Soren Schultz

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Full-stack software engineer with experience architecting and deploying scalable, end-to-end solutions. Proven ability to own a company's entire tech stack, from a Python/FastAPI backend on AWS to multi-threaded data pipelines, internal Electron tools, and public-facing React applications.

Education

Case Western Reserve Uni.

Sept 2020 - May 2025
Computer Science B.S. '24, M.S. '25
Minors in Music & Mathematics
GPA: 3.8/4.0

Relevant Coursework

Programming in Java • Full-Stack Web Dev • Software Craftsmanship • Digital Image Processing • Natural Language Processing • Data Structures • Algorithms • Database Systems • Software Engineering • Operating Systems • Machine Learning • Deep Generative Models • AI for Sequential Decision-Making • Probabilistic Graphical Models • Computer Vision • Causality & ML • Security for ML • Computer Architecture

Experience

Software Engineer @ Magic Sheet Music Incorporated / Musa   July 2022 - Current

Architect, maintain, and deploy the company's core API using a 3-layer architecture (Python, FastAPI, SQLModel); designed and secured the AWS stack (ECS, RDS, S3, ALB, Cognito), managing secrets with SSM Parameter Store and secure dev access with an SSH bastion host.

Engineered a multi-threaded Python batch uploader (with a Textual TUI) to process, convert, and ingest 1.2 million (500GB) sheet music files into the API, featuring concurrent processing, queue management, and job-resume capabilities.

Developed a secure, cross-platform internal admin application (Electron, TypeScript, React, MUI) to manage the API database, run web-scraping jobs, and automatically synchronize files with live MuseScore sessions.

Lead development of the public-facing marketing website and user portal (React, TypeScript, Vite), featuring role-based dashboards (Learner & Teacher) with distinct permissions, billing, and student management UIs.

Implemented comprehensive testing and CI/CD, achieving 75% code coverage with Pytest on the backend API and automating deployments to AWS ECS using GitLab CI.

Undergraduate Teaching Assistant @ CWRU - Compiler Design   Fall 2022 & 2023

Co-authored a new LLVM tutorial series (slides + code + write-ups) that replaces the steep llvm.org guide, letting first-time compiler students build and extend a mini-compiler with minimal prior background.

Wrote detailed design documents and sample solutions for six lab assignments, covering lexical analysis with Flex, parsing with Bison, and LLVM IR generation & optimization passes.

Delivered 3 guest lectures: "Intro to Programming in C++," "Object-Oriented Programming in C++," and "Introduction to Flex."

Hosted weekly Zoom office hours and Slack Q&A, mentoring ≈30 students per term on debugging clang errors, interpreting IR, and structuring compiler pipelines.

Collaborated with two fellow TAs & Department Chair to align grading rubrics and maintain consistent feedback across project milestones.

⟨⟩ Skills

Programming Languages
Python • TypeScript • JavaScript • SQL • Java • C# • HTML/CSS

Backend, Cloud & Databases
AWS (ECS, RDS, S3, Cognito, ALB) • FastAPI • Node.js • SQLModel / SQLAlchemy • Alembic • Firebase

Frontend & Desktop
React • Electron • Vite • Material UI (MUI) • Textual (TUI) • OpenSheetMusicDisplay

Testing & DevOps
Pytest • GitLab CI/CD • Vitest • Playwright • Docker • Git • WebSockets

★ Recent Projects

WebRTC Videochat   TypeScript • React • Firebase Realtime DB • WebRTC • Metered TURN Server • Chakra UI
A WebRTC videochat web-app that uses Firebase Realtime Database as a signaling server and the WebRTC protocol to stream video and audio data between clients. Uses Metered TURN server to relay traffic between clients and Firebase Security Rules to secure the database.

Oregon ACP Website   TypeScript • React • Firebase Auth, Firestore DB, Storage & Functions • Mantine UI
A website for the Oregon American College of Physicians (ACP). Intended to be an improved version of the current oregonacp.org website. Complete with an auth-protected admin dashboard where committee chairs can make announcements and executive members can manage permissions. Uses server-side pagination to load announcements and Firebase Functions to securely manage user claims.

Variational Quantum Circuit for K-arm Bandit Solution Opt   Python • Numpy • Matplotlib • Qiskit
Uses a simulated VQC to optimize a solution to K-arm bandit problems. Shown to provide a general improvement in accuracy of the final solution over a classical epsilon-greedy approach for large K.

Malware Image Classification with ESRGAN   Python • Numpy • SkLearn • Pytorch
Combines a baseline CNN with a pre-trained ESRGAN model to improve the accuracy of classification of malware images by ~6%. Uses the MalIMG dataset to train the CNN and connective network, keeping the ESRGAN model frozen.

LLM Knowledge Graph Extraction & Bias Detection   Python • Neo4j • LLMs • Ollama
Uses an LLM to extract knowledge graphs from reddit posts to build bipartite knowledge graphs between groups of people and trait nodes. Uses an Ollama sentence transformer to detect social biases in the text between two parametrized groups by analyzing the knowledge graph.

⬤ Diplomas and Certifications

Bachelor of Science in Computer Science • Master of Science in Computer Science • Amazon Web Services: Cloud Practitioner

🌐 Languages

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