HASSAN OSMAN

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EXPERIENCE

Project Stories Jan 2026 – May 2026

Software Engineer Intern *Louisville, KY*

- Engineered secure RESTful APIs for a self-serve checkout platform using Java, Spring Boot, and MySQL, driving a 45% increase in Growth-tier signups.
- Architected backend services utilizing MVC architecture (Controllers, Services, Repositories) and Dependency Injection, establishing transactional boundaries to guarantee atomic cart-to-order operations.
- Designed normalized database schemas and ORM entity mappings to eliminate data redundancy and maintain transaction consistency.
- Built automated CI/CD pipelines via GitHub Actions to execute automated unit and integration test suites, accelerating build verification and safe deployment cycles.

PROJECTS

MapReduce WordCount *(C, POSIX Threads)* Oct 2025 – Dec 2025

- Built a MapReduce-style distributed processing engine in C with multithreaded mappers and reducers, processing 1M+ tokens across parallel workers.
- Implemented thread synchronization using mutexes and semaphores to eliminate race conditions on shared memory buffers and word-count hash tables.
- Achieved 3.5× speedup over a single-threaded baseline across 4 worker threads through optimized thread pooling and data partitioning.

Path Tracer: Mesh Loading Pipeline *(C++, std::thread)* Jun 2025 – Jul 2025

- Implemented a Wavefront OBJ mesh-loading pipeline for a multithreaded CPU path tracer, extending rendering capabilities from procedural spheres to complex 3D assets in a Cornell Box scene.
- Wrote a streaming parser supporting standard OBJ face-index formats with explicit non-triangular face validation and index conversion algorithms.
- Designed an AABB normalization algorithm to compute mesh centroids and apply uniform unit scaling, ensuring coordinate consistency across imported models.

EDUCATION

University of Louisville Dec 2025

Bachelor of Science in Computer Science *Louisville, KY*

TECHNICAL SKILLS

Languages: Java, Python, C, C++, SQL, HTML5, CSS3, Swift, Go

Frameworks & Architecture: Spring Boot (Spring MVC, Spring Data JPA), Distributive system

Databases & Cloud: MySQL, Relational Database Design (RDBMS), AWS (EC2, S3)

DevOps & Tools: CI/CD (GitHub Actions), Git, Maven, Automated Testing, Linux/Unix CLI

INVOLVEMENT

- **CodePath Technical Interview Prep (TIP)**: Completed intensive algorithmic training covering data structures with peer-led mock technical interviews.
- **AfroTech**: Participated in national engineering workshops, technical panel discussions, and career development sessions with industry leaders.