Sebastian J. Hamel

SFW Engineer, formerly w\ BLUE ORIGIN & NASA

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Open Source Projects

</> NBody-WASM-Sim — Demo / Repository

GPU-rendered astrophysics simulation in the web browser

- Performant real-time physics in Rust using linear algebra libs and WebGPU– 3.5x faster than Javascript
- Builds and deploys the demo web page automatically using GitHub CI/CD Actions
- Serves as an open-source template to create GPU-accelerated, interactive web apps
- Endorsed by 70+ Rust community members (Github stars)

</> Velato — Contribution / Repository

An integration to parse & render animated/reactive UI with Vello

- A collaboration with engineers from Blue Origin and Google
- Renders the Google Fonts team's Lottie animations
- Provides coverage of the large Lottie spec (an industry standard for interactive animations)

</> KubOS-NASA CubeSat Simulator Integration — Contribution / Repository

Simulation support for flight software written in Rust

- Enables Rust-based flight software (KubOS) to run on NASA's software-simulated CubeSat hardware
- Contains Rust bindings for NASA CubeSat emulation HALs

Career

Software Engineer — May 2024 – Dec 2024

Blue Origin - Contract — *Blue Origin Rocket Factory, FL*

- Software engineering full stack applications for the Enterprise Technology Business Unit with agile practices
- Designed, developed, deployed, and maintained scheduling software for repairing rocket parts in Typescript
- Worked with users and UX designers to gather feedback, iterated on features and deployed to production
- Led and delivered telemetry visualization tools written in Rust for the New Glenn 1 mission
- Utilized open-source Rust crates to aggregate and calculate projected flight paths

Software Engineer — Feb 2022 – May 2024

NASA - COMET, Command & Control — *Kennedy Space Center, FL*

- Engineered simulation software for NASA's Exploration Ground Systems (EGS) with agile practices
- Developed CI/CD tools on GitLab to accelerate the development process
- Lead team effort on design of Rockwell PLC programming language features in NASA's EGS PLC emulator
- Innovated on Rust desktop applications to manage PLC runtimes for NASA launch console operators
- Completed a 10 week, NASA-sponsored course on leadership and management

Software Engineer — Jun 2020 – Feb 2022

AFIT, Center for Space Research & Assurance — *Wright-Patterson AFB, OH*

- Lead the effort of onboarding summer interns, creating learning materials on the C language and flight software

- Developed CubeSat flight software in C with NASA's cFS framework and also in Rust with KubOS
- Primary developer of GitHub contributions to an open-source spacecraft flight software framework written in Rust (KubOS)
- Lead the team effort on the design of system mode management software on a CubeSat spacecraft
- Developed CubeSat ground control software which interfaces with databases and TCP/UDP mission communications in Python
- Developed software in Python to automate processes and accelerate CubeSat mission development

Software Engineering Co-op Jan 2019 – Aug 2019
NASA IV&V *Fairmont, WV*

- Contributed to NASA's open-source flight software simulator (NOS3) with upgraded packages and documentation
- Developed Rust bindings to C++ based hardware abstractions layers for NOS3 simulator
- Modeled CubeSat OEM hardware components into C++ emulators running in NOS3

Skills

- **Primary Languages:** Rust, TypeScript, React
- **Other Languages:** C/C++, Python, Java, GPU Shaders (GLSL, WGSL)
- **Platforms:** Ubuntu, RedHat 8, Windows
- **Tools:** Git, GitLab, Bash, VSCode, Jira
- **DevOps:** Terraform, GitLab CI, GitHub Actions, Docker
- **Backend:** DynamoDB, GraphQL, AWS

Education

Bachelor of Science, Computer Science & Engineering Class of 2021
University of Toledo, ABET Accredited *Toledo, OH, USA*

- Summa Cum Laude
- 3.97 GPA