

INDUMATHI THAMIZHARASAN

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Professional Experience

University at Buffalo – A2IL | Software Engineer Intern

Feb 2026 – Present

- Designed and developed **RESTful backend services** using **Java (Spring Boot)** for a centralized faculty management system, aggregating data from multiple sources (Excel, internal databases) supporting **100+ users**
- Implemented a **committee membership API** using a cross-database **native SQL join** across multiple MySQL schemas, enabling efficient retrieval of relational data across systems
- Built **6+ backend APIs** supporting faculty profiles, course data, and academic workflows, enabling structured data access and seamless frontend integration
- Designed backend features using a **layered architecture** (Controller → Service → Repository), improving code maintainability and separation of concerns
- Used **Spring Data JPA projections** to efficiently map query results to DTOs, improving query performance and reducing unnecessary entity loading
- Structured API responses using **DTOs and standardized response wrappers**, ensuring consistent API contracts across services
- Debugged and resolved **database schema mismatches** in production queries, improving data accuracy and system reliability
- Documented APIs using **Swagger/OpenAPI**, improving developer experience and enabling easier testing across the team

Accenture | Software Engineer – Backend & Data Systems

Aug 2022 – Aug 2024

- Engineered **distributed data processing systems** on **GCP**, orchestrating ingestion workflows across multiple sources (SFTP, SharePoint, GCS) into BigQuery, processing **100K+ records per file** across daily high-volume workloads
- Integrated ingestion pipelines with **downstream backend services**, enabling reliable data availability for application and analytics workflows
- Designed a **modular, multi-stage pipeline architecture** (source extraction → staging → warehouse load) with reusable components, improving maintainability and enabling faster debugging across processing stages
- Built **fault-tolerant workflows** by implementing validation and failure detection for file availability, schema mismatches, and data inconsistencies, improving pipeline reliability and reducing data loss
- Implemented **data transformation and schema enforcement logic** using BigQuery Stored Procedures, ensuring consistent normalization and validation across ingestion workflows
- Improved **SQL query performance by 20–25%** through indexing, query optimization, and schema tuning across large datasets
- Automated **CI/CD pipelines** for deployment of backend and data workflows, improving release consistency and reducing manual effort
- Diagnosed and resolved **production issues** through debugging and root cause analysis, improving system stability across processing workflows

Projects

- **Real-Time Ride Matching Service** [Proof of work] – Built a **low-latency backend system** using **Java (Spring Boot)** and **WebSockets** to match riders with drivers in real time; implemented a **concurrent matching engine** using thread-safe data structures (**ConcurrentHashMap, atomic operations**) to handle simultaneous requests, achieving **sub-100ms response latency**; designed to simulate **high-concurrency dispatch systems** under multi-threaded load.
- **AI Resume Analyzer (LLM + Semantic Search)** [Proof of work] – Developed an **AI-powered backend service** using **SentenceTransformers, FAISS, and Llama 3** to perform semantic matching and generate structured insights over unstructured resumes; built a **FastAPI-based pipeline** for efficient processing and retrieval; containerized using **Docker**.
- **Pintos OS Kernel Systems & Concurrency** [Proof of work] – Implemented **thread scheduling, synchronization primitives, and system calls** in **C**, demonstrating understanding of **concurrency, memory management, and OS-level resource control**; achieved **95%+ pass rate** across 200+ kernel-level tests.

Education

University at Buffalo, SUNY | M.S. Computer Science and Engineering – AI/ML Track

Aug 2024 – Dec 2025

Coursework: Machine Learning, Deep Learning, Distributed Systems, Algorithms, Cloud Computing, OS, Computer Security

Sathyabama Institute of Science and Technology | B.E. Computer Science, Chennai, India

Aug 2018 – Sep 2022

Coursework: Data Structures & Algorithms, OOP (C++), DBMS, Computer Architecture

Technologies

- **Languages:** Java, Python, SQL, C/C++, JavaScript
- **Backend:** Spring Boot, FastAPI, REST APIs, Microservices, WebSockets
- **Databases:** MySQL, PostgreSQL, BigQuery, Redis, MongoDB
- **Cloud & DevOps:** AWS(S3, Lambda), GCP, Docker, CI/CD
- **AI/ML:** LLM Applications, SentenceTransformers, FAISS, HuggingFace, PyTorch
- **Tools:** Git, JUnit, PyTest, Postman, Pandas, NumPy, Agile/Scrum