

Sebastien Chapuis

Senior Systems Software Developer · Rust & Blockchain

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Profile

Senior software developer specializing in **performance-critical systems**, with experience building core infrastructure for **Tezos and Mina blockchain nodes** and a **commercial disassembler**. Combines **clean, maintainable design** with hands-on **Linux profiling and optimization**. Expertise spans binary analysis, content-addressed storage, protocol-compatible state machines, recursive zero-knowledge proofs, WebAssembly, and cross-language interoperability.

Active **open-source maintainer and contributor** across Rust, Emacs, language tooling, and Linux developer environments, with projects collectively earning **2,000+ GitHub stars**.

Experience

Mina Foundation - OpenMina 2022 - 2025
Senior Software Developer

- Built major foundations of OpenMina's **Rust protocol stack** across Merkle, masked, sparse, staged, and on-disk ledgers; implemented **Mina-compatible hashing and transaction processing**, serialization, OCaml FFI, and native/browser validation.
- Implemented **recursive verification and native proof generation** for Mina transactions, merges, blocks, and zkApps using **Pickles/Kimchi**, including witnesses, public inputs, accumulator checks, step/wrap recursion, and proof-authorized zkApps.
- Unified **zkApp semantics** across circuit-checked and ordinary execution through generic interfaces, reducing duplicated **consensus-sensitive logic** while preserving precondition and authorization behavior.
- Implemented and integrated a **deterministic transaction pool** with P2P verification, sender dependency queues, action replay, and **canonical-chain reorganization** handling.
- Improved reliability and portability through **checksummed/compressed storage**, lazy/cached cryptographic hashing, allocation and stack-pressure reductions, **WebAssembly**-specific field support, and reproducible failure packages.

github.com/openmina/openmina

Viable Systems - Tezedge 2020 - 2022
Software Developer

- Designed and implemented major parts of Tezedge's **Rust context engine**, combining compact **Merkle-tree data structures** with Irmin-compatible hashing and Tezos block-application semantics.
- Built **custom persistent serialization**, checksums, locking, fsync, **crash recovery**, and hash-verified snapshots for versioned blockchain state.
- Implemented **generation-based garbage collection**, reusable object storage, **lazy hashing/loading**, string interning, and allocation-conscious tree traversal.
- Integrated **Rust storage with OCaml protocols** using FFI and **typed IPC**, including integrity checks and restart hash reconciliation.
- Created **SQLite timing and diagnostic RPCs**, deterministic replay, fuzz tests, parity tests, and **snapshot-resume CI** for correctness and regression analysis.

github.com/tezedge/tezedge

Binaryum France
Founder & Software Developer 2018 - 2019

- Founded, designed, and shipped a **cross-platform desktop disassembler** built with **Rust and Electron/TypeScript**, supporting x86/x86-64, ARM/ARM64, MIPS, and PowerPC binaries.
- Implemented **instruction decoders**, **ELF, PE/COFF, and Mach-O parsers**, control-flow visualization, cross-reference navigation, symbol demangling, annotations, and structure-aware analysis.
- Built **multithreaded and cached analysis**, commercial licensing, and payment integration for distribution across **Linux, macOS, and Windows**.

binaryum.com

Skills

Programming Languages
Rust, C, C++, OCaml, JavaScript, TypeScript, Java, Emacs Lisp, SQL, Shell, Assembly (x86/ARM/WASM)

Education

Epitech Master's degree
Information Technology Paris, France • 2013 - 2018

Languages

French
Native

English
Professional

Hobbies

Outdoor Sports
Skydiving, Kitesurfing, Skiing, Sailing