

Rishank Goyal

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EDUCATION

University of Adelaide - Adelaide, SA
Master of Computer Science

GPA: 6.71/7.00([Transcript](#))
Expected Graduation, Dec 2026

- **Relevant Coursework:** Applied Machine Learning and Artificial Intelligence, Distributed Systems, Event-Driven Computing

Indian Institute of Information Technology, Tiruchirappalli (IIIT) – Trichy, India
Bachelors of Technology in Computer Science

GPA: 8.41/10.00([Transcript](#))
Nov 2020 – May 2024

WORK EXPERIENCE

University of Adelaide
Teaching Assistant

Adelaide, Australia
July 2025 - Present

- Tutor for **Alogrithm Design/ Analysis** and **Structured Data**; conduct weekly tutorials and clarify problem-solving strategies.

eBottli
Software Engineer Intern

Adelaide, Australia
July 2025 – Dec 2025

- Worked on developing an internal client-operations dashboard using **JHipster (Java, SQL)**, delivering REST APIs for scan activity, device health, and error analytics with store/device/time drill-down
- Deployed the internal **operations dashboard** on AWS and implemented along with indexed queries to ensure performant reporting at scale.

Ielektron Technologies
Software Engineer Intern

Bangalore, India
Aug 2024 – Oct 2024

- Designed and implemented a high-performance **Ranged Key Caching system**, optimizing memory usage by storing continuous key ranges instead of individual entries, reducing overhead from $O(K)$ to $O(1)$ per key.
- Worked on building the **Adaptive Replacement Cache (ARC) algorithm**, optimizing it for varied data access patterns, and integrated it alongside LRU and LFU strategies, achieving 90%+ cache hit rates at 10% cache-to-database size ratio, and 99% hit rates at 30% ratio.

PROJECTS

Intraday Momentum Strategy ([Link](#))

- Implemented an event-driven backtesting engine on 1-minute market data, reproducing an intraday momentum strategy based on dynamic “noise bands”, VWAP-based trailing stops, and volatility-targeted position sizing.
- Modeled realistic commissions and slippage, generated detailed trade logs (trades.csv), and evaluated performance vs buy-and-hold SPY using Sharpe, max drawdown, alpha/beta, and monthly/yearly return breakdowns

Loop Fusion Static Analysis Engine ([Link](#))

- Implemented a C++ static-analysis pipeline that decompiles EVM bytecode to a control-flow graph, detects fusible loops with a bitmask algorithm, and reports ~15% fewer dynamic opcodes and ~9.6% lower gas usage (≈ 0.00023 ETH saved per transaction in tests) on 100+ sampled contracts via a Node.js/Express API and React UI

Color Image Quantization ([Link](#))

- Implemented kNN on frames of video to reduce the number of colors used in a frame to ‘k’ and maintained a global color palette to attribute for all the frames in a video in order to achieve compression of in-memory space occupied by a particular frame

SKILLS SUMMARY

Languages: C++, Python, SQL

Systems and Performance: Linux, multithreading & concurrency (threads, mutexes), performance optimization, networking (sockets, TCP/IP concepts)

Data and Tooling: NumPy, Pandas for data analysis/backtesting, Git, Docker

AWARDS AND ACHIEVEMENTS

- Selected for **Goquant** Bootcamp in **Top 20** participants and worked on developing C++ OEMS
- **ICPC Regional 2023** Qualifier ([Certificate](#))
- Global Rank **64** in Codechef Starters 117 and **272** in Codeforces Round 995 (Div 3)

VOLUNTARY EXPERIENCE

- **Web Developer** at Adelaide University Competitive Programming Club (April 2025 – Present)
- **Senior editor** position in university magazine committee for 2 years (Jan 2021 – Aug 2023)

Publications

[1] **GasOptiScan:** Unveiling Gas-Inefficient Smart Contracts via Loop Fusible Pattern Detection for Enhanced Cost Efficiency, 2023 International Conference on Emerging Trends in Networks and Computer Communications (ETNCC), Windhoek, Namibia, 2023, pp. 178-183, DOI: [10.1109/ETNCC59188.2023.10284938](https://doi.org/10.1109/ETNCC59188.2023.10284938)