ALVARO VALDEZ-DURAN

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Education

University of Washington   **Expected June 2025**
Bachelor of Science in Computer Science   *Tacoma, Washington*

Relevant Coursework

- Data Structures
- Software Testing and QA
- Database Management
- Object-Oriented Programming
- Software Engineering
- Web Development
- Machine Learning
- File Scripting
- Computer Security

Experience

University of Washington   **September 2024 - Present**
Teaching Assistant   *Tacoma, Washington*

- Motivated to assist over 30 students in understanding core programming concepts like variables, loops, and conditionals in an introductory programming course, leading to a 20% increase in average student performance on assignments.
- Provided hands-on support during weekly lab sessions, offering technical support to students debugging their code and troubleshooting usability issues in their programs.
- Worked with provided lab materials to facilitate weekly lab sessions, increasing student engagement and improving the retention of key concepts by 15%.
- Utilized strong communicative skills in conveying complex concepts to students in an understandable manner to resolve issues.

Projects

Library Book Management System | *React, Node.js, Next.js, Postgres, Docker, Postman, Git*   **Oct 2024 - Dec 2024**

- Collaborated with a flexible team of 4 developers on the full stack development of a web application for managing library books, creating an Agile environment for iterative development and continuous improvement.
- Developed automated backend API routes for seamless deletion by ISBN, title, or author, integrating PostgreSQL for real-time data management and data manipulation across systems.
- Utilized Python scripting to clean and preprocess incoming .csv files for bulk book imports, ensuring consistent data formatting and minimizing errors before database insertion.
- Developed backend automation routes in Node.js to support data integration workflows, enabling efficient deletion and manipulation of 10,000+ records through custom API endpoints.
- Participated in regular sprint reviews and retrospectives, contributing to workflow automation ideas for faster testing and deployment.

Dungeon Adventure | *LibGDX, Java, Git*   **July 2024 - August 2024**

- Contributed innovative gameplay ideas and collaborated closely with team members to design creative dungeon exploration mechanics, ensuring seamless integration between player actions, combat logic, and visual/audio feedback.
- Contributed to 30% of core systems, ensuring seamless integration between player actions, combat logic, and visual/audio feedback.
- Worked closely with teammates to manage project workflows, applying Agile-inspired collaboration techniques to meet tight deadlines.

Evolved Names | *Java*   **January 2024**

- Designed and implemented a genetic algorithm that simulated evolutionary processes, including mutation, crossover, and selection, to evolve strings towards a target name within 100 generations.
- Implemented automated mutation logic for insertion, deletion, and replacement, introducing genetic diversity for optimal convergence.
- Developed a crossover strategy that combined traits from two genomes, ensuring efficient recombination while maintaining genetic diversity for faster convergence.
- Achieved target name evolution in less than 50% of the allowed generations on average, demonstrating efficient algorithmic design and fine-tuned parameterization.

Technical Skills

Languages: Python, C, C#, C++, Java, JavaScript, TypeScript, SQL, R
Developer Tools: VS Code, IntelliJ, PyCharm, Git, GitHub
Technologies/Frameworks: LibGDX, React, Next.js, Node.js, Docker, Postman, Arduino, Web Application Frameworks
Cloud Platforms: Azure, Render