

# ARUP CHAUHAN

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## EXPERIENCE

### Software Engineer

Chicago, Illinois

IIT-DB Group Research Lab, Illinois Institute of Technology | *Python, PostgreSQL, C++, TensorFlow, Docker* May 2024 - Present

- Designing SQL query execution plans **optimized at the systems level**, focusing on cost estimation and execution times
- Leveraging ML techniques, including Deep Q-Networks and Support Vector Machines to **enhance query plan selections**
- Benchmarking query execution and system performance on a **10M multidimensional dataset** using a custom C++ module to **achieve a 25% reduction in execution time**

### Application Engineer (Content Systems Development)

New Delhi, India

Hindustan Times through Four C Plus (Internet) Co. Ltd. | *Java, Spring Boot, RESTful APIs, OODB* Oct 2019 - Apr 2022

- Developed and maintained an event-driven auto-publishing service for the web content management system using Java and Spring Boot, implementing scheduling and triggers to optimize content workflows, with **30% boosted efficiency**
- Integrated social media content publication capabilities into web CMS by implementing RESTful API endpoints secured with Spring Security OAuth 2.0, resulting in a **20% increase in content reach and engagement**
- Refactored backend services for database upgrade compatibility with Hibernate ORM, **reducing transaction latency by 15%**

### Application Engineer (Data Systems Optimization)

New Delhi, India

Hindustan Times through Four C Plus (Internet) Co. Ltd. | *Java, ExecutorService, JMS, OODB, JUnit* Jul 2018 - Oct 2019

- Created a suite of Java servlets to transform XML data into a proprietary object database schema format
- Designed a multithreaded data ingestion pipeline within the servlet architecture, leveraging Java's ExecutorService to parallelize data processing tasks, resulting in a **35% increase in data processing speed**
- Implemented and maintained a notifier service using JMS to ensure operations performed by servlets on the import server database are properly managed and logged, enhancing **transaction integrity by 10%**

## PROJECTS & OPEN SOURCE CONTRIBUTIONS

### Microsoft C++ Standard Library (STL) | *C++, Python, CMake*

Microsoft ([Open Source](#))

- Optimizing feature branches of `flat_map` and `flat_set` data structures for code conformity. Previously: refactored skipped integration tests to investigate root causes and restructured STL system header files for versioning

### Realtime Notification System | *Golang, MySQL, Redis, Docker*

[Project Link](#)

- Built a real-time notification system in Golang, using Redis for event-driven messaging and MySQL for storage. Reduced the **processing latency by 35%** with Go concurrency model. Deployed with Docker for consistent environment replication

### Route Planning and Directional Mapping Tool | *JavaScript (React), Node.js, Redis, Docker*

[Project Link](#)

- Designed an adaptive route optimization tool with real-time Dijkstra's Algorithm simulations using React for a responsive and interactive UI, Redis for in-memory caching, **achieving a 95% cache hit ratio**, and Docker for scalable deployment

### Information Retrieval System | *Python, Flask, Scikit-Learn, MongoDB, RESTful APIs*

[Project Link](#)

- Developed a focused search engine using TF-IDF (Scikit-Learn), Scrapy for targetted data extraction, and an HTML to JSON parser. Integrated it with MongoDB and deployed via a Flask RESTful API averaging a **200ms response time**

## EDUCATION

### Master of Science - Computer Science

Chicago, Illinois

Illinois Institute of Technology

Aug 2023 - May 2025

Relevant Coursework: Advanced Database Organization, Design and Analysis of Algorithms, Operating Systems

### Bachelor of Technology - Computer Science & Engineering

Lucknow, India

Dr. A.P.J. Abdul Kalam Technical University

Aug 2014 - May 2018

Relevant Coursework: Data Structures, Distributed Systems, Software Engineering

## SKILLS

- Technologies** - Python, Java, C/C++, Golang, TypeScript, JavaScript, HTML, CSS, YAML, JSON, Spring Boot, Flask, Node.js, Next.js, React, TensorFlow
- Databases & Platforms/Tools** - PostgreSQL, MySQL, MongoDB, Firebase, Elasticsearch, Git, GitHub, Docker, GCP, Postman, JIRA, Hibernate, JUnit, Selenium, GitHub Actions, CMake
- Engineering Practices** - RESTful APIs, Microservices, Agile, SDLC, Test-Driven Development, CI/CD, Containerization