Timothy Elgersma

Database Engineer

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Languages

C • C++ • Java • Kotlin • LaTeX • Typescript • Python • PostgreSQL

Experience

September 2022 – Present
Yugabyte | Software Engineer
C, C++, PostgreSQL

- Designed and implemented remote filter pushdown between major Postgres versions, enabling fully online major version upgrades as part of a broader team effort
- Prototyped and delivered support for distributed bitmap scans, yielding up to 1000x speedups on some customer queries
- Built a SQL view to expose abruptly terminated queries, enhancing system observability
- Collaborated on the development of login profiles, improving security by enforcing login attempt limits
- Refactored column target rules, decreasing response size by 25%
- Optimized memory tracking calls, reducing latencies by up to 60% for queries with large columns
- Redesigned memory allocation strategy, cutting memory usage by 60-95% on large writes
- Implemented graceful recovery to mitigate the impact of the kernel's Out of Memory killer
- Resolved multiple correctness issues in the query execution engine

September 2021 – December 2021
Yugabyte | Software Engineer Intern
C, C++, PostgreSQL

- Enabled row-level geo-partitioning across clouds, regions, and zones by designing and implementing tablespaces for tablegroups (collections of colocated tables)
- Updated YSQL grammar, cluster load balancer, and YSQL dumps to handle new tablespace features
- Prototyped using table statistics to estimate clause selectivity for better query planning

May 2021 – August 2021
Amazon | Software Developer Engineer Intern
Java, Kotlin

- Decreased latency by 15% and operational complexity for two million requests per day by designing and implementing a new API bridge that uses client configurable "profiles"
- Lead design discussions with a variety of stakeholders to ensure the highest standards for scalability, client customization, and enforcing invariants

January 2020 – April 2020
Faire | Backend Developer Intern
Kotlin, PostgreSQL

- Increased Faire's contribution margin by 180bps by implementing payment assistance plans and allowing the risk team to make timely, informed decisions by surfacing relevant customer and Plaid data
- Decreased customer support ticket count by 9% through heuristics to auto-handle common requests
- Refactored customer invoices for correctness, consistency across mediums, clarity, and simplicity

Projects

January 2021 – April 2021
Joos Compiler
Scala

- Compiles Joos 1W, a large subset of Java, directly into assembly for CS 444 (Compiler Construction)
- Designed and implemented scanning, parsing, analysis, and code generation in Scala

January 2019 – Present
Resume Creator
Python, LaTeX

- Implemented a Python script and LaTeX template to generate a resume from YAML

Education

September 2017 – April 2022

University of Waterloo | Bachelor of Computer Science

- **Relevant coursework**: CS 341 (Algorithms), CS 446 (Software Architecture), CS 458 (Security), IN 4331 (Web-scale Data Management)