

Shubham Kaushik

PhD Researcher @ Brandeis University

Contact Information

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Research Interests

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

Professional Experience

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

Teaching Experience

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

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> , 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

- **Designing Range Query-Aware Log-Structured Merge (LSM) Trees** (*Ongoing*): Designing a new family of data reorganization strategies and data layouts, driven by range queries. [[ppt](#)] [[report](#)] [[readme](#)]
- **Enabling Efficient Range Deletes in LSM-Trees** (*Ongoing*): Introducing a lightweight and updatable range delete filter to avoid superfluous accesses to storage using a small amount of metadata [[report](#)] [[readme](#)]
- **Multi Layered Detection Model (MLED) for Error Detection** (*Ongoing*): Designing an architecture to significantly reduce the Undetected Error Probability in petabyte-scale file transfers. [[ppt](#)] [[readme](#)]
- **Heterogeneity-Aware Operator Placement for Stream Processing Systems at the Edge:** Proposing an approach to dynamically place operators based on the selectivity and heterogeneity of the data. [[ppt](#)] [[readme](#)]
- **Finding Vulnerabilities in VS Code Extensions:** Devised a simulation framework using Pyautogui to install and execute extensions, and detect security vulnerabilities by analyzing the open ports. [[report](#)] [[readme](#)]

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](#)]
- May 2016 | “Core **Java**” - Oracle’s Workforce Development Program [[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*.