
Dhruv Chawla

Compiler Engineer

dhruv263.dc@gmail.com

+91 9910299843

<https://dc03.github.io>

Vellore, Tamil Nadu

A capable programmer learning compiler design and the LLVM compiler infrastructure. Experienced with interpreters, and familiar with systems and assembly programming. 4 years of C++ experience.

Languages

- English - Fluent
 - Hindi - Intermediate
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Skills

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|-------|----------|----------------|---------|--------|
| • C++ | • Python | • Compilers | • Linux | • LLVM |
| • C | • Rust | • Interpreters | • Git | |
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Experience

- **Google Summer of Code Contributor (The LLVM Compiler Infrastructure)**

May 29, 2023 - September 25, 2023

Project name: Improving Compile Times

- Implemented the InferAlignment pass into the LLVM optimization pipeline
- Added a new diagnostic to clang
- Implemented transforms within InstCombine
- Found miscellaneous performance improvements in DAGCombiner and InstCombine
- Found a major performance improvement in SetVector
- <https://summerofcode.withgoogle.com/programs/2023/projects/JdqGUwNq>

- **Google Summer of Code Contributor (The ENIGMA Team)**

June 13, 2022 - September 12, 2022

Project name: Data Buffers / Serialization

- Worked on rewriting most of the frontend of the ENIGMA Development Language compiler, a scripting language based on GML
 - Rewrote most of the Binary Buffer system which deals with storing and reading data from byte streams
 - Made a serialization and deserialization system which uses template metaprogramming for static polymorphism
 - <https://summerofcode.withgoogle.com/programs/2022/projects/BrXiUNA2>
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Education

- **B.Tech in Information Technology** *VIT, Vellore | 2020 - 2024*
Current CGPA: 9.28
 - **XIIth Grade (Senior Secondary), CBSE** *Navy Children School, Mumbai | 2020*
Percentage: 96.4%
 - **Xth Grade (Secondary), CBSE** *Navy Children School, Mumbai | 2018*
Percentage: 93.6%
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Projects

- **nyx** <https://github.com/dc03/nyx> | *September 2020*
 - A simple, interpreted language implemented in C++
 - Features classes with constructors and destructors, lists, tuples
 - Static type system
 - Copy, reference and move semantics
 - Bytecode virtual machine
 - Code formatter, bytecode dumper, VM execution tracing
 - **rispy** <https://github.com/dc03/rispy> | *February 2022*
 - Interpreter for a lispy-inspired lisp
 - Implemented in Rust
 - Tree-walk interpreter
 - Testing for lexical analyzer and parser
 - **tictactoe-arduino** <https://github.com/dc03/tictactoe-arduino> | *February 2023*
 - Tic-tac-toe implemented on an Arduino Uno
 - Multiplexing of outputs (LEDs) and inputs (buttons) to reduce pin usage
 - Compact layout of game state to reduce memory usage
 - Part of a university course project
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Certifications

- **Introduction to Haskell Programming (NPTEL)** *Issued Sep 2022*
Percentage: 85% Credential ID NPTEL22CS69S2318078809012045
 - **Compiler Design (NPTEL)** *Issued Apr 2022*
Percentage: 90% Credential ID NPTEL22CS14S2446142802071248
 - **Design and Analysis of Algorithms (NPTEL)** *Issued Oct 2021*
Percentage: 85% Credential ID NPTEL21CS68S4332059403122958
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