

## ALEXANDER ARIAS

Westmorland, CA

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### SOFTWARE DEVELOPER

Software Developer and U.S. Army Veteran with experience in full-stack development, systems programming, and team-based software projects. Skilled in Java, Python, C++, and modern frameworks, including .NET and Node.js. Led and collaborated on complex projects, from building custom operating system components to designing instruction set architectures. Strong foundation in data structures, algorithms, and computer security, backed by a Bachelor of Science in Computer Science from UC San Diego, and committed to continuous learning, leveraging both technical and leadership skills to drive innovative software solutions.

- Programming Languages
- Software Development
- Operating Systems
- Debugging | Testing
- Version Control
- Web Development
- Mathematics | Algorithms
- Tutoring | Mentorship
- Bilingual | Spanish

### EDUCATION | CERTIFICATION

**Bachelor of Science in Computer Science** | University of California – San Diego  
**Associate of Science** | Computer Science, Mathematics, Physics | Imperial Valley College

### TECHNICAL COMPETENCIES

**Frameworks/Libraries:** .NET, Node.js, JUnit

**Programming:** Java, Python, C, C++, C#, JavaScript, HTML, CSS, Assembly, SystemVerilog

**Software:** Microsoft Office 365 (Word, Excel, PowerPoint), Google Workspace (Docs, Sheets, Slides)

**Version Control/Collaboration Tools:** Git, GitHub

**Development Tools/Debuggers:** Gnu Debugger (GDB), Valgrind, Linux Command Line Tools

**Operation Systems:** Linux (Ubuntu, CentOS), Windows (7, 10, 11)

### PROFESSIONAL EXPERIENCE

**University of California – San Diego | San Diego, CA**

**Sep. 2022 – Dec. 2023**

**Outreach Volunteer, Eta Kappa Nu Engineering Honor Society** (Jan. 2023 – Dec. 2023)

- Taught fundamental computer science concepts to students in underserved elementary and high schools.
- Increased youth interest in STEM by organizing interactive demos on coding and algorithms.
- Mentored high school students on academic pathways in computing, which increased computer science club participation.

**Computer Science Tutor** (Sep. 2022 – Dec. 2022)

- Tutored students in C and Assembly, which led to a 90% pass rate in Computer Organization and Systems Programming courses.
- Created tailored instructional plans to reinforce course concepts and enhance coding confidence.
- Conducted one-on-one and group sessions, which increased student test scores.

**Imperial Valley College | Imperial Valley, CA**

**Jun. 2018 – Jun. 2020**

**Mathematics Tutor**

- Tutored students in Algebra through Multivariable Calculus and Discrete Math; supported GPA improvement for 30+ students.
- Developed custom learning plans that improved comprehension of complex math topics by 40%.
- Recognized on the President's Honor List every term; maintained a 4.0 GPA across 101+ units.

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**United States Army | Various Locations**  
**Indirect Fire Specialist****Jun. 2013 – Oct. 2016**

- Operated and maintained advanced mortar systems valued at \$300K+ to deliver precision fire support in mission-critical environments.
- Managed tactical communications as Radio Telephone Operator (RTO); maintained secure voice transmissions across units.
- Trained and supervised junior team members in equipment safety, mission protocols, and leadership fundamentals.

**PROJECTS****The Super Simple Instruction Set Architecture (ISA) and Core Processing Unit***Technologies: System Verilog, Python, C*

- Led a 3-person team in designing and developing a 9-bit instruction set and CPU for Forward Error Correction (FEC) tasks; completed the project 40% ahead of deadline.
- Achieved zero-bug functionality upon deployment by implementing rigorous unit testing and version control practices.
- Architected a modular hardware simulation environment and enabled scalable feature testing and debugging.
- Automated verification tasks using Python scripts and reduced manual test time.

**Nachos Operating System***Technologies: Java, C, Linux Commands*

- Developed core OS modules for Synchronization, CPU Scheduling, and Memory Management within a 4-person team.
- Improved memory allocation and deallocation processes through efficient paging implementation.
- Resolved concurrency issues in thread management, which improved performance in test scenarios.
- Contributed to team-wide code reviews and documentation; ensured consistent architecture and code quality.

**Multi-Platform Post Scheduler***Technologies: HTML, CSS, JavaScript*

- Co-led an 8-member team to develop a CRUD web application for scheduling posts across social media platforms like Twitter, Facebook, and Instagram.
- Designed and implemented user-friendly front-end interfaces with responsive design best practices.
- Integrated third-party APIs and local storage to streamline user content management.
- Strengthened skills in asynchronous JavaScript and RESTful design patterns.

**Graphics Shadow Mapping and 3D Rendering Projects***Technologies: C++, C, OpenGL*

- Collaborated with a team of 2 to develop a 3D graphics rendering application featuring dynamic shadow mapping using OpenGL.
- Applied advanced graphics techniques such as fragment shaders, Mandelbrot fractals, and 3D rotation algorithms to build immersive visual scenes.
- Designed modular code to support extensions and performance optimization in scene rendering.