Shivang Arya

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Experience

Technical Contributor, GigaVector (Open Source) Feb. 2026 – Apr. 2026
Vector Database *Remote*

- Patched missing wrapper bindings in `python_compat.c` that caused MSVC exported .DLL builds to crash with `AttributeError` failures when Python clients accessed namespace management APIs
- Restored stability for Windows test targets by completing native to Python wrapper exposure paths, while also refactoring header organization and formatting for maintainability
- Fixed an accessibility related rendering bug where GSAP animation hooks left landing page components permanently invisible on browsers with reduced motion preferences enabled; implemented deterministic opacity fallback based on run time motion capability detection

Projects

tinyweb | *High Performance Web Server* | *C, POSIX Sockets, pthreads*

- Built a modular HTTP/1.1 web server from scratch in raw C using POSIX sockets, implementing low level TCP networking without external frameworks
- Designed a multi threaded request execution pipeline using a condition variable based thread pool for concurrent client connection handling
- Implemented a variadic routing engine mapping HTTP methods and URIs directly to function pointer callbacks through custom hash map lookups
- Developed custom memory managed data structures including linked lists, queues, binary trees, and dictionaries to support asynchronous request processing

strandy | *Concurrent Task Executor* | *C, pthreads, Concurrency*

- Engineered a lightweight POSIX compliant thread pool library in raw C for asynchronous task execution using condition variables and mutex synchronization
- Implemented a thread safe FIFO work queue supporting concurrent producer consumer scheduling without spin lock CPU overhead
- Built synchronization primitives around pending and active worker state tracking to safely coordinate executor shutdown and workload completion

rvlib | *Runtime Generic Collections* | *C, Generic Data Structures*

- Architected a generic container library in C using descriptor based runtime polymorphism to provide reusable data structures without language-level generics
- Implemented linked lists, stacks, queues, deques, and a chained hash table with deep copy insertion, custom hashing strategies, and type aware element management
- Built an extensible type descriptor framework exposing pluggable comparison, hashing, copy, print, and destruction routines for user defined data models
- Designed deterministic memory ownership semantics and recursive cleanup paths to safely manage dynamically allocated resources across nested container hierarchies

Technical Skills

Languages: C, Python, JavaScript, Lua, SQLite, PostgreSQL
Systems: POSIX APIs, Socket Programming, Multi threading, Memory Allocators
Frameworks: Flask, Astro.js
Developer Tools: Git, Docker, GDB, Valgrind, NeoVim, Arch Linux

Education

Hemvati Bahuguna Garhwal University Dehradun, Uttarakhand
Bachelor in Computer Science, CGPA: 7.59 *Aug. 2023 – June 2026*