PRANSHU TRIPATHI

Software Development Engineer

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🔗 https://github.com/Pranshu-Tripathi   📍 Hyderabad   ☆ https://codeforces.com/profile/hackerpr7

SUMMARY

Software Development Engineer with 2+ years of experience across full-stack development, system design, and AI integrations. Proven expertise in C++, Python, FastAPI, and Kubernetes, with deep knowledge of design patterns, CI/CD, and microservices. Recognized by the CTO/CEO for prototyping and leading the LLM-based Maestro Assistant project. Delivered a 300–400x performance boost in molecular calculations using a custom C++ library. Actively seeking challenging SDE roles to build scalable, high-performance systems in cutting-edge tech environments.

EXPERIENCE

Schrödinger (D.E. Shaw)

Developer 2 (SDE-2)   📅 07/2024 - Present   📍 Hyderabad

- Prototyped a **voice-enabled LLM agent** (Maestro Assistant) using Vertex AI, Google Speech-to-Text, and LITELLM; now leading **backend dev** with **2 reports**.
- Reduced non-bonded interaction time **300–400x** by building a modular C++ library with caching; cut 10-min tasks to 30s.
- Designed and deployed **LLM agent backend** with **FastAPI**, **G Cloud Run**, **Docker**, **G Cloud SQL**, and **Terraform** for production-ready models.
- **Implemented** a **bidirectional communication layer** between **Maestro** and **PyMOL** using the **Mediator design pattern**, reducing integration complexity by 40% and improving system modularity.
- Enhanced export functionality for new **movie presets** (e.g., *View Ligand Docking*) from **Maestro** to **PyMOL**, decreasing manual visualization setup time by 60% and enhancing automated workflow efficiency.
- Refactored 2000+ lines of legacy code using **Factory** and **Strategy patterns**, improving extensibility for handling diverse Job Server outputs.
- Implemented caching in the interaction library, enabling **<1-second repeated lookups** and making the tool reusable across Schrödinger's software suite.

Developer 1 (SDE-1)   📅 06/2023 - 06/2024   📍 Hyderabad

- Redesigned **DAO interface in Maestro** using **Bridge** and **Adapter patterns**, enabling support for 12+ new APIs across all structure properties.
- Created an adapter for Schrödinger's structure class that removed the m2io dependency and **enabled a property-writing mechanism with 3x greater flexibility.**
- Improved **collaboration across teams** by decoupling write logic, enabling 3+ new writing strategies and earning recognition from the Scientific Infrastructure team.
- Identified and fixed **20+ legacy code bugs**, resulting in 2x faster job file incorporation and improved stability across Maestro workflows.
- Co-implemented a **Vulkan - based rendering engine**, replacing **OpenGL** to enhance 3D graphics performance and GPU efficiency in Maestro.

Software Development Intern   📅 01/2023 - 06/2023   📍 Hyderabad

- Engineered robust **MVC** and **Command pattern** integrations, improving code maintainability and reducing feature-related bugs by 40%.
- Created comprehensive **unit and integration tests** for the toolbar, increasing test coverage by 25% and ensuring functional reliability.

Software Development Intern   📅 05/2022 - 07/2022   📍 Hyderabad

- Delivered a **robust preset management feature** in **2 months**—30% faster than average—using Factory and Adapter design patterns.
- Achieved **100% test pass rate** with **zero post-release bugs** by implementing SOLID principles and comprehensive functional tests.

PROJECTS

EVENTHIVE

Deployed a **ticketing platform** on GKE handling 3,000+ RPS, publishing NPM packages to streamline microservice integration across 5 services | *YouTube* | *GitHub*

Customer Relationship Management (CRM)

Developed a **Spring-based CRM app** managing 500+ customer records with CSRF protection and AOP to streamline code structure | *GitHub*

Carbon Hero

Built a **leaderboard-based Flutter app** to track user carbon footprint, integrating Firebase for real-time updates and auth | *GitHub*

Fibonacci Calculator (CI/CD Project)

Built a **production-grade deployment** on AWS with full CI/CD automation using Travis CI for streamlined development | *GitHub*

Fibonacci Calculator – Kubernetes Edition

Developed a **production-grade deployment** to GKE with CI/CD automation using Travis CI, ensuring high availability and scalability | *YouTube* | *GitHub*

AWARDS

Runner-up, Company Hackathon, Schrödinger

Appreciation from CTO & CEO, for Maestro Assistant LLM project

Silver Medals – Table Tennis & Football, Schrödinger

SKILLS

Programming Languages

C++, Python, Java, JavaScript, TypeScript, SQL, Dart, Shell Scripting, HTML5, CSS3, Bash, JSON

Frameworks & Libraries

Spring, Express.js, React, Next.js, Qt, Flutter, Hibernate, MongoDB, PostgreSQL, SIP (Python-C++), PyQt6, BULLJS

Cloud & DevOps

Docker, Kubernetes (K8s), Jenkins, GitHub Workflows, Travis CI, AWS (Elastic Beanstalk, RDS, ElastiCache), Google Cloud Run, GKE, G Cloud SQL, NATs Streaming, CI/CD Pipelines

Development Tools & Technologies

Git, GitHub, Postman, Visual Studio, Webpack, Maven, Vertex AI, FastAPI, Java Android SDK, Firebase, REST APIs, MVC Architecture

Software Engineering Concepts

Design Patterns (Factory, Strategy, Command, Mediator, Bridge, Adapter, Singleton), Microservices Architecture, Multithreading, Event-Driven Architecture, MVC/MVVM, Unit Testing, Integration Testing, AOP (Aspect-Oriented Programming), Security (CSRF, OAuth)

Additional Technical Interests

LLMs (Vertex AI Agent, Gemini), GANs, CNNs, LSTMs, IoT Systems, Classification Models, Scene Rendering (Vulkan, OpenGL), Agile Methodologies, CI/CD Automation

CERTIFICATION

Design Patterns in Modern C++ – Udemy, Jan 2024

Multi-Threading in Modern C++ – Udemy, Jun 2024

Docker & Kubernetes – Udemy, Aug 2024

Micro-Frontends in React – Udemy, Sep 2024

EDUCATION

B.Tech in Electronics and Communication Engineering

Indian Institute of Information Technology (IIIT)

📅 08/2019 - 05/2023   CGPA
📍 Allahabad   **9.16** / 10

- **Awards:** Merit-cum-Means Scholarship (2020, 2021, 2022) | Ranked **4th**

VOLUNTEERING

Coordinator, IoT – TESLA, IIITA

Senior Member, Literature Society – IIITA

LANGUAGES

English, Hindi, Marathi