Yuki Okamoto

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1 Summary

Software engineer and researcher specializing in high-performance Rust backend systems, programming language theory, and developer tooling. Experienced in designing and implementing scalable web services, distributed systems, and compiler-related technologies. PhD student researching Rust's type system and borrow checker.

2 Qualifications

- Lead maintainer of RustOwl, a popular open-source project with 5,000+ GitHub stars.
- Contributed to rust-lang/rust and other open-source projects.
- Developed and operated an AI-powered web service serving 500,000+ users.
- 10+ years of programming experience; currently proficient in Rust, Python, and TypeScript.
- Over 5 years of professional experience as a web engineer.

3 Education

OST – Eastern Switzerland University of Applied Sciences, Switzerland September 2026 – Present
Visiting PhD Student in Computer Science
Supervisor: Prof. Farhad D. Mehta

Shibaura Institute of Technology, Japan April 2024 – Present
PhD Student in Computer Science
Programming Language Research Group, Supervisor: Prof. Isao Sasano

- Research focus: Type system and borrow checker in Rust
- Improving the borrow checker from a theoretical perspective

Shibaura Institute of Technology, Japan April 2021 – March 2024
Master of Engineering
Programming Language Research Group, Supervisor: Prof. Isao Sasano

- Thesis research on type system design for trait implementations in Rust

Shibaura Institute of Technology, Japan April 2017 – March 2021
Bachelor of Engineering

4 Publications

Negative Bounds for Avoiding Conflicts in Implementing Traits in Rust
Yuki Okamoto, Isao Sasano
Human Aspects of Types and Reasoning Assistants (HATRA 2025), co-located with ICFP/SPLASH 2025

5 Work Experience

Freelance April 2020 – Present
Software Engineer

Tweet generator – AI-powered social media service (August 2019 – April 2023)

- Developed and operated a web service that generated tweets mimicking users' writing styles
- Achieved 500,000+ cumulative users and earned approximately $10,000 in advertising revenue
- Implemented Markov-chain-based text generation using morphological analysis

- Designed a scalable architecture using AWS ALB, EC2 Auto Scaling, and RDS (PostgreSQL)
- Stack: Python, Vue.js, PostgreSQL, AWS
- Role: Solo developer – full system design, implementation, and operation

kaiwa – AI communication platform (January 2025 – July 2025)
Contractor for Livetoon Inc.

- Built a real-time communication backend for an AI interaction service
- Implemented REST API and WebSocket server for real-time messaging
- Stack: Python, WebSocket, Terraform, AWS
- Role: Backend architecture design, implementation, and code review in a small team

LabBase Inc., Japan May 2023 – Present
Research Engineer

Job-Hunting Platform

- Migrated Web backend from Java to Rust
- Stack: Rust (Tokio, Actix Web), PostgreSQL, Elasticsearch

AI Interview Service

- Implemented a real-time interview backend integrating the OpenAI API
- Implemented WebRTC- and WebSocket-based communication for low-latency interactions
- Stack: Rust (Tokio, axum, tungstenite), OpenAI API, TypeScript, Svelte
- Role: Design and implementation in a small team; built the proof of concept

pluszero, Inc., Japan April 2020 – August 2025
Web Engineer

Web Systems for Enterprise

- Implemented an automated data entry system using OCR and the Google Maps API
- Refactored the codebase in Rust/WebAssembly to improve reliability and maintainability
- Stack: Rust, WebAssembly, Python, TypeScript, CSS, Google Maps API

Other Internships

- Bitkey Inc. (2026, Internship, *IoT key management backend*): Go
- MIXI, Inc. (2022, Internship, *Robot communication backend*): Python
- pixiv Inc. (2022, Internship, *PHPStan custom extension*): PHP
- DMM.com LLC (2021, Internship, *Mobile/web Application*): Swift
- Hatena Co., Ltd. (2020, Internship, *Mock blog service*): Go, Kubernetes

6 Open Source Contributions

RustOwl (Author & Lead Maintainer)
`https://github.com/cordx56/rustowl` (5,000+ GitHub stars, 10,000+ VS Code Marketplace installs)
Editor plugin that visualizes ownership and lifetimes in Rust, supporting VS Code, Neovim, and Emacs.

- Built an LSP server and a custom rustc driver that analyzes MIR
- Implemented multi-threaded analysis with caching to work around single-thread constraints in `rustc`
- Managing a community of 22 contributors and 6 maintainers
- Stack: Rust (rustc, Tokio, serde), Language Server Protocol

rust-lang/rust (Contributor)
`https://github.com/rust-lang/rust`
Fixed type-system-related bugs, including issues in monomorphization (#157953).

Other Contributions

- **openclaw/openclaw**: Fixed bugs in messaging-service integrations
- **valkey-io**: Reported security issues in several repositories
- **clap-rs/clap**: Minor documentation fix

7 Technical Skills

Programming Languages

- Rust (expert): 5+ years, specializing in compilers, async/concurrent systems, and web servers including REST API, WebSocket, and WebRTC
- Python (expert): 5+ years, web backends and AI/ML integration
- TypeScript (advanced): web frontend and backend
- Go (advanced): web backend and CLI applications

Backend Development

- REST API, GraphQL, WebSocket, WebRTC
- PostgreSQL, Elasticsearch
- Amazon Web Services (EC2, ECS, ALB, Lambda, RDS, S3, and VPC)

Frontend Development

- React, Vue.js, Svelte
- CSS (expert), Tailwind CSS
- WebAssembly

DevOps & Tools

- Docker, Terraform, and GitHub Actions
- Git and GitHub

Research & Academic Area

- Programming language theory and type systems
- Compiler and interpreter implementation
- Program analysis and transformation
- Developer tooling and IDE integration

AI-related

- OpenAI and Anthropic APIs
- AI coding tools (Claude Code, Codex)