.js and Express.js, hosted on AWS Lambda and API Gateway, to facilitate real-time email classification

## TECHNICAL SKILLS

**Languages:** Python, C, Java, JavaScript, SQL, Risk-V, x86, Matlab

**Technologies:** Git, AWS, Google Cloud, Bash, GDB, Linux

**Libraries:** Pandas, Scikit-learn, SQLAlchemy, Matplotlib, Seaborn, NumPy

**Frameworks/Tools:** Node.js, Express.js, Intel Intrinsics, OpenMP, OpenMPI, Docker

**Database:** PostgreSQL, MySQL, Firebase, Amazon RDS