Aarab Nishchal

Bhubaneswar, India · aarab.nishchal@gmail.com · +91-9546457837
aarab.vercel.app · linkedin.com/in/aarab-nishchal · github.com/aarabii

Education

Kalinga Institute of Industrial Technology Expected May 2026
Bachelor of Technology in Computer Science
Relevant Coursework: Data Structures & Algorithms, System Design, Machine Learning, Operating Systems, DBMS, API Design, Distributed Systems, Performance Optimization.

Experience

Software Development Engineer Intern, **Unstop** Sep 2024 – Present

- Optimized the platforms code execution engine by analyzing backend bottlenecks in 300+ algorithmic problems; refactored C++/Java logic to reduce average runtime latency by **15%**.
- Architected internal automation pipelines to validate problem constraints and test cases, ensuring **99.9% uptime** for the problem statement delivery API during high-traffic hackathons.
- Engineered comprehensive test suites for technical assessments, achieving **100% code coverage** on edge cases to eliminate false positives in candidate grading.

Technical Projects

CppTestGenAI: Automated C++ Unit Test Generation System | *C++, Ollama, LLM, Python* [GitHub]

- Built an automated unit test generation tool that parses C++ project structures (headers/source) to construct dependency graphs without cloud API calls.
- Integrated a local quantized LLM via Ollama to analyze code logic and generate self-correcting test cases, achieving an **80-85% accuracy rate** on generated coverage reports.
- Designed a log-parsing engine that compares "Expected" vs "Actual" outputs to auto-generate regression reports, reducing manual testing overhead by approx. **40%**.

Orphia: Text to Music Generative AI System (RNN/LSTM) | *Python, LSTM, Next.js, Hugging Face* [GitHub]

- **Team Lead:** Led a 6-person engineering team to build a dual-pipeline generative audio system that converts text prompts to high-fidelity melodic tracks.
- Designed a hybrid ML pipeline chaining **Metas MusicGen** for base audio with a custom-trained **RNN/LSTM** model (trained on Euro-folk KRN datasets) to refine beat prediction and tempo alignment.
- Optimized the end-to-end inference API to process and render audio in under **60 seconds**, handling cross-origin requests via a robust Next.js middleware.

Algo Visualizer: Algorithm Visualization Platform (Pathfinding & Sorting) | *TypeScript, Next.js* [Github]

- Engineered a high-performance interactive visualizer for Pathfinding (Dijkstra, A*) and Sorting algorithms, capable of handling 2,000+ grid updates per execution.
- Solved React rendering bottlenecks by implementing aggressive **memoization strategies** and extracting state logic, maintaining a consistent **60fps (16ms frame time)** during heavy DOM manipulation.
- Implemented a responsive grid system that supports variable execution speeds and dynamic array resizing without triggering full-page repaints.

Technical Skills

Languages:	C++, Java, JavaScript (ES6+), TypeScript, Python, SQL (PostgreSQL/MySQL)
Core Engineering:	Data Structures & Algorithms, System Design, OOP, REST API Architecture, CI/CD, SEOs
Web & Tools:	React.js, Next.js, Node.js, Docker, Git, Convex DB, Suberbase, MongoDB, Tailwind CSS, Linux/Bash
AI & ML:	PyTorch, LSTM/RNN Architectures, LLM Integration (Ollama/LangChain), Hugging Face APIs

Certifications

- **AWS Academy Cloud Foundations** Amazon Web Services
- **Problem Solving (DSA)** HackerRank
- **Scientific Computing with Python** freeCodeCamp
- **API Fellowship Program** Keploy