

# DHRUV SOMANI

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## EDUCATION

### Indian Institute of Technology, Guwahati

2020 - Expected 2024

B. Tech. in Computer Science and Engineering

CPI: 9.14/10.0

Minor in Robotics and Artificial Intelligence

**Key Courses:** Operating Systems, Computer Networks, Database Management Systems, Machine Learning, Implementation of Programming Languages Lab, Systems Software Lab

Awarded **6 AS “Outstanding”** grades including Software Engineering (+ Lab), Computing Lab and Optimization.

## EXPERIENCE

### Quadeye Securities LLP

May - July 2023

Software Engineering Intern

Gurugram

- Engineered a highly scalable mock **live trading exchange** using **C++**, featuring a **server**, **matching engine**, **FIX parser** and **encoder** for comprehensive testing of the internal API and exchange connectors.
- Conducted code benchmarking and identified bottlenecks to reduce the latency of the exchange significantly.
- Developed an exhaustive testing tool for **order lifecycle** in adherence to exchange policy, covering all order states, parameters and transitions on corresponding actions or matching engine events as a **state-machine**.

### Google Code-in

October - December 2018

Software Engineer

Remote

- Contributed to the **coala project**, an open-source code linting and fixing tool written in **Python**.
- Accomplished **13 tasks** such as template autogeneration for a web server, recursive directory traversal for command-line utilities, programming language abstract syntax trees and unit tests.
- Honored as a **finalist** out of 3000+ programmers for exceptional contributions to **open-source** software.

## HONORS AND AWARDS

- Represented India** and won the **Bronze Medal** at the **Asia-Pacific Informatics Olympiad**, 2018.
- Among the **national top 30** to reach the IOI Training Camp, the penultimate stage of India's IOI selection process with a perfect score in the **Indian National Olympiad in Informatics** in 2018 and 2019.
- Secured the **26<sup>th</sup> rank** and a **Honorable Mention** at the **ICPC Amritapuri Regionals**, 2021.
- Ranked among the **top 10** in the **Regional Mathematical Olympiad**, Gujarat Region twice.
- One of the 37 undergrads across India awarded the **Reliance Foundation Scholarship** in **AI** and **CS**, 2020.
- Classified as a **Master** on Codeforces with a maximum rating of 2186.

## KEY PROJECTS

### Route Planning for Optimized Last-Mile Delivery

Python

- Proposed and implemented solutions to the capacitated **vehicle routing problem** (VRP) with dynamic additions, an NP-Hard combinatorial optimization problem, using Google OR-Tools.
- Applied iterative **sweep clustering** algorithms to cluster delivery points based on geographical coordinates, to reduce the search space and achieve a **5x speedup** without loss in optimality.

### nano-C Compiler

C++, Assembly

- Created a compiler including a **tokenizer**, **parser**, **intermediate code generator** (three-address code) and **target code generator** for nano-C, a subset of the C programming language.

### xv6 - Unix based OS

C++

- Implemented hybrid SJF and RR scheduling and **Lazy Memory Allocation** using LRU paging.

## TECHNICAL SKILLS

**Programming Languages:** C, C++, Python, MATLAB

**Data Science & ML:** pandas, NumPy, matplotlib, scikit-learn

## POSITIONS OF RESPONSIBILITY

**Coordinator**, Coding Club: Delivered lectures with 300+ attendance and authored problems for coding contests.

**Web Developer**, Students' Web Committee: Developed institute's COVID response website with 2500+ users.