RATHISHBARATH S. L.

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(Open to Relocate)

EDUCATION

Sri Krishna College of Engineering and Technology — Coimbatore, Tamil Nadu
Bachelor of Technology in Artificial Intelligence and Data Science — *Graduated: 2024*

- **Relevant Coursework:** Operating Systems (CPU Scheduling, Virtual Memory, Interrupts, Device Drivers & I/O Subsystems), Computer Architecture (CPU Pipelines, Cache Hierarchy, Hardware-Firmware Interface), Data Structures & Algorithms, Object-Oriented Programming.

EXPERIENCE

AI Annotation & Telemetry Quality Analyst — Present
Objectways — *Karur, Tamil Nadu*

- Execute structured telemetry data validation, verification, and quality assurance across high-volume production datasets under strict accuracy and turnaround SLAs.
- Collaborate daily with cross-functional engineering, QA, and program leads in agile triage reviews to isolate edge-case anomalies, document root-cause defects, and incorporate peer review feedback into validation workflows.

Software Development Trainee (Systems & Collaborative Engineering) — 1 Year Practical Training
Besant Technologies Training Institute — *Tamil Nadu, India*

- Developed modular C++, C#, Python, and Java components within a collaborative engineering workflow utilizing RFC design reviews, Git pull-request code reviews, static analysis, and automated unit/integration test suites.
- Engineered multithreaded OS-level modules managing virtual memory allocation, thread synchronization, and buffered I/O; incorporated senior peer code review feedback to resolve race conditions, deadlocks, and memory leaks.

PROJECTS

Windows Telemetry & Hardware Power-State Diagnostics Engine | *C++, C#, Python, ETW, Win32 API, WPR/WPA* — Independent Systems Project

- Architected an Event Tracing for Windows (ETW) and Win32 diagnostic pipeline monitoring CPU C-state/P-state residency, hardware interrupts (ISRs/DPCs), context switches, L1/L2/L3 cache misses, virtual memory paging, and disk/device I/O latency across firmware, kernel, and application layers.
- Developed a Python statistical analyzer correlating high-frequency timer interrupts and background thread wake-ups with ACPI power state transitions, validating processor power and battery life improvements using WPR/WPA trace baselines.
- Evaluated system behavior at scale using structured trace telemetry, automated regression tests, and peer-reviewed design specifications.

Automated Crash Dump, Hang & I/O Subsystem Triage Analyzer | *C++, Python, WinDbg, Sysinternals, GoogleTest* — Independent Debugging Project

- Engineered an automated post-mortem debugging utility ingesting Windows minidumps and trace logs to execute stack walks, symbol resolution, and root-cause bucketing for access violations (`0xC0000005`), heap corruption, blocked I/O IRPs, and thread deadlocks.
- Constructed C++ fault-injection test harnesses simulating lock convoys, handle leaks, and page-fault thrashing; verified diagnostic precision via GoogleTest unit tests and structured code review checklists.

OpenTelemetry .NET Runtime & OS Resource Instrumentation Adapter | *C#, .NET, OpenTelemetry, PerfView* — Adapted Open-Source Project

- Extended the open-source `opentelemetry-dotnet` SDK following upstream architecture and code-review guidelines to capture OS process counters, GC pause durations, and thread-pool starvation events across application layers.
- Reduced memory allocation overhead during high-throughput telemetry export by implementing cache-friendly value-type struct aggregators, validating CPU and GC efficiency gains in PerfView.

TECHNICAL SKILLS

Languages: C, C++, C#, Python, Java, JavaScript, SQL (KQL)

Hardware, Firmware & OS Internals: CPU Architecture, Processor Scheduling, L1/L2/L3 Cache Hierarchy, Virtual Memory & Paging, Hardware Interrupts (ISR/DPC) & Context Switching, Device Drivers & I/O Subsystems, ACPI Power States & Processor C-States, Win32 API, ETW

Debugging & Performance Tools: WinDbg, Windows Performance Analyzer (WPA), Windows Performance Recorder (WPR), Sysinternals Suite (ProcMon, ProcExp, VMMap), PerfView, Visual Studio Debugger, Crash Dump & Stack Trace Analysis

Telemetry, Cloud & Engineering Practices: Azure Monitor, Log Analytics, Kusto Query Language (KQL), OpenTelemetry, Pandas, NumPy, Cross-Team Collaboration, Peer Code & Design Reviews, Git/GitHub PR Workflows, CI/CD, GoogleTest, NUnit, PyTest