

Joseph L. Sheedy

Lead Weather Forecast Engineer • Staff Data Engineer

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Summary

Lead engineer combining deep atmospheric science expertise with 20+ years building high-performance, large-scale systems for weather, climate, oceanography, and geospatial domains. Proven track record re-architecting data pipelines, leading teams, and delivering order-of-magnitude efficiency gains in on-prem and cloud-native environments. Expert level skill in programming domains from microcontrollers to GPU to distributed systems

Profiles

- GitHub: jsheedy
- LinkedIn: josephsheedy

Work Experience

Zipline — Staff scientific software engineer / Lead Weather Forecast Engineer

South San Francisco, CA | <https://www.zipline.com> 2022-05 — Present

- Technical lead for weather nowcast system automating go/no-go decisions for massive scale global drone operations
- Designed and implemented the company's first data lake, unlocking fleet wide analytics
- Built first ETL and API interfaces to all recent fleet telemetry data
- Cloud-native services to process and deliver nowcast data
- Identified and procured off the shelf ground weather stations, built realtime ETL and API services to them and integrated into nowcast system
- Mentored engineers and drove projects end-to-end from concept through long-term maintenance

Saildrone — Lead Weather Forecast Engineer • Platform Engineer

Alameda, CA | <https://www.saildrone.com> 2019-01 — 2022-04

- Led weather forecast team and Data Pipeline team
- Built first company datalake, unlocking robotic fleet wide analytics
- Built one-click end-to-end solution for offloading payload and telemetry data from drones over wired network or hand carry via large intelligent portable storage devices
- Re-engineered multiple global weather forecast systems from first principles, achieving orders-of-magnitude efficiency and cost improvements
- Designed and deployed cloud-native Python services using chunked gridded storage (Zarr, NetCDF) processing >100 GB of forecast data daily with sub-minute latency
- Own Kubernetes deployments and observability for production forecast platform
- Mentor engineers and drive projects end-to-end from concept through long-term maintenance

Rooster Park — Senior Developer

Seattle, WA 2018-05 — 2018-12

- First full-stack engineer for a domain-specific CMS; stood up all infrastructure for hyper-growth phase
- Built automated AWS environments, Python/Flask backend, React frontend, and full CI/CD pipeline

Vulcan Inc. — Senior Software Developer

Seattle, WA | <https://www.vulcan.com> 2015-10 — 2017-08

- Converted from Rooster Park contract to FTE after successful Sea Around Us redesign
- Ported legacy VB ecological modeling suite to high-performance Python (major usability + speed wins)
- Led migration of monolithic ASP.NET app to Angular + Python REST API stack
- Open-sourced core components: <https://github.com/SeaAroundUs/>
- Built from-scratch D3.js mapping framework for global fisheries data
- Designed and shipped real-time RabbitMQ event system for radio-collar wildlife tracking
- Developed high-precision AR prototypes in Unity3D + Python/OpenCV/numpy for beacon-based localization

Rooster Park (contract for Vulcan) — Senior Developer

Seattle, WA 2014-12 — 2015-10

University of Washington Professional & Continuing Education — Part-time Instructor — Python 300

Seattle, WA 2013-04 — 2015-06

- Created curriculum and taught the capstone course of the Python professional certificate program
- Delivered classes on-site at UW and off-site for corporate clients

Velotron Heavy Industries — Owner • Lead Developer

Seattle, WA 2007-08 – 2014-12

- Delivered dozens of commercial and research projects across weather, fisheries, energy, and interactive art
- Built and shipped a successful Ruby on Rails real-time video streaming platform
- Developed distributed Python geospatial analysis stacks for fisheries science
- Created optical gesture / voice-controlled Windows 8 application (Ember.js + C# .NET)
- Designed GeoDjango weather-model management systems and wind-power forecast delivery portals
- Shipped interactive art installations integrating Unity3D, Max/MSP, Ableton Live, projection mapping, and node.js

ClipCard (formerly OneOcean) — Senior Developer

Seattle, WA 2012-06 – 2014-03

- Core engineer on distributed Django metadata extraction platform for oceanographic datasets
- Integrated proprietary formats, cloud storage, and multiple distributed task queues

3TIER (now Vaisala) — Developer • Systems Administrator

Seattle, WA 2003-05 – 2007-08

- Built end-to-end meteorological data collection, modeling, and web delivery systems
- Managed large Linux clusters running numerical weather models
- Introduced modern version control, bug tracking, and release practices

Chronotechnic LLC - Java developer

Seattle, WA 2002-08 – 2003-05

- Java development and quality assurance testing for bioinformatics products
- Developed front-end and business logic in Swing and scripted hardware controls

OEone - IT Manager / Developer

Gatineau, Quebec 2001-02 – 2002-07

- Managed infrastructure and developed products for an embedded Linux based operating system
- Developed user services, packaged software, version control management, MySQL administration
- Developed an automated build system.

Arctic Fox Technology - President, Consultant

Fairbanks, AK 2000-04 – 2001-2

- Founded and provided leadership in technical and business aspects of a software consulting company
- Developed tools and websites
- Onsite IT support Chief Scientist aboard research cruises for the Digital Observer Project

Arctic Region Supercomputing Center - Research Assistant

Fairbanks, AK 2000-02 – 2000-07

Geophysical Institute - Research Assistant

Fairbanks, AK 1998-08 – 2000-05

- Collected and analyzed solar radiation data from the Antarctic.
- Chief Scientist aboard the Polar Star in 2000.
- Debugged electronics, managed data acquisition infrastructure, and engineered software.
- Prepared publications and presented the results.

New Mexico Tech - Research Technician

Socorro, NM 1998-06 – 1998-08, 1997-06 – 1997-09

- Operated and maintained a local area network at a high altitude lightning research laboratory.
- Collected, managed, and analyzed lightning and meteorological data.

University of Washington, Dept. of Atmospheric Sciences - Programming Assistant

Seattle, WA 1996-11 – 1997-03, 1997-03 - 1997-06, 1998-01 - 1998-06

- Developed and executed a meteorological model in C on a SunOS platform Research Assistant
- Executed numerical weather models with scripting, FORTRAN, and NCAR graphics
- Web Developer

Education

- M.S., Atmospheric Science — University of Alaska Fairbanks (1998–2000)
- B.S., Atmospheric Science — University of Washington (1994–1998)
- B.S., Physics — University of Washington (1994–1998)

Certificates

- Neural Networks and Deep Learning — Coursera (deeplearning.ai), 2017

Patents

- US10325410B1: Augmented reality for enhancing sporting events (2017)

Skills

Languages & Frameworks

Python, Polars, DuckDB, Kubernetes, AWS, Django/Flask/FastAPI, React, Angular, D3.js, Ruby on Rails, Unity3D, C#, Swift, Rust, Objective-C, Java, FORTRAN

Data & Science

Modern data engineering, numerical weather prediction, Parquet, H3, Zarr, NetCDF, SQL/noSQL, xarray, Dask, OpenCV, numpy, scipy, Geospatial analysis, PostGIS, GDAL, RabbitMQ, asyncio

Leadership & Practices

Team lead, Mentoring, System design, Software architecture, CI/CD, Observability