Ashurst Walker

Software Developer

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 SignalWalker (https://github.com/SignalWalker)

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 ashurst-walker (https://www.linkedin.com/in/ashurst-walker/)

I am a recent graduate from the University of Georgia with a degree in computer science and 2 years of work experience, ranging from low-level system driver development to user interface design.

SKILLS

Graphics Programming
Advanced

Vulkan | GLSL | WGSL

Network Programming
Intermediate

TCP | UDP | Peer-to-Peer

System Administration
Intermediate

Linux | Nix | systemd | nginx | DNS

Web Development
Beginner

HTML | CSS | Javascript | Django | Elixir

WORK EXPERIENCE

Jan 2021 - May 2022
Software Developer at Olyseus
📍 **Limassol, Cyprus (Remote)**   https://olyseus.com/

Skills acquired: C++ | Rust | Python | CMake | Meson | Nix | NVMe | Qt | DJI | CUDA | TensorRT | PyTorch | Embedded

Developed a driver for fast data transfer between devices, libraries for interfacing with DJI drones, and algorithms for recognizing and georeferencing the positions of data collection devices.

- Created a cross-platform, userspace NVMe driver in C++ and developed a component for its use within a cross-platform Qt application
- Modified a Windows-only Qt application to add native support for Linux
- Developed Rust & C++ libraries for working with DJI's drone SDKs
- Developed an application for automatic camera calibratation for object detection using machine learning
- Developed an imgui-based application in Rust & C++ for streaming real-time video from a remote drone platform
- Implemented algorithms from academic articles for GPS-based georeferencing of spatial data and transforming that data between various frames of reference
- Developed functions for performing YOLOv5 image processing with TensorRT
- Used Nix, CMake, and Meson to create a reproducible build system for the above tools

Mar 2019 - Dec 2019
Augmented Reality Research Assistant at UGA Center for Geospatial Research
📍 **Athens, Georgia, United States**   https://cgr.uga.edu/

Skills acquired: C++ | Rust | Python | UI | Distributed | ROS

Maintained & improved an augmented reality sandbox allowing people to manipulate sand to learn about geological processes.

- Developed software for real-time geographical analysis of elevation data gathered from a physical box of sand, the results of which were projected back onto the sandbox
- Optimized analysis & reprojection algorithms to improve response times from ~2-4 seconds down to ~100 milliseconds
- Implemented algorithms from academic sources for transformation and projection of pointcloud data

- Used Rust to implement network I/O for the above applications
- Used Python to implement geograpical analysis functions and to render user interfaces
- Documented processes used to implement the above, for future implementors
- Developed and documented a process for calibrating a LiDAR + multispectral camera assembly with ROS for use in drone imagine of foliage

PROJECTS

Eightfold
Oct 2022 - Current

🔗 https://github.com/SignalWalker/eightfold

Skills acquired: Rust | glTF | Octree | Vulkan | CI

- Implementing memory/cpu-efficient spatial partitioning data structures in Rust
- Utilities for deserialization of 3D data and re-serialization into glTF
- Automatically built and tested using GitHub actions

ashwalker.net
Aug 2022 - Current

🔗 https://github.com/SignalWalker/nix.net.ashwalker

Skills acquired: Cloud | Nix | systemd | nginx | PHP | PostgreSQL | Elixir | Python | DNS | Wireguard

- Built using Nix flakes, allowing stateless reproducibility for the entire system and every service hosted by it -- the whole system can be rebuilt with a single command

Flint
Jun 2019 - May 2021

🔗 https://gitlab.com/SignalWalker/Flint/-/tree/0.4.0

Skills acquired: Vulkan | Rust | GLSL | WGSL | SPIR-V

- A Rust library abstracting over the Vulkan graphics API, including utilities for automatically generating graphics pipelines from shader source files, mesh optimization, and GPU memory allocation

Stonemason
Mar 2023 - Current

🔗 https://github.com/SignalWalker/Stonemason

Skills acquired: Rust | Language Design | UI

- A functional, typed language designed for configuration & UI templating

Ruin Architect
Mar 2023 - Current

Skills acquired: Rust | Bevy | WGSL | Peer-to-Peer | Game Design

- A sandbox game for collaboratively building & exploring spaces
- Uses P2P networking to connect players
- Currently working on collaborative, networked level editing tools

Melia
Dec 2022 - Current

🔗 https://github.com/SignalWalker/melia

Skills acquired: Rust | Nix | HTTP | HTML | systemd

- An http server for serving blog posts rendered from a variety of markup languages

2015 - 2019

Bachelor Computer Science at University of Georgia

LANGUAGES

English
Native speaker

INTERESTS

Music

Skills acquired: Piano | Guitar | French Horn

Writing

Hiking

Skills acquired: Yellowstone | OSMP - Boulder, CO | Appalachian Mountains

Design

Electronics