KAI KÜHNE

Senior Software Engineer with 20 years of experience across backend infrastructure, Dev-Ops, and low-level systems development.

Recently focused on real-time graphics and custom tooling — gaining deep experience in performance-critical software, rendering, and device programming.

Previously built and maintained large-scale distributed systems at SoundCloud and Native Instruments. Now seeking to apply systems-level expertise and creative problem-solving in backend-focused engineering roles.

📍 Berlin, Germany   ✉️ mail@kaikuehne.net
🌐 kaikuehne.net   ⌗ kai-kuehne

✔ Skills

Languages
Go, Python, Scala, C, C#, Odin

Backend Systems
Distributed systems, microservices, inter-service communication, web APIs

DevOps & Infrastructure
ETL pipelines, container orchestration, infrastructure as code, cloud platforms (AWS/GCP), CI/CD workflows

Data Systems
Google BigQuery, Kafka, MySQL

Multimedia & Hardware
Game engine architecture, performance profiling (CPU/GPU), shader programming, MIDI integration, real-time rendering, USB-based hardware communication

🏛 Education

Master of Science — Computer Science
2014-2017, Beuth University of Applied Sciences

Bachelor of Science — Computer Science
2008-2013, Beuth University of Applied Sciences

💼 Professional Experience

Independent Software Engineer — Systems & Game Development   2023-Present

- Implemented real-time 2D rendering systems, including a custom renderer for Spine2D skeletal animations.
- Developed graphics shaders for dynamic UI and real-time visual effects.
- Released playable prototype of *ULTRAMASSIVE*, a Sci-fi deckbuilder focused on exploration and research mechanics.

Technologies: Godot, C/C++, C#, Odin, GLSL, SDL.

Software Engineer — SoundCloud Ltd.   2020-2022

- Implemented and maintained ingestion services for label-submitted music and metadata; maintained fingerprinting services for identifying uploaded audio across the platform.
- Worked on distributed backend systems using Scala and Finagle; supported internal clients across analytics, marketing, and operations.
- Enhanced application performance through memory profiling and garbage collection optimization.
- Managed infrastructure on AWS and GCP, integrating with Hadoop/Spark and BigQuery pipelines.
- Acted as "First Responder" on-call, resolving incidents and supporting internal teams and contractors.

Technologies: Scala, Finagle, Kubernetes, Airflow, Hadoop, Spark, AWS, GCP.

Software Developer — Native Instruments GmbH   2018-2019

- Built and maintained backend infrastructure for cloud-based digital services at a leading music tech company.
- Designed APIs and backend systems in Go and Python.
- Deployed microservices using Kubernetes and Terraform in AWS environments.

Technologies: Go, Python, gRPC, Tornado, Kubernetes, Terraform, AWS.

🚀 Selected Projects

Chordel — Synthesizer & Training Tool for Ableton Push 2   2024-Present

- Engineered a real-time audio and MIDI system for Push 2 hardware.
- Implemented low-latency MIDI handling, frame-accurate Push display rendering, and interactive training and gameplay features.
- Architected the full software stack, including hot-reloading and visual feedback systems.

Technologies: C, SDL2, Cairo, PortMidi, TinySoundFont, libusb.

Ultramassive — Exploratory Deckbuilder Game   2023-Present

- Prototyped in Godot; rebuilt from scratch in C# using SDL3 to gain full control over architecture, performance, and cross-platform deployment.
- Developed a custom Spine2D renderer for the C# engine.
- Created procedural star map exploration, real-time input systems, and custom UI logic.
- Engineered a developer-facing debugging and hot-reloading infrastructure to accelerate iteration.

Technologies: Godot, C#, SDL3, Spine2D, GLSL.