Vito Secona

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Open Source Projects

Belalang Programming Language | https://github.com/belalang-project/belalang

- A custom programming language designed that features a compiler and virtual machine written in Rust.
- Developed a CLI tool to compile and execute bytecode, with a structured language pipeline including a lexer, parser, and compiler.
- Implemented a stack-based virtual machine for efficient execution.
- Improving memory footprint and performance by implementing the Immix Garbage Collection algorithm.

Cargo Plumbing Commands | https://github.com/crate-ci/cargo-plumbing

- Exposing core Cargo functionalities as distinct, scriptable steps.
- Easier maintainability and contributor approachability by isolating Cargo's architecture.
- Enabling seamless integration with external build systems (e.g., Bazel, Nix) by refactoring Cargo's architecture to decouple core processes.
- Currently vetting a long-standing system architecture design, leading to a more efficient usage of the Index.

Experiences

Open Source Contributor | *The Rust Programming Language & NixOS* Jul. 2025 — Present

- Advancing Rust's build ecosystem by contributing to the Cargo Plumbing Commands project as part of Google Summer of Code 2025.
- Improving Cargo by focusing on decoupling build steps and exposing critical low-level processes.
- Maintaining the `cargo-plumbing` package at `nixos/nixpkgs`.

Teaching Assistant | *Fakultas Ilmu Komputer, Universitas Indonesia* Jun. 2024 — Present

- Assisting Programming Foundations 1 course, helping students get started with Computer Science using the Python programming language.
- Assisted Programming Foundations 2 course, helping students understand OOP concepts and problem solving skills.
- Assisted Introduction to Digital Systems course, helping students understand logic circuits and digital design.

Lead Web Developer | *Open House Fasilkom UI 2024* Jun. 2024 — Nov. 2024

- Led the development of a web platform that handled 2000+ users with 1000+ online tickets registrations.
- Developed participant and ambassador registration systems with an efficient workflow.
- Optimized service to handle 100+ concurrent users, ensuring user experience.

Backend Developer | *Green Welfare Indonesia* Jun. 2024 — Jan. 2025

- Drove a 10% performance gain and enhanced overall platform stability by engineering an optimized backend infrastructure using Go, Gin, and Gorm.

Education

Undergraduate Computer Science | *Universitas Indonesia* Aug.2023 — Present

Current GPA: 3.97

- *Computer Graphics*: Rasterization Algorithm, Ray Tracing Algorithm, Deep Learning in Computer Graphics, Animations
- *Operating Systems*: GNU/Linux CLI, Scripting, Memory Management, Processes and Threads, Synchronizations, File Systems, CPU Scheduling
- *Embedded Systems*: Real-Time Operating Systems, Arduino Programming, AVR Programming
- *Computer Networks*: OSI Model, Network Topology Design, Socket Programming
- *Algorithms Design and Analysis*: Algorithms Correctness and Complexity, Dynamic Programming
- *Numerical Analysis*: Numerical Stability in Computers, Optimization Techniques in Machine Learning