

SEAN W. EVANS

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Website

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SUMMARY

Systems-level engineer specializing in High-Performance Computing (HPC), Database Internals, and Machine Learning. Expert in bridging theoretical modeling with production engineering using CUDA, Rust, and C++. Proven track record of optimizing high-throughput pipelines and developing novel open-source architectures, including GPU-accelerated physics engines and secure CI/CD static analysis tools.

SKILLS

Languages: Rust, C++, C, CUDA, Python, SQL (Postgres/T-SQL), TypeScript

Systems & HPC: GPU Kernels (CUDA/AVX), Distributed Consensus (Raft), Linux, Compiler Design (AST), Multiprocessing

Data & Databases: PostgreSQL Internals, Extension Development, Vector Search, ETL Pipelines, XML (DOM/SAX)

Machine Learning: PyTorch, TensorFlow, Detectron2, Computer Vision (OpenCV), Structural Analysis

OPEN SOURCE ENGINEERING

fluid-sims (High-Performance Computing)

CUDA, C++, SPH, Navier-Stokes

- Engineered a GPU-accelerated Computational Fluid Dynamics (CFD) engine. Implemented Smoothed-Particle Hydrodynamics (SPH) and Shallow Water Equations with log-depth stability, achieving real-time simulation of 100k+ particles.

pg_os & pg_gpt2 (Database Internals)

C, PL/pgSQL, Postgres Extensions

- Developed a custom runtime environment within PostgreSQL exposing OS primitives (processes, scheduler). Built a C-based extension to embed GPT-2 inference directly into the database engine for zero-latency batch processing.

Ghast (Security Engineering)

Python, AST Analysis, GitHub Actions

- Built a static analysis tool for CI/CD pipelines preventing poisoned pipeline execution and enforcing immutable action pinning. Integrates with SARIF for native GitHub Security alerts.

raft-vm (Distributed Systems)

Rust, Consensus Algorithms, Actor Model

- Implemented a fault-tolerant virtual machine leveraging the Raft consensus algorithm and Actor model to ensure state replication and consistency across distributed nodes.

EXPERIENCE

Data Conversion Laboratory

Machine Learning Engineer

Remote

May 2021 – Feb 2025

- Designed a Detectron2-based document segmentation pipeline reducing manual classification by 50 %.
- Built a CNN-RNN LaTeX OCR system with near state-of-the-art accuracy.
- Automated document styling using NLP + MS Office SDK, reducing a 40-hour workflow to 2 hours.
- Implemented an OpenCV-based checkbox detector achieving >96 % accuracy across thousands of formats.
- Developed high-throughput pipelines capable of processing millions of pages per week.

Data Conversion Laboratory

Software Engineer

Remote

Sep 2020 – May 2021

- Architected a PDF cleaning and OCR preprocessing system scaling to 100k+ pages per week per server.
- Automated LaTeX and JATS XML correction workflow, replacing a full-time manual process.
- Developed robust .docx to XML conversion tooling using MS Office InterOp and C #.

Data Conversion Laboratory

Lead Technology Analyst

Queens, NY*Sep 2019 – Sep 2020*

- Led workflow optimization initiatives, mentored junior engineers, and coordinated technical requirements with stakeholders.

Data Conversion Laboratory

Technology Analyst

Queens, NY*May 2018 – Sep 2019*

- Developed custom data-conversion tools for production support and maintained high-volume enterprise pipelines.

EDUCATION

- **Long Island University**

Bachelor of Science in Mathematics

January 2026