

Shubham Kaushik

PhD Student @ Brandeis University

Contact Information

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Research Interests

Databases, Data systems, Storage systems, Distributed systems, Data streaming, Cyber security

Work Experience

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| 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

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| 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

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| Jan 2024 - Present | Doctor of Philosophy (PhD) 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

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| 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 Modelling of an Object-Oriented System using CPN</i> , International Journal of Computer Sciences and Engineering |

Posters

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| 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, Java, SQL, Rust (*learning*)
- **Markup Languages:** HTML, CSS, JSON, YAML, \LaTeX , Markdown
- **Databases:** RocksDB, MySQL, MongoDB, Redis, SQLite, ORM
- **Tools & Frameworks:** Django, Flask, Microservices, Asyncio, Kafka, 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*.