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**, *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

TEACHING EXPERIENCE

Fall 2024	**Teaching Assistant**, *Introduction to Computer Networking* (*COSI 128A*) *Michtom School of Computer Science*, Brandeis University, MA, United States
Spring 2024	**Teaching Assistant**, *Database Management Systems* (*COSI 127B*) *Michtom School of Computer Science*, Brandeis University, MA, United States
Fall 2023 Spring 2023	**Teaching Assistant**, *Data Mechanics* (*DS 310*) *Center for Computing & Data Sciences*, Boston University, MA, United States
Fall 2022	**Teaching Assistant**, *Computer Networks* (*CS 455*) *Department of Computer Science*, 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 *Anatomy of the LSM Memory Buffer: Insights & Implications*, In Proceedings of the International Workshop on Testing Database Systems
JCSE 2019	**Shubham Kaushik**, Ratneshwer. *Fault Modeling of an Object-Oriented System using CPN*, International Journal of Computer Sciences and Engineering

POSTERS

NEDB Day 2024 | **Shubham Kaushik**, Manos Athanassoulis, Subhadeep Sarkar *RangeReduce: A Range Query Driven Compaction for LSM-Trees*, North East Database Day

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. [blog]
- **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. [blog]
- **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. [paper]
- **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. [blog]
- **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. [blog]

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*.