

Ananta Narayan Shrestha

New York, NY | (602) 727-9844 | anshrest@asu.edu | linkedin.com/in/ananta-narayan-shrestha | iantei.github.io

Summary

Software engineer with 6+ years of experience building large-scale data pipelines, distributed systems, and cloud-native services — spanning terabyte-scale HPC data processing, AWS cloud infrastructure, GenAI/RAG systems, and safety-critical C++ software at Philips Ultrasound R&D and open-source national-lab tooling at NREL. MS in Computer Science (ASU, 4.0 GPA).

Experience

Software Engineer Dec 2025 – Present
Exitio Tech Inc. New York, USA

- Building an AI-powered chatbot on AWS using Anthropic Claude and retrieval-augmented generation (RAG) to improve response grounding and quality.

Research Software Engineer Aug 2023 – Sep 2025
National Renewable Energy Laboratory Colorado, USA

- Developed and validated a 1 TB data-processing pipeline for the national EV Infrastructure grid simulation on HPC using Python, Polars, Pydantic, and Parquet, cutting execution time from 10 hours to 30 minutes (95%).
- Designed automated testing workflows (GitHub Actions, Docker, pytest), cutting manual testing overhead 60%, and redesigned OpenPATH (e-mission)'s public dashboard (Python, JavaScript, MongoDB), serving 5,000+ users across 34 deployments.
- Built a machine-learning pipeline (Random Forest with feature engineering and cross-validation) for deployment-stage commute-mode inference over large-scale mobility datasets.
- Optimized RouteE Compass (open-source energy-aware routing engine, Rust) by refactoring JSON configuration parsing and error handling; recognized with the U.S. DOE-VTO AMC Team Award 2025 for enabling Google Maps' eco-routing.

Software Engineer Intern II May 2023 – Aug 2023
Yahoo Inc. Illinois, USA

- Integrated four fuzzing engines (Google FuzzTest, LibFuzzer, AFL++, Honggfuzz) into Yahoo's production DNS infrastructure in C++17, reporting two critical memory-management vulnerabilities; automated the workflow with CI/CD pipelines (ScrewDriver, CMake) and authored a ~50-page engineering report.

Software Engineer I & II Jun 2018 – Jun 2022
Philips India Ltd. (Healthcare – Ultrasound) Bangalore, India

- Architected a multi-threaded, low-latency (5 ms) real-time audio processing library for the cross-platform Lumify app (Swift, C++, AVFoundation), meeting IEC 62304 safety-critical standards.
- Triaged and resolved critical multi-threading and connectivity issues in a 20 GB legacy C++ codebase; built a C++ static-analysis CLI tool, improving delivery speed by 30% and resolving ten high-priority production incidents.
- Designed a secure multi-level user-authentication portal (C++, C#, WPF/MVVM); mentored new recruits across Agile projects.

Projects & Open Source

Energy Policy RAG github.com/iantei/energy-rags

- Production-grade Retrieval-Augmented Generation system: Medallion ETL (Bronze/Silver/Gold) on Polars/Parquet, Docling PDF parsing, ChromaDB, LangChain, Docker/Ollama GPU inference, and an 18-test integration suite.

Scalable Serverless Cloud Pipeline AWS

- Architected a serverless, high-throughput data pipeline on AWS Lambda, S3, SQS, and Docker demonstrating cloud-native design patterns.

Open Source: NatLabRockies/routee-compass (merged PR #364, gzip query-file support); nanvix research OS (signal handling, concurrent sandbox testing, POSIX fixes).

Education

Master of Computer Science, GPA 4.0/4.0 — Arizona State University, Tempe, AZ May 2024

B.Tech. Computer Science & Engineering — MNNIT, Prayagraj, India May 2018

Technical Skills

Languages:	Python, C++, Rust, Swift, Java, C#, JavaScript, SQL
Data & Distributed Systems:	PostgreSQL, MongoDB, Polars, Parquet, ChromaDB, distributed transactions & consistency, HPC (Slurm)
Cloud & DevOps:	AWS (EC2, S3, SQS, Lambda, IAM, ECR), Docker, Docker Compose, GitHub Actions (CI/CD)
GenAI:	Anthropic API, LangChain, RAG pipelines, Ollama, LLM-assisted development tooling
Practices:	Automated testing, technical documentation, mentoring & onboarding, Agile, SDLC

Awards & Publications

- U.S. DOE-VTO AMC Team Award 2025 — RouteE & FASTSim enabled Google Maps' eco-routing feature.
- Co-author: Powell, B., Shrestha, A., et al., "Where are all the Electric Vans?", ASCE ICTD 2025.
- Philips Ultrasound R&D Hackathon: Winner 2019–20; Runner-up 2018–19; Team Up to Win 2022.