

HARSHIT SHARMA

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PROFESSIONAL SUMMARY

A driven Computer Science practitioner with a strong foundation in designing and building scalable, high-performance systems. Combines hands-on development experience with an expert-rated competitive programming background to deliver efficient solutions to complex algorithmic challenges. Consistently ranked among the top students academically and a proven contributor to globally recognized platforms like Codeforces.

EDUCATION

Thapar Institute of Engineering Technology

Bachelor of Engineering in Computer Science

Patiala, Punjab

Expected May 2026

- **CGPA:** 8.0 / 10.0
- **Class XII:** 96.4% — **Class X:** 95.8%
- **Relevant Coursework:** Data Structures Algorithms, Design and Analysis of Algorithms, DBMS, Operating Systems, Software Engineering, Mathematical Modelling and Simulation

TECHNICAL SKILLS

- **Languages:** C++, Go, C, Python, JavaScript, SQL, HTML, CSS
- **Technologies & Developer Tools:** Git, GitHub, Docker, Redis, PostgreSQL, MySQL, gRPC, RESTful API design, CI/CD, Azure (AKS / Container Apps), Visual Studio Code, Cursor, Copilot
- **Core Concepts:** Data Structures, Algorithms, Object-Oriented Programming (OOP), DBMS, Operating Systems, API Design

PROJECTS

CodeJudge: A Distributed Online Judging System

Personal Project

Tech Stack: Go, PostgreSQL, Redis, Docker, C++, Terraform, Azure (AKS)

- Architected a distributed, microservices-based backend in Go, containerized and deployed to **Azure Kubernetes Service (AKS)**.
- Engineered a secure C++ sandbox using low-level Linux syscalls (*fork*, *setrlimit*) to safely execute untrusted code with strict resource limits.
- Implemented a plagiarism detection service using a **Winnowing-based fingerprinting algorithm** for structural code analysis.
- Automated cloud infrastructure provisioning on Azure with **Terraform** and established a CI/CD pipeline for repeatable deployments.
- **Live Version:** codejudge.live

ChronoPath: A C++ Temporal Pathfinding Engine

Personal Project

Tech Stack: C++17, JS, Algorithms, Data Structures, GTFS

- Engineered a high-performance pathfinding engine that processes real-world public transit data to solve complex, time-dependent routing problems.
- Built a custom parser for the official **GTFS data of the Delhi city transit system** to construct a time-aware graph model capable of handling the city scale. (Win-x64 executable is available in the GitHub repo).

ACHIEVEMENTS

Academic

- Qualified for the Regional Mathematical Olympiad (RMO) by securing rank 254 in the Pre Regional Mathematical Olympiad in 2019.
- Selected among the top 51 students from Himachal Pradesh for the NTSE Stage-2 camp.

Competitive Programming

- **Codeforces (Handle: [kwant](#)):** Expert Rating 1653.
 - Consistently ranked in the top 10% of users globally based on rating.
 - Currently Ranked 1254 out of 10,000+ active users from India.
 - Achieved a global rank of 949 out of 15,000+ participants in a single contest.
- **CodeChef (Handle: [tripc0de](#)):**
 - Secured rank 150 in a recent contest (e.g., Starters 196) globally.

EXPERIENCE

Problem Setter / Tester - Codeforces

Codeforces Profile: [kwant](#)

- **Designed, authored, and tested** novel algorithmic problems for official Codeforces rounds, ensuring correctness and clarity for a global audience.
- Authored and validated high-quality problems ensuring balanced difficulty, correctness, and editorial clarity.
- Contributions featured in Round #1050; see related blog posts: [entry/146112](#) and [entry/146136](#).

Research Contributor - CognitiveMetrics

2023 – Present

[CognitiveMetrics.com](#)

- Contributed to the development and psychometric validation of standardized cognitive tests.
- Specialized in test development **norming, and factor analysis**.
- **Led the development** of the [CORE/FW](#) Test, from framework refinement and statistical reliability analysis to the psychometric validation of its measurement accuracy.

Data Structures Algorithms Peer Mentor

- Mentored a cohort of 15+ junior students in advanced topics like DP and graphs.
- Designed and led weekly problem-solving sessions to enhance algorithmic thinking and debug complex code.

Teaching Assistant - Numerical Analysis (UMA021)

Summer 2025

- Led weekly lab sessions for students, graded assignments, and provided constructive feedback.
- Assisted the professor with course material preparation and resolved student queries.