

# Tahzeer Ashraf

<https://linkedin.com/in/tahzeer>

Mobile : (+91) 79774 26436

Email : [tahzeer.work@gmail.com](mailto:tahzeer.work@gmail.com)

Github : <https://github.com/tahzeer>

## EDUCATION

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### Indian Institute of Technology, Goa

*Bachelor of Technology Mechanical Engineering; CGPA 7.1/10*

Goa, India

*Nov 2020 - May 2024*

## EXPERIENCE

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### Technoforte Software

*Software Engineer · DPI/DPG*

Bengaluru, IN

*Jun 2024 - Present*

- **Program Management Systems:** Modernized and maintained legacy staff-facing PBMS applications by migrating from Odoo 15 to Odoo 17, and engineered client-facing web applications in Next.js for citizen-facing OpenG2P deployments.
- **Real-time Data Intensive Services:** Architected and operated high-throughput synchronous and asynchronous backend services using FastAPI and Celery for large-scale demographic data processing, including real-time templating based on web-standard data models for digital governance.
- **Internal Services:** Designed and maintained core OpenG2P internal platform services, including reusable abstractions over FastAPI, Celery, and centralized authentication/key management, to accelerate multi-project development.
- **Deployment Ownership:** Implemented containerized deployments using Dockerfiles, Helm charts, Kubernetes, and Rancher, and collaborated with implementing country teams on demos, requirements analysis, and OSS adoption.

### Indian Institute of Technology

*Undergraduate Research Assistant · Rocket Propulsion Labs, SMS*

Goa, IN

*July 2023 - Dec 2023*

- **Combustion Modeling:** Specialized in modeling heterogeneous composite propellant combustion with a focus on AP/HTPB systems.
- **Kinetics Simulation:** Used Python-based Cantera 3.x to simulate chemical reaction kinetics across flame regions and evaluated 1D models with different Vieille burn rate laws.
- **Burn Rate Prediction:** Developed an ANN to predict charge burn rates based on chemical kinetics and initial physical conditions.

## PROJECTS

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**Cryptalk:** Real-time Next.js 16 application that leverages Upstash Realtime for event streaming and Redis for persisting room metadata and message history, enabling low-latency messaging in ephemeral, self-destructing rooms. The backend uses Elysia to provide authenticated room creation, TTL-based expiry, and message APIs, while the frontend uses Tanstack Query and the Upstash Realtime client to sync messages live, enforce room access via secure cookies, and automatically clean up state when a room expires or is destroyed.

**PyShell:** PyShell is a small POSIX-compliant command shell built in Python that supports built-in commands, external program execution, I/O redirection, and pipelines in an interactive REPL environment. Its designed to replicate standard shell behavior while deepening understanding of parsing, command execution, and shell mechanics..

## PROGRAMMING SKILLS

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**Languages:** C/C++ , Python , HTML/CSS , JavaScript/Type-script , Golang , SQL (Postgres)

**Technologies:** FastAPI , Next.js , Tanstack , Elysia , Docker , Kubernetes , Linux