

Robert S.W. Carroll

<https://robswc.me> – <https://github.com/robswc>

Experience

FEB. 2023 – PRESENT

Lead Full-Stack Engineer – *Buildaible, Fredericksburg VA (Remote)*

- **Architected** scalable backend infrastructure using Python with FastAPI for building high-performance APIs, while customizing Django for multi-tenancy to ensure secure data isolation across 50+ B2B customers, enabling reliable, extensible services in a high-stakes production environment.
- **Designed and deployed** resilient microservices architecture on Kubernetes, utilizing Helm charts and GitHub Actions for automated CI/CD pipelines on DigitalOcean, with auto-scaling capabilities and zero-downtime deployments with minimal operational overhead.
- **Mentored** a team of 5+ engineers through complex Django refactors and infrastructure migrations, fostering best practices in code quality (tools like pre-commit, ruff, Black) and DevOps while promoting team growth and ownership across applications.

JUN. 2021 – JAN. 2023

Full-Stack Engineer – *Synctivate, Fredericksburg VA*

- **Engineered** secure, scalable backend systems in Python using Django, Flask, and FastAPI, designing modular APIs capable of handling thousands of daily transactions.
- **Optimized CI/CD pipelines** through refactoring legacy applications, implementing Docker containerization, and automating deployments via GitHub Actions and Dokku, reducing release cycles from days to hours and enhancing deployment reliability and agility.
- **Developed extensible integrations** and pioneered an open-source QuickBase SDK in Python, enabling seamless no-code cloud connections for over 100 developers and facilitating innovative, community-driven enhancements to data workflows.

NOV. 2018 – JUN. 2021

Full-Stack Engineer – *Shenandoah Research, Fredericksburg VA*

- **Designed and implemented** high-throughput data integration layers in Python with ETL pipelines transforming streaming market data, leveraging Postgres for flexible queries, Redis for low-latency caching, and Arctic for durable storage to support real-time processing and reliable data availability.
- **Deployed and maintained** a fault-tolerant microservices ecosystem using Docker containerization and Kubernetes orchestration, automated through GitLab CI/CD pipelines, with comprehensive monitoring via Prometheus and Grafana for proactive issue detection and high availability.
- **Developed machine learning pipelines** in Python using LightGBM for high-performance modeling on low signal-to-noise datasets, incorporating advanced signal processing techniques and feature extraction to derive actionable insights from complex, noisy data streams in production environments.

Publications

- **Research and Publication:** Justin Mittereder, Robert S. W. Carroll, Brandon Frulla, Stephen Davies. (2021) *Exploring the Impact of Social Network Density and Agent Openness on Societal Polarization*. Conference of The Computational Social Science Society of the Americas.
 - Contributions: Helped build an agent-based simulation to study opinion-dynamics.

Education

AUG. 2019 - DEC. 2021

The University of Mary Washington - Fredericksburg VA

Bachelor of Science in Computer Science; GPA: 3.90

- **Leadership:** Served as Vice President of the university's Association for Computer Machinery club
- **Hackathon:** Placed 1st in the annual UMW-Hackathon. The project used object-detection to turn images of a bookshelf into a digital library, allowing users to browse their physical collections and book data in a digital environment.
- **Awards:** Placed 1st in the UMW coding competition, sponsored by ACM and DiverCS. (2020) Placed 1st in the annual UMW-Extravaganza with a demonstration of an agent-based trading system. (2021)