Rajveer Singh Bharadwaj

rajveer.developer@icloud.com | github.com/Rajveer100 | linkedin.com/in/rajveer-singh-bharadwaj-5504b31a4

Algorithms . Compilers . Open Source

Experience

Apple Open Source - Swift, *Swift Compiler Contributor* | Remote   *Dec '22 - Present*
- Added unimplemented **expression cases** in the **ASTPrinter**. GitHub> PR
- Improved out-of-place **Binding Diagnostic** reflecting 'var' or 'let' **Binding Pattern**. GitHub> PR
- Improved **Cast and Coercing** Diagnostics when **Literals** are involved. GitHub> PR

LLVM Open Source, *LLVM Compilers Contributor* | Remote   *Sep '23 - Present*
- [clang] Disallow using "this" on **new** and **delete**. GitHub> PR
- [libc++] Fix ambiguity when using **std::scoped_allocator** constructor. GitHub> PR
- [libc++] **Diagnoses** insufficiently aligned pointers for **std::assume_aligned**. GitHub> PR

Rust Open Source, *Rust Compiler Contributor* | Remote   *Sep '23 - Present*
- Switch from using **// ERROR** annotations with **–error-format** to error-pattern. GitHub> PR
- Bootstrap: Check validity of **–target** and **–host** triples before starting a **build**. GitHub> PR
- Remove all usages of **dont_merge** hack to avoid function merging. GitHub> PR

Fidelity Investments, *Software Developer Intern* | FCAT | Bangalore   *May '23 - Jul '23*
- Analysed and Visualized **Mongo's** Full Time Diagnostic Data - **FTDC Metrics**. GitHub> Gist
- Tech Stack: Go . Mongo . AWS S3 . Grafana . Snowflake . Python . JavaScript . Git . Bash

Education

UG	**B.Tech in Computer Science and Engineering**, *Bangalore Institute of Technology*	Bangalore, India	*Jun '20 - Jun '24*
HS	**Higher Secondary Education**, *Delhi Public School North Bangalore*	Bangalore, India	*May '18 - May '20*

Achievements

Active	**ICPC Regionalist Amritapuri Region, '@MainActor'**, ACM International Collegiate Programming Contest (ICPC)	*Link>Cert*
Active	**Solved over 5000+ problems in top programming platforms**, Competitive Programming	*Link>Profiles*
2022	**World Rank 1709 (AIR 389) in Google CodeJam Round 1C**, Google's Coding Competitions	*Link>Cert*
2022	**World Rank 1183 (AIR 857) in Google KickStart Round G**, Google's Coding Competitions	*Link>Cert*
2021	**World Rank 2833 in Meta HackerCup Round 2**, Meta's Coding Competitions	*Link>Cert*

Skills

PL/Compilers/iOS	C++ . Swift . Rust . LLVM . MLIR . Python . Java . Bash . Git . CMake . Ninja
Developer Tools	Unix . macOS . Terminal . NeoVim . Xcode . JetBrains IDEs
Languages	English (C2) . Spanish (A1)

Projects

The Eva Programming Language - LLVM Compilers   *Q1 - 2024*
Built a programming language from scratch with LLVM Compilers Infrastructure, C++/CMake/LLVM   *GitHub>Link*
- Working on building a low-level programming **language** with **LLVM IR**.
- Production-level **language features** like functions/closures, lambdas and **OOPs** classes.
- Branch instructions, flow control and **code generation** with final **executable**.

Recursive Descent Parser- Tokenizers/Parsers/AST   *Q4 - 2023*
Implemented Recursive Descent Parser from scratch for a full programming language, Rust/Cargo   *GitHub>Link*
- **RDP Parser** built from scratch handling complex **constructs** during parsing process.
- Built **tokenizer** and parsing modules with generated **Abstract Syntax Tree** (AST).
- **Recursive** production rules to handle **generic functions**, implement **classes** and objects.

The Eva Interpreter (S-Expressions) - Interpreters/Runtime Semantics   *Q4 - 2023*
S-Expressions based Interpreter built from scratch focusing on runtime semantics, JavaScript/Node.JS   *GitHub>Link*
- JS-based implementation with elegant **multi-paradigm** structure and **functional** programming.
- **Inheritance** and prototype based OOPs with **environments** and nested scopes.
- User-defined and built-in native **functions/lambdas** with **syntactic sugar** for operators.

Crypto Tracker - iOS   *Q4 - 2023*
Visualise Live Crypto Price Charts With Comprehensive Overview, SwiftUI iOS App   *GitHub>Link*
- A Crypto Currency App tracking **live data** via third-party **API** with user portfolio.
- Dynamic **Chart Detail** utilising SwiftUI with **Combine** and **CoreData** for data **persistence**.
- Appealing visuals, **animations** and **core** functionality with great **UI** experience.

Competitive Programming - Templates   *Q1 - 2023*
Custom Competitive Programming Templates, C++/Rust Template Programming   *GitHub>Link*
- Implementation of **data structures** and **algorithmic** templates with C++ and Rust.
- Segment **Trees**, **Modular** Integer, **Combinatorics**, Disjoint **Set** Union and many more.
- Utilises **Generics** and **optimised** logic for fast **computations** in heavy input data.