

# Nicolaas Zwart

Backend Dev, Embedded Rust Engineer

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## PROFESSIONAL SUMMARY

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Computer Science graduate with project experience in full-stack development, embedded systems, distributed systems, software testing and team leadership. Delivered complex projects from concept to deployment, including production web applications and embedded firmware in Rust. Background in screenwriting and copywriting.

## EDUCATION

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- **Oregon State University, College of Engineering** Corvallis, OR  
*Bachelor of Science in Computer Science; GPA: 3.95, Dean's List* Mar. 2023 – Jun. 2025
- **The Evergreen State College** Olympia, WA  
*Bachelor of Arts, Electronic Music Synthesis* Sep. 2005 – June 2009

## TECHNICAL SKILLS

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- **Languages:** C, C#, C++, Python, Rust, Go, x86 Assembly/MASM, TypeScript, JavaScript, SQL (SQLite, Postgres), HTML/CSS
- **Testing & QA:** Python unittest module, Test Automation, Boundary Value Testing, Category Partition Testing, Random/Fuzz Testing, Test Case Design
- **Frameworks/Libraries:** FastAPI, Pydantic, SQLAlchemy, React.js, Flask, SvelteKit, embedded-hal
- **Developer Tools:** Docker, Git/Github, Xcode, VSCode, PyCharm, vi, zsh, Linux, AWS EC2

## PROJECTS

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- **Rust-Powered Microcontroller Home Humidity Sensor:** OSU CS capstone project: Led team development of embedded firmware for Raspberry Pi Pico using Rust. Implemented modular architecture, event loop design, and I2C communication protocols. Established project vision and adaptively managed evolving requirements while maintaining team alignment. Authored comprehensive technical documentation and coordinated distributed team collaboration through version control workflows. *Rust, embedded-hal, I2C, Git, Documentation, Team Leadership*
- **Open Source Contribution - Rust Embedded Documentation:** Contributed documentation improvements to rust-embedded/discovery-mb2, a learning resource maintained by the official Rust Embedded Working Group. Identified and resolved documentation ambiguity in Chapter 11 magnetometer section by clarifying references between hardware datasheet and crate API documentation. Pull request merged into main branch, improving learning experience for embedded Rust developers. *Rust, Embedded Systems, Technical Documentation, Open Source*
- **Full-Stack Web Application & Microservice Development:** Portfolio project for CS 361 at OSU: Built a web application using SvelteKit frontend with Go backend APIs, plus an independent, cryptographically secure password generation microservice consumed by classmates' projects. Implemented REST endpoints, input validation, character composition analysis, security scoring algorithms, and Fisher-Yates shuffling with the Go package crypto/rand. *Go, SvelteKit, REST APIs, Cryptography, Full-Stack Development*
- **PluraLeaf - Community Location-Sharing Platform:** Portfolio project for CS 340 at OSU: Collaborative full-stack web application designed as a map-based alternative to Craigslist where users create categorized "leaves" (pins) for want ads, sales, events, and local news with precise geographic coordinates. Developed FastAPI backend with async database operations. Created responsive Bootstrap frontend with dynamic filtering and spatial search capabilities within neighborhoods. Designed normalized MySQL schema with foreign key relationships across Users, Pins, Categories, SavedPins, and Comments tables. *FastAPI, MySQL, SQLAlchemy, Bootstrap, JavaScript, Pydantic, Team Collaboration*

- **NYT Mini Crossword Performance Analytics:** Personal data analysis project extracting crossword completion times from iMessage database using Python and SQLite. Built custom regex patterns to parse unstructured text data, implemented date correction algorithms for temporal data alignment, and developed interactive calendar GUI with tkinter for manual data validation and cleaning. Addressed macOS Ventura database format changes by implementing Objective-C parsing for encoded attributedBody blobs when message text was no longer stored in plain text columns. Processed thousands of messages to generate performance analytics and visualizations. *Python, SQLite, regex, tkinter, Objective-C, Data Processing, Analytics*
- **anonymous button.:** Full-stack webapp personal project using Flask with HTML frontend built with Bootstrap, custom CSS, and JavaScript for colorful, responsive interface. Implemented cookie system for anonymous user pages maintained in SQLite database. Deployed to AWS EC2 with Docker, Gunicorn WSGI, and Nginx reverse proxy. *Flask, JavaScript, SQLite, Bootstrap, Gunicorn, Docker, AWS*
- **VarChess:** Portfolio project for CS 162 at OSU: chess variation with highly modular OOP design in Python allowing two-player input. Utilized polymorphism to limit methods per class and enable future expansion. Extensively pseudocoded ~1000 line program for straightforward debugging. *Poetry, OOP*
- **I/O ASCII Converter:** Software development project for CS 271 at OSU: ASCII input/output converter built in x86 Assembly. Extensively utilized macros and loops for program simplicity and efficiency. Used runtime stack for parameter passing while maintaining stack integrity. *x86 Assembly/MASM, Visual Studio 2022, Irvine Library*

## EXPERIENCE

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- **Hammer Creative** Remote  
*Copywriter* May 2022 – Present
  - **Complex Content Development:** Generated and refined complex ideas and written content, demonstrating strong analytical thinking and the ability to turn concepts into deliverables on high-profile projects.
  - **Team Collaboration:** Collaborated with multidisciplinary teams to meet strict deadlines while ensuring high standards of accuracy and quality in final outputs.
  - **Adaptability:** Adapted quickly to changing project requirements, consistently producing precise and detailed work under time-sensitive conditions.
- **Spotify** Remote  
*Content Writer* July 2020 – Feb. 2021
  - **Research and Script Creation:** Conducted thorough research to inform the creation of over 90 podcast scripts, synthesizing large volumes of information into clear, concise content.
  - **Project Management:** Worked within a highly collaborative team, utilizing strong organizational and project management skills to coordinate effectively and maintain a two-month lead time.
- **Freelance Screenwriter** Los Angeles, CA and Remote  
*Screenwriter/Content Developer* 2015 – 2022
  - **Cross-Functional Collaboration:** Coordinated with diverse technical teams (animators, directors, designers, editors) across multiple projects for major studios including DreamWorks Animation and Warner Bros., translating complex requirements between stakeholders.
  - **Long-Term Project Leadership:** Led 3-year-long development cycles managing 50+ iterations while balancing stakeholder requirements and technical constraints under tight production deadlines, demonstrating systematic approach to problem-solving and adaptation.
  - **Strategic Communication and Presentation:** Composed compelling story pitch presentations and tonal style guides, demonstrating ability to distill complex narrative concepts and present them effectively to diverse stakeholder groups including executives, creative teams, and production staff.

## INTERESTS

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- **Technical Pursuits:** Modular synthesizers, bicycle building and repair, DIY mechanical keyboards
- **Creative Pursuits:** Electronic music composition, fiction writing (novels, screenplays)
- **Hobbies:** Cycling (road, gravel, mountain), hiking, film