Joshua Lozano

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joshualozano2002 • Expected Graduation: **Spring 2025**

Education

Sonoma State University **Rohnert Park, CA**

BS Computer Science, GPA 3.5 *2020–2025*

- **Dean's list:** 2022-2025
- **Relevant coursework:** Algorithms Analysis, Data Structures, Software Design and Development, Programming Languages, Operating Systems, Theory of Computation, Database Management Systems Design, Differential and Integral Calc II, Quantum Computing, Computer Vision.

Experience

NASA **UC Irvine, CA**

NASA Intern *June 2024–August 2024*

- Utilized Python, Matplotlib, Pandas, and NumPy to process and analyze large datasets, generating clear, insightful graphs and visualizations to support research findings.
- Designed and executed an independent research project focused on specific topics such as air quality, greenhouse gases, and aerosols, leveraging advanced analytical tools and techniques.
- Collaborated with interdisciplinary teams of students, scientists, and NASA personnel to interpret and present data-driven results, enhancing research communication and teamwork skills.
- Operated state-of-the-art atmospheric instrumentation and supported field deployments to measure air composition and other environmental variables, gaining hands-on experience with advanced research tools.

Cattlemens Steakhouse **Petaluma, CA**

Food Server *September 2022–December 2024*

- Quickly adapted to a fast-paced, high-pressure environment, efficiently managing multiple tasks and prioritizing customer needs.
- Collaborated with a diverse team to deliver high-quality service, ensuring clear communication and attention to detail.

Skills

Programming: C/C++, Python, SQL, Unix, x86, ARM.

Tools and frameworks: Clion, Git, Jupyter Notebook, Matplotlib, Sklearn, Tensorflow, Curses, NumPy, Pandas, Unreal Engine, Curses, Keras, Threads.

Projects

VOC Composition and Ozone Formation Potential Observed Over Long Beach, California:

- Conducted NASA-supported atmospheric and environmental research using data from research aircraft, leveraging Python and Matplotlib for large-scale data analysis and visualization, collaborating with interdisciplinary teams to interpret findings, and presenting results in a professional symposium.
- Automated data handling and statistical calculations to compare VOC levels and OH reactivity trends between 2014 and 2022.
- Utilized QGIS for geospatial analysis, mapping VOC concentrations over Long Beach and integrating environmental data for trend analysis.

C-like syntax defined in Backus-Naur Form (BNF) Interpreter:

- Developed a C-like language interpreter from scratch using deterministic finite state automata (DFA) and recursive descent parsing, implementing lexical analysis, syntax parsing, AST construction, and execution logic to reinforce concepts in compiler design and data structures.
- Designed and implemented a linked-list-based symbol table to manage variables, functions, and scope resolution, ensuring efficient identifier lookup and semantic correctness.
- Developed a recursive-based execution engine that traverses the Abstract Syntax Tree (AST), evaluates expressions (including postfix notation for arithmetic and Boolean logic), and executes program statements.

The Maze Project:

- Engineered a C++ maze solver using Kruskal's Algorithm and Union-Find data structures, constructing a graph-based representation with adjacency lists, applying Minimum Spanning Trees (MST) for optimal pathfinding, and developing a console-based visualization with dynamic maze generation and efficient cycle detection.
- Designed multiple maze generation patterns with dynamic weight assignments, allowing for varied and customizable maze structures to test different algorithmic solutions.