

Shubham Kaushik

Ph.D. Researcher @ Brandeis University

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RESEARCH INTERESTS

Databases, Data systems, Storage systems, Distributed systems, Data streaming

PROFESSIONAL EXPERIENCE

Jan 2024 - Present	Ph.D. Researcher Brandeis University, MA, United States
Mar 2022 - Aug 2022	Software Engineer , Server Programming Team Kwalee, India
Jun 2021 - Mar 2022	Engineer - Information Security , Cyber Fusion, Information Security FIS Global, India
Oct 2019 - Jun 2021	Project Engineer , Python Cloud Computing, Wipro Digital Wipro Limited, India
Jul 2018 - Oct 2019	Project Engineer , Big Data, Cyber Defense Wipro Limited, India
Mar 2017 - Apr 2017	Full Stack Developer Intern , Backend Team SoPo Internet Private Limited, India

EDUCATION

Jan 2024 - Present	Doctor of Philosophy (Ph.D.) Brandeis University, MA, United States Major: Computer Science
Sep 2022 - Dec 2023	Masters of Science (M.S.) Boston University, MA, United States Major: Computer Science with specialization in "Data-Centric Computing" GPA: 3.88/4.0
Jul 2014 - Jun 2018	Bachelor of Technology (B.Tech.) Maharshi Dayanand University, Haryana, India Major: Computer Science & Engineering Thesis: "Fault Modelling of an Object-Oriented System using Colored Petri Nets"

PUBLICATIONS

DBTest 2024	Shubham Kaushik, Subhadeep Sarkar <i>Anatomy of the LSM Memory Buffer: Insights & Implications</i> , In Proceedings of the International Workshop on Testing Database Systems
JCSE 2019	Shubham Kaushik, Ratneshwer. <i>Fault Modeling of an Object-Oriented System using CPN</i> , International Journal of Computer Sciences and Engineering

POSTERS

NEDB Day 2024	Shubham Kaushik, Manos Athanassoulis, Subhadeep Sarkar <i>RangeReduce: A Range Query Driven Compaction for LSM-Trees</i> , North East Database Day
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BACHELOR'S THESIS

Shubham Kaushik. *Fault Modelling of an Object-Oriented System using Colored Petri Nets*, 2018.

Advisor: Dr. Ratneshwer, School of Computer and Systems Sciences, Jawaharlal Nehru University.

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Python, SQL, Rust (*learning*)
- **Markup Languages:** HTML, CSS, JSON, YAML, \LaTeX , Markdown
- **Databases:** RocksDB, Postgres, MongoDB, Redis, SQLite, ORM
- **Tools & Systems:** Kafka, Hadoop, gRPC, Microservices, Asyncio, Git, ETL, Flink, AWS

PROJECTS

- **Range Query-Aware Log-Structured Merge (LSM) Trees** (*Ongoing*): Developing data reorganization strategies and layouts to optimize the performance of range queries in LSM-based storage systems. [[readme](#)]
- **Multi Layered Detection Model (MLED) for Error Detection** (*Ongoing*): Creating a flexible system to reduce undetected errors in petabyte-scale file transfers through layered error-checking methods. [[readme](#)]
- **Benchmarking LSM-Based Storage Engines**: Analyzed performance of LSM trees with different memory buffers across various types of workloads, offering guidelines for optimal buffer selection. [[publication](#)]
- **Heterogeneity-Aware Operator Placement for Streaming Systems**: Proposed a dynamic method to place data processing operators based on data selectivity, improving efficiency and reducing network traffic. [[readme](#)]
- **Finding Vulnerabilities in VS Code Extensions**: Created a simulation framework to automate the installation and execution of VS Code extensions, identifying security vulnerabilities by analyzing open ports. [[readme](#)]

TEACHING EXPERIENCE

Fall 2024	Teaching Assistant , <i>Introduction to Computer Networking (COSI 128A)</i> <i>Michtom School of Computer Science, Brandeis University, MA, United States</i>
Spring 2024	Teaching Assistant , <i>Database Management Systems (COSI 127B)</i> <i>Michtom School of Computer Science, Brandeis University, MA, United States</i>
Fall 2023	Teaching Assistant , <i>Data Mechanics (DS 310)</i>
Spring 2023	<i>Center for Computing & Data Sciences, Boston University, MA, United States</i>
Fall 2022	Teaching Assistant , <i>Computer Networks (CS 455)</i> <i>Department of Computer Science, Boston University, MA, United States</i>

CERTIFICATIONS

- Jul 2023 | “The Ultimate Hands-On **Hadoop**: Tame your **Big Data**!” - Udemy [[link](#)]
- Jul 2023 | “Beginning **C++** programming from Beginner to Beyond” - Udemy [[link](#)]
- Oct 2018 | Statement of accomplishment for “**Python** Track” - DataCamp [[link](#)]

CURRICULAR ACTIVITIES

- Sep 2023 | Judged and mentored at [HackMIT 2023](#), aiding teams with technical challenges.
- Nov 2022 | Mentored 4 teams, with an average of 20 participants at [BostonHacks](#).
- Jan 2017 | Volunteered in the Program Event Management team at the *National Youth Festival*.