

# Aryan Anand

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## Education

- PES University**, B.Tech in Computer Science Sept 2022 – May 2026
- **Coursework:** Data Structures & Algorithms, Computer Networks, Applied Cryptography, Big Data, Database Management, Database Technologies, Blockchain
- Rajendra Vidyalaya**, X - XII Mar 2020 – Mar 2022
- Physics, Chemistry, Mathematics, Computer Science

## Experience

- AI Systems Engineering Intern** *Cosdata – Next-gen Vector Database · New York, NY (Remote)*  
*June 2025 – Present*
- Engineered **multi-threaded Python benchmarks** to automate performance validation (QPS, Recall@10, nDCG) on BEIR datasets, accelerating CI for new commits.
  - Designed and optimized **low-latency streaming upsert APIs** and **hybrid search endpoints** in **Rust (Actix Web)**, cutting response times via cache-aware dynamic programming.
  - Diagnosed and resolved critical bugs in **index invalidation**, vector deduplication, and route consistency; improved async performance and reduced memory overhead.
  - Authored and maintained API documentation; implemented changes in the official **Python SDK** to ensure alignment with evolving backend logic.

## Projects

- BashScripts - Collection of Custom Utility Scripts** [aryan-212/BashScripts](https://aryan-212/BashScripts)
- **BigData-Docker:** Simplified the Big Data elective setup via Docker-based environment.
  - **PESULogin:** Automated captive portal login for college Wi-Fi using 'curl'.
  - **ArchHibernator:** Enabled seamless hibernation on Arch via swap/kern param detection.
  - Tools Used: Bash, Docker, cURL, Linux System Utilities
- DeepStalk - Multi-Threaded Dark Web Scraper** [aryan-212/DeepStalk](https://aryan-212/DeepStalk)
- Developed the world's fastest open-source .onion crawler, leveraging **Rust's async runtime**, Tokio for **concurrent networking**, and a high-performance frontier management system with **Bloom filters and priority queues**.
  - Tools Used: Rust, Reqwest, Docker, Elasticsearch
- BackendBro - AI-Powered Rust API Generator** [aryan-212/BackendBro](https://aryan-212/BackendBro)
- Created a **multi-agent AI system** that converts **natural language prompts** into fully functional **Rust APIs** with complete **CRUD operations**, automated **testing**, and **self-healing capabilities** for robust backend generation.
  - Tools Used: Rust, Actix-web, Tokio, Serde, Reqwest
- EmoStream - Real-time Emoji Processing System** [aryan-212/EmoStream](https://aryan-212/EmoStream)
- Built a high-performance, **event-driven system** using **Kafka** and **Flask** for real-time emoji broadcasting. Implemented **concurrent processing** with multiple subscribers, RESTful APIs for client management, and containerized deployment using **Docker**
  - Tools Used: Python, Kafka, Flask, SparkSQL

## Technologies

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**Languages:** Rust, Go, C++, Python, SQL

**Technologies & Tools:** Docker, Kubernetes, Git, GitHub Actions, Linux, Neovim, VS Code

**Backend:** Axum, Actix, PostgreSQL, MongoDB, Redis, Firebase, REST, WebSockets

**Distributed Systems:** Kafka, Hadoop, Spark, Flink, Redis Queue, Elasticsearch