Swarnim Barapatre

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Professional Summary

Full-Stack Software Engineer with experience in developing mission-critical software for defense and enterprise organizations. Proven track record in designing systems and developing full-stack applications from scratch, regardless of the technology stack.

Education

BITS Pilani Vasco da Gama, Goa
Bachelor's in Chemical Engineering + Master's in Biological Sciences May, 2019 — July, 2024

Professional Experience

AccurateIC Pune, Maharashtra
FullStack Software Engineer, AI Department Aug, 2024 — Present

- Developed full-stack application for AI-powered naval autonomous collision avoidance systems, handling real-time radar, camera & sensor data stream processing for 10+ vessels.
- Architected, developed and led the development of building a platform for IOT-enabled systems (especially engines), smoothening the behavioural analysis of such systems, predicting failures and optimizing the systems for longevity using Artificial Intelligence.
- Drove technical decision-making and architecture planning towards making the software efficient, robust & maintainable.
- Identified performance bottlenecks & carried out code optimization.
- Mentored & trained junior developers and conducted code reviews of pull requests to maintain quality and correctness.
- Implemented standard development practices to bring in uniformity and long term maintainability of projects.

MasterSoft ERP Solutions Nagpur, Maharashtra
Software Engineering Intern, R&D Department Aug, 2023 — June, 2024

- Architected and developed products serving 700+ concurrent users as part of a core R&D team, ensuring optimal performance under high-load conditions.
- Developed Panopticon resulting in annual savings of Rs 53 Lakhs by eliminating dependency on third-party services and implementing in-house productivity measurement systems.
- Built comprehensive internal developer toolchains and automation frameworks, reducing development cycle times by up to 14 days and improving overall team productivity across multiple projects.
- Maintained critical Linux server infrastructure, implemented proactive monitoring solutions, and resolved production incidents to ensure system uptime and reliability.

Skills

- **Languages**: TypeScript, JavaScript, Python, Go, SQL, Bash, Powershell, Pascal
- **Frontend**: React, Tanstack Query, HTML, CSS, TailwindCSS
- **Backend**: AdonisJS MVC, ExpressJS, NodeJS, OAuth, RabbitMQ, Lucid ORM, Flask, FastAPI, Fiber, WebSockets, Server-Sent Events
- **Databases**: PostgreSQL, SQLite, Microsoft SQL Server, MongoDB
- **Cloud/DevOps**: AWS EC2, Nginx, Linux
- **Other**: Emacs, Vim, Git, LaTeX, Typst, GitLab API

Projects

ISACA — Intelligent Situational Awareness & Collision Avoidance Ship Oct, 2024 — Present

- Co-developed the ISACA application that runs the autonomous ship developed for the Indian Navy.
- The application includes features such as: radar overlay, obstacle & future trajectory visualization, planning routes on the world map, controlling sensor functionality (gps, radar, camera, etc), viewing camera feeds.
- Achieved 40% reduction in CPU consumption by refactoring inefficiencies.
- Proposed and implemented synchronized communication solution between the Ship and the Control Base.
- Developed using a tried and tested tech stack of *ExpressJS, ReactJS, Tailwind, Vite and PostgreSQL.*

NeuroGen — Smart Monitoring & Alert Systems for GenSets Dec, 2024 — Present

- Designed the system architecture and database structure.
- Features include: Predictive Maintenance, Multi-variate Anomaly Detection, Life Expectancy Simulations, Data Analysis & Visualizations.
- This application runs along with machine learning models in order to predict potential failures and provides alerts and recommendations.
- Led the development of the web application from scratch using a modern tech stack using *AdonisJS, Lucid ORM, ReactJS, Tanstack Query, and Tailwind CSS*.

Panopticon — Employee Performance Measurement System Oct, 2023 — June, 2024

- Designed and developed a multi-tenant application for streamlined employee productivity measurement.
- Reduced annual costs by Rs 53 Lakhs by eliminating reliance on external services (DeskTime).
- Facilitated confident remote talent recruitment through accurate productivity metrics.
- Implemented features such as interventionless atomic app updates, a live-updating configuration system, and encrypted activity logs.
- Tech Stack: *Python, Subprocess, Multi-threading, Pascal (Delphi), OpenCV, Powershell, Win32 APIs*

MS-SQL Suite of Tools Oct, 2023 — June, 2024

- Crafted a suite of tools for the Microsoft SQL Server meant for internal use by database developers, achieving 85% time reduction in SQL task flows.
- Developed a tool to optimize memory consumption by identifying memory leaks in the database, preventing database server crashes.
- Developed tools to compare and contrast database stored procedures and SQL functions, visualizing differences (side-by-side diff comprison) via automated reports and generating alter scripts to synchronize databases.
- Tech Stack: *Python, difflib, sqlparse, pyodbc*

Kafkaesqueue — Persistent Queue Management System Oct, 2023 — June, 2024

- Built a reliable queue system to streamline automation of time-intensive tasks, providing FIFO processing guarantees and remote task submission capabilities.
- Designed with persistence mechanisms to prevent data loss and configurable parallel processing modes, achieving significant performance improvements when order-independent processing is suitable.
- Addressed common challenges in task management workflows by providing a lightweight alternative to enterprise messaging systems for smaller-scale applications.
- Tech Stack: *Python, FastAPI, Pydantic*

OpenAI Question Paper & Course Outcome Generator Apr, 2023 — May, 2024

- Developed an AI-powered tool that automatically generates comprehensive course outcomes from course handouts and syllabi.
- Implemented question paper generation functionality with automatic classification based on Bloom's Taxonomy levels.
- Created RESTful API endpoints for seamless integration with existing educational management systems.
- Reduced manual effort in curriculum planning through automated course outcome generation.
- Tech Stack: *Python, OpenAI API, FastAPI, Pydantic*

Extra Curriculars

Swimming: National Swimmer. Multiple times State Gold Medalist.