AAYUSH AGARWAL

Software Engineer | 3+ Years in Backend & Distributed Systems

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EDUCATION & SCHOLASTIC ACHIEVEMENTS

College	Degree	Year	JEE Adv. 2018 AIR	KVPY SA 2017 AIR
IIT Delhi	B.Tech in Computer Science & Engineering	2022	60	176

WORK EXPERIENCE

- **SDE, Market Risk Applications, Goldman Sachs** **July 2022 - Present**
  - **Joblite - Scalable Remote Task Distribution Framework**
    - Built library to manage pipeline-stage task execution on P3(internal scheduling service) running workloads on **25k cores**
    - Helped meet **7hr SLO** and reduce **cloud usage by 30%** via async task scheduling and per-task resource configuration
    - Collaborated **cross-team** on internal P3 service by adding DAG-based execution to its API layer for task chaining logic
    - Scaled task throughput from **25k/5min** → **50k/5min** by scaling Joblite process & batching DB persistence I/O
    - Built a dynamic batching solution with custom hooks to handle expensive input patterns & improve task success rate
    - Supporting analytics by publishing compute data to Snowflake and increased reliability via failure propagation of tasks
  - **Comet - Event Driven Microservice & Orchestration Framework for Risk Pipeline**
    - Helped build **Kafka**-based **microservice** system with central orchestrator to decouple DAG stages & handle **20M** inputs
    - Designed orchestrator **persistence model** to track multi-granularity tasks and map upstream stage dependencies
    - Added stage-aware retries, dynamic downstream triggering in DAG workflows & backup-driven recovery for resilience
    - Integrated real-time monitoring by streaming orchestrator states to RV DRA server, cutting issue resolution time by 60%
  - **Soft Skills:** Guided and mentored Junior Developers in the team and Summer Interns of 2023 & 24 in their project work
  - **Tech Skills:** Distributed Systems, Database Design, Python, Kafka, Docker, REST APIs, gRPC, Pandas, Backend Dev
- **ML Engineer Intern in Zevi.ai** **Dec 2021 - Feb 2022**
  - Fine-tuned and deployed SBERT models on AWS to improve semantic search relevance across e-commerce catalog queries
  - Enhanced autocomplete by integrating semantic context from SBERT embeddings, improving user query prediction by 25%
  - **Skills:** Python, Jupyter, Docker, AWS EC2
- **Summer Intern, Capital Risk Applications, Goldman Sachs** **May 2021 - Jul 2021**
  - Integrated a SQL-driven validation framework to streamline onboarding of new data quality rules for regulatory report
  - Designed SQL templates for configurable & common pattern-based validation checks, minimizing manual coding effort
  - **Skills:** Java, SpringBoot, SQL

KEY PROJECTS

- **Collaborative Document Editor** *under Prof. Abhilash Jindal, IIT Delhi* | **Feb 2022**
  - Built & deployed real-time collaborative text editor supporting multi-user edit using **WebSockets** and synchronization
  - Used CRDT-based **conflict resolution** ensuring consistent, synchronized document updates handling **race** conditions
  - Designed scalable REST API & Websocket endpoints with periodic incremental persistence ensuring fault-tolerance
  - **Tech Stack:** Java, SpringBoot, MongoDB, WebSockets
- **Online Code Judge Platform** *(self project)* | **Feb 2025**
  - Built online coding platform with secure **JWT authentication**, real-time code execution, and automated verdicts
  - Utilized **Docker** to create isolated sandbox environments for secure code execution within memory and time constraints
  - **Tech Stack:** Docker, REST APIs
- **Mathematical Definition Classifier** *under Prof. M.Balakrishnan, IIT Delhi* | **Sep 2021**
  - Developed a classifier to understand the context of any mathematical formula as part of the RAVI project, IIT Delhi
  - Used for **semantic disambiguation** of variables used in a mathematical formula for context understanding
  - Can be used to make mathematical documents and PDFs in STEM accessible to visually impaired individuals
- **Emoticon Detection Model** *under Prof. Parag Singla, IIT Delhi* **Feb 2021**
  - Implemented **CNN** to recognize emotional state of images into 7 different categories in Kaggle competition
  - Achieved accuracy of 70% in the deep learning model by adding dropouts to solve vanishing gradients problem

TECHNICAL SKILLS

- **Languages:** Java, Python, C++ | **Frameworks:** Flask, Django, SpringBoot | **Libraries:** NumPy, Pandas
- **Databases & Warehouses:** MySQL, PostgreSQL, Redis, MongoDB, DynamoDB, Snowflake
- **Message Brokers:** Kafka, SQS | **APIs & Protocols:** REST APIs, WebSockets, gRPC | **Tools:** Git, Postman, Jupyter
- **Cloud & DevOps:** Docker, Kubernetes, AWS EC2, CI/CD, Terraform, GitHub Actions