

theyellowtoaster@gmail.com

Ben Kettle

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San Francisco, CA

Passionate software engineer with 3+ years of experience and two MIT degrees that loves to dive deep in new areas and demonstrably excels at learning new systems quickly. Comfortable working all over the stack, wherever is best for success. Particularly excited about roles in the transportation field that involve real-world data and constraints.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) JUNE 2023

Master of Engineering in Electrical Engineering and Computer Science. Computer Systems focus (5.0/5.0 GPA)

- For thesis research with MIT PDOS, designed a new C- and WebAssembly-based toolchain for privilege separation and used it to implement a security key that isolates cryptographic secrets from bug-prone code.
- Awarded the Frederick C. Hennie III Award for Excellence in Teaching for my teaching and course development roles as the only TA for the new Fundamentals of Computer Security. Also TA'd a grad-level security course.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) MAY 2022

Bachelor of Science in Electrical Engineering and Computer Science. Minor in Urban Studies. (5.0/5.0 GPA)

- Relevant and exciting class projects included:
 - Implementing Raft and a sharded fault-tolerant key-value store on top in Go (6.824 Distributed Systems)
 - An optimizing compiler in Rust, earning second place in the class (6.035 Computer Language Eng.)
 - A GPS-based multiplayer laser tag game across the MIT campus (6.08 Interconnected Embedded Systems)
- Developed and taught lessons in physics, math, and computer science internationally in Global Teaching Labs.

EXPERIENCE

SEMGREP - SENIOR SOFTWARE ENGINEER SUMMER 2022, AUG. 2023-PRESENT

- Owned a rebuild of the foundation of the Supply Chain product to support software projects without lockfiles. Shipped to customers earlier than first planned to validate the approach, even with new security constraints.
- Led Python backend work in a new fine-grained authorization system now used on every Flask backend request.
- Built and integrated a new explicit API for SQLAlchemy transactions across our Flask backend to reduce average database transaction length and improve database lock contention.
- Recognized by company leadership for high impact with a “founder’s grant” and an engineering-wide award.
- Embraced unfamiliar domains; became a company expert on DB concurrency and a team expert on OCaml.

APPLE, INC. - CELLULAR FIRMWARE ENGINEERING INTERN JUNE-AUG. 2021

- Built a new Python & C software/hardware test framework to consolidate interdepartmental integration testing.

KEOLIS COMMUTER SERVICES - FULL STACK ENGINEERING INTERN JUNE-AUG. 2020

- Built a distributed real-time location tracking and engine telemetry processing system for MBTA locomotives.
- Implemented algorithms for data processing onboard each locomotive, handling 10x/sec updates over unreliable cellular links without data loss in Python. Presented live & historical fleet data in a React-based dashboard.

PROJECTS (MORE AT BENKETTLE.XYZ)

LITTLEFIXES.XYZ WINTER 2024

- Built a geospatial forum to foster discussion of urban oversights and micro-improvements to fix them.
- Implemented with Rust (Axum) and SvelteKit; used PostGIS for spatial querying and Leaflet for map UI.

LOW-POWER TIMELAPSE CONTROLLER 2024-2025

- Designed a low-power (coin cell) STM32-based timelapse PCB that controls camera power and shutter.

SKILLS

- **Technologies:** Python (Flask, SQLAlchemy), TypeScript (React, Svelte), Go, OCaml, Rust, C, Verilog
- **Infrastructure:** Kubernetes, Postgres & PostGIS, AWS (S3, EC2, RDS), Protobuf, ArgoCD, Github Actions