

AYUSH KUMAR SINGH

Varanasi, Uttar Pradesh, India

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Education

Vellore Institute of Technology (VIT)

Bachelor of Technology in Computer Science

Bhopal, India

Aug 2023 - May 2027

Sunbeam School Lahartara

Higher Secondary Education

Varanasi, India

June 2023

Key Projects

Competitive Programming Algorithm Visualizer

- Built an interactive visualizer to demonstrate algorithms like Dijkstra, DP, and sorting intuitively.
- Designed a clean, responsive frontend using React, TypeScript, and D3.js for dynamic, step-by-step animations with adjustable speeds.
- Developed a backend using Python (FastAPI) for algorithm state generation APIs, enabling dynamic user inputs.

High-Concurrency URL Shortener API

- Developed a high-concurrency URL shortener API using Go (Gin), Redis, and PostgreSQL, handling 10,000+ concurrent requests.
- Implemented Redis caching for low-latency redirects, IP-based rate limiting, and structured click analytics.
- Performed extensive load testing using Locust to optimize concurrency, connection pooling, and caching.

Skills

Programming Languages

Python, Go, C++, TypeScript, JavaScript

Machine Learning

Supervised Learning, Regression, CNNs, RNNs, NLP, Image Analysis

Core Competencies

Data Structures & Algorithms, OOP, Operating Systems, DBMS, Linux Environments

Tools & Technologies

Git, Docker, Google Colab, FastAPI, Gin, Firebase, AWS/GCP, Vercel, Render

Competitive Programming Profiles

Codeforces: Master (2122) - [Profile](#)

CodeChef: 6★ (2279) - [Profile](#)

Achievements

- **ICPC Regionals 2024:** Secured AIR 57 and College Rank 1 in preliminaries. Qualified for Amritapuri & Kanpur Regionals.
- **Meta Hacker Cup 2024:** Advanced to Round 2, ranking among the top 2500 globally.
- **Major Contest Performances:**
 - Codeforces Div 2 (1002): [Rank 77](#)
 - Codeforces Div 3 (980): [Rank 62](#)
 - CodeChef Starters 190: [Rank 2](#)