Rohan Tyagi

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Professional Summary

R&D Engineer at Synopsys specializing in performance-oriented systems development with C++ and Python. Strong in Data Structures & Algorithms (solved **500+ problems** across platforms), complexity analysis, and system-level design. Delivered measurable impact: **30% speedups**, **40% crash reduction**, and **20% fewer non-deterministic failures** in production workflows.

Technical Skills

Languages: C++, Python, C, TCL/Tk, SQL, Bash/Shell
CS/DSA: Graphs, Dynamic Programming, Trees, Greedy Algorithms, STL, OOP, Complexity Analysis, Design Patterns
Systems: Performance Optimization, Profiling (gdb/valgrind), Memory Management, Debugging, Concurrency, Multithreading
EDA Tools: Logic Synthesis, Design Compiler, Fusion Compiler, QoR Reporting, Timing Analysis, STA
Developer Tools: Linux/UNIX, Git, Perforce, CMake, VS Code, Jira, Docker, CI/CD, GitHub Actions
AI Tools: GitHub Copilot, Cursor AI, ChatGPT/Claude, VS Code Extensions
Soft Skills: Agile/Scrum, Technical Writing, Problem Solving, Team Collaboration, Code Review

Professional Experience

Synopsys Inc — **Noida, India**
Research & Development Engineer — *Jul 2024 – Present*

- Led C++/Python development for advanced synthesis tools (Design Compiler, Fusion Compiler) in performance-critical EDA workflows, optimizing runtime and system stability
- Achieved **30% runtime speedup** and **40% crash rate reduction** by refactoring core simulation modules using advanced profiling and debugging techniques
- Reduced non-deterministic failures by **20%** through deterministic event-driven design improvements and robust error handling mechanisms
- Built diagnostic utilities for memory profiling and regression auto-analysis using gdb/valgrind; cut MTTR by **30%**

Synopsys Inc — **Bengaluru, India**
Graduate Engineer — *Aug 2023 – Jul 2024*

- Developed **3DQoR** visualization framework using Python and Plotly for comprehensive Quality of Results (QoR) analysis and reporting
- Collaborated with cross-functional teams to deliver features for EDA synthesis tools, improving workflow efficiency

Key Projects

AgriChain | ***React, Node.js, Blockchain, AI/ML, TensorFlow*** | Live | GitHub

- A comprehensive agricultural ecosystem platform combining AI-powered disease detection, blockchain-based supply chain tracking, government schemes integration, and direct farmer-to-consumer marketplace

Yoga Sync | ***OpenCV, TensorFlow, PoseNet, Python*** | Live | GitHub

- Built real-time yoga posture recognition system using computer vision and ML, providing instant feedback via keypoint detection

Education

ABES Engineering College — **Ghaziabad, India**
Bachelor of Technology in Computer Science & Engineering | *GPA: 8.81/10* | ***Gold Medalist*** — *2020 – 2024*

Publications

- Technological Insights into Yoga Posture Recognition: A State-of-the-Art Review - *IEEE, 2024* [Link]
- Disease Prediction in Plants using New Era Technologies - *IEEE, 2023* [Link]
- Mental Component Study for Sustainable Health - *Taylor & Francis, 2024* [Link]
- Examining AQI with Effect of Agnihotra in NCR Region - *Springer, 2022* [Link]

Certifications & Training

- **CISCO:** Programming Essentials in Python | Networking Essentials
- **NPTEL:** Python for Data Science | Developing Soft Skills and Personality