Srinath Shrestha

SOFTWARE ENGINEER

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PROFILE

Software engineer with hands-on experience building concurrent systems, developer tools, and production services. Work spans Go, C, networking, Unix internals, data structures, performance profiling, testing, and open-source contributions.

TECHNICAL SKILLS

Languages: Go, C, SQL
Core: Data Structures and Algorithms, Concurrency, Networking, Operating Systems, Unix Processes, Performance Engineering
Tools and Platforms: Linux, Git, Docker, PostgreSQL, AWS, GitHub Actions

EXPERIENCE

Backend Developer Intern *Jan 2025 - May 2025*
SkyForge System Solutions

- Engineered services for SIRTIKA, a production diagnostic assessment platform spanning multiple business domains; developed REST APIs, PostgreSQL models, and core business workflows.
- Designed asynchronous report-generation pipelines and reliable background processing with atomic task-state transitions; improved data access through selective queries, caching, and lazy evaluation.

SELECTED PROJECTS

Process Supervisor *Go | Unix | Concurrency*

- Built a dependency-aware process manager with crash restarts, heap-scheduled backoff, runtime limits, bounded logs, Unix process groups, signal escalation, and a permission-restricted control socket.
- Used a single event-loop goroutine to own lifecycle state; tested dependency failures, stale events, timeouts, and shutdown behavior.

Concurrent Sharded Cache *Go | Atomics | Profiling*

- Built a generic TTL cache with shard-local locks, bounded capacity, LRU/LFU eviction, atomic counters, and lock-free MPMC access buffers.
- Added race-detector coverage, parallel benchmarks, and a pprof workload for contention and memory analysis.

gjson *Go | Parsing | Fuzzing*

- Implemented a recursive-descent JSON parser with a typed AST that preserves member order, duplicate keys, exact number text, and source spans.
- Added positioned syntax errors, conversion and traversal APIs, examples, and fuzz tests against the standard JSON grammar.

mmap Search Engine *Go | Memory Mapping | Indexing*

- Built a local full-text engine with Unicode tokenization, an inverted index, TF-IDF ranking, exact and prefix queries, and Top-K result selection.
- Designed a validated binary format with atomic persistence, incremental updates, concurrent mmap searches, fuzz tests, and benchmarks.

OPEN-SOURCE CONTRIBUTIONS

- **CockroachDB Pebble** : cached local object paths in a storage hot path; focused benchmark improved from 247-256 ns and four allocations to 4.13-4.27 ns with zero allocations.
- **Judgment Pack Runtime** : replaced quadratic JSON Pointer construction; a one-megabyte regression case improved from 25.49 seconds to 0.01 seconds.
- **Participle** : removed a per-token mapper allocation; isolated benchmark improved from 86.4 to 64.6 ns/op and from one allocation to zero.

TECHNICAL WRITING

Publish technical writing about software engineering and systems at srinathshrestha.xyz/blogs

EDUCATION

B.Tech in Computer Science and Engineering *2022 - 2026*
Bennett University, Greater Noida *CGPA: 8.32*