

# Kumar Shivendu

I love Search and Distributed (Database) Systems

[✉ mail@kshivendu.dev](mailto:mail@kshivendu.dev) | [🌐 kshivendu.dev](https://kshivendu.dev) | [🔗 KShivendu](https://KShivendu) | [LinkedIn](https://kshivendu) | [Twitter](https://twitter.com/KShivendu_)

## Skillset

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- Languages    Rust · Python · JavaScript · Java · Bash · C++
- Frameworks    Actix · Tokio · FastAPI · Express.js · Django · React · Material UI · Bootstrap · Cypress · PyTest
- Infra    Kubernetes · Grafana · Loki · PostgreSQL · Redis · Elasticsearch · Qdrant (Core engineer) ·

## Experience

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### **Qdrant: Software Engineer - Core Team**

Oct. 2023 - Present

- Qdrant is the **fastest growing vector database with 27k+ stars, 40k+ docker pulls/day, and tens of thousands of production deployments.**
- Conducted performance experiments to investigate our bottlenecks and did comparative benchmarks of Qdrant vs other search/db engines
- **Built the infrastructure for Chaos testing and Continuous benchmarking** which caught 50+ critical bugs and perf degradations early
- **Creator and owner of our cluster manager service** that automatically scales and manages nodes/shards of Qdrant clusters inside k8s.
- Cluster manager **powers features like vertical/horizontal scaling, replication, rebalancing, resharding, multi-zone/region cluster sync**
- Responsible for distributed system features and bugs in the qdrant core — consensus, shards, wal, snapshots, shard transfers, resharding, etc

### **SuperTokens (YC 20): Software Engineer**

Mar. 2022 - Sep. 2023

- SuperTokens is an authentication devtool with 14k+ Github stars, 2.5M docker pulls, and multiple thousand B2B and B2C SaaS users.
- Architected our most requested **enterprise features - multi-factor authentication (MFA) and Time-based OTP (TOTP)**
- Implemented **authorization (RBAC), multitenancy, MFA, and TOTP features** in our Python and Node.js SDKs

### **FamPay (YC 19): Software Engineer Intern**

Sep. 2021 - Mar. 2022

- FamPay is India's first numberless card and payments app for teenagers with 10M+ app downloads.
- Worked on multiple features like UPI payments, KYCs, and asynchronous celery batch jobs.
- Improved CI and infra by introducing mypy, parameterized, diff coverage, traefik, oauth2-proxy, and developed a tool to debug our Redis cache

### **Software Heritage (Inria Paris): Google Summer of Code Student**

May. 2021 - Aug. 2021

- Software Heritage (SWH) is an organization under Inria (Paris) to collect and preserve all of the open-source software that has ever existed.
- Developed **advanced metadata search features on top of 300M+ public software repositories containing 23 Billion+ source code files**
- **Designed a custom search query language** and wrote a transpiler that converts the Abstract Syntax Tree (AST) into Elasticsearch queries.
- Implemented autocompletion for the custom query language in the web interface using WebAssembly, Javascript, CSS, and Django.

## Prev. Internships

Feb. 2020 - Jul. 2020

- SDE Intern @ Logy.AI: Developed the appointment booking portal for Colgate MyToothDoc platform using Django. (100k+ users)
- ML Intern @ Logy.AI: Improved internal image annotation platform. Doubled the speed of the malaria detection APIs by implementing an Fourier transform based blurry microscopic image detector
- ML Intern @ IIT Mandi: Trained ARIMA and LSTM models to forecast network usage time series data. Our paper was accepted at IEEE

## Side projects

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### Tech talks

- **Beyond Filters: Modern Search with Vectors in Django** @ DjangoConUS, Chicago [Link](#)
- **Chaos testing: Breaking a database on purpose** @ PlatformCon (Virtual) [Link](#)
- Improving search relevance using reranking and fusion @ Microsoft Bangalore [Link](#)
- Qdrant: Future of search and beyond @ FOSS United Bangalore [Link](#)

### Technical blogs

- I Reverse-Engineered Exa.ai Infrastructure Cost with Napkin Math [Link](#)
- Monitoring my life with Grafana, Prometheus, and InfluxDB [Link](#)
- In-depth look at ACID properties of Postgres [Link](#)

### Open Source projects and contributions

- smoldb: Implemented a distributed database from scratch with persistence, consensus, and shards etc. [Link](#)
- software heritage: Received the **Google Open Source Peer Bonus** for my continued contributions and mentored a student in GSoC
- vscode-advanced-search: VSCode Extension for bulk search/refactor that's more powerful than regex. **Winner in FOSS United Hackathon** [Link](#)
- suggest-ai: Recommendations for everything powered by GPT3 and Google Image Search API [Link](#)
- search-copilot: Chrome extension that extends your existing search using LLMs + scraping to give you vector search + filters [Link](#)
- ann-benchmarks: **Did the first ever benchmark of OpenAI embeddings at 1M scale using databases (Qdrant vs Pgvector).** Creators of Github Copilot, Yahoo Search, Spotify recsys, and Supabase responded to my work on Twitter. This project **accelerated/led implementation of HNSW in Postgres (pgvector)**. The dataset I created has been referred by Cloudflare, Redis, Clickhouse, etc and gets 1K/m downloads [Link](#)

## Education

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### **Indian Institute Of Technology (IIT) Bhilai**

Bhilai, India

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING

Jul. 2018 - May. 2022

CGPA : 8.2/10.0