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Skills

Languages: C, C++, Java, Python, Golang, MATLAB, Ruby, JavaScript, NodeJS
Libraries: Spring Boot, Boost, gRPC, RDMA IBVerbs, Linux system libraries, Win32 SDK
Tech: AWS, Kafka, GDB, Valgrind, TCP, MySQL, MongoDB, Wireshark, Jenkins, Docker, Kubernetes

Work Experience

Hewlett Packard Enterprise *Andover, Massachusetts*
Systems Software Engineer Intern *May 2023 - Present*

- Built NVGrid, a foundational library suite for developing advanced cloud storage apps leveraging **NVMe, RDMA**
- Implemented **RDMA** channel API using **IBVerbs** to provide high-speed data transfers with minimum latency
- Developed **TCP** channel for non-RDMA NICs, and **Shared Memory** channel for services on the same node
- Engineered Connection Manager library for establishing channel connections between nodes; used **gRPC** service framework and **Redis** for service look-up; and **Boost state machine** for connection orchestration
- Architected **Telemetry** library to monitor the health and performance metrics of NVGrid components and integrated it with **Grafana** for visualization
- ***Tech used:*** C/C++, IBVerbs, Boost, gRPC, Redis, Kubernetes, Docker, Grafana, Bazel, GoogleTest, Jenkins

Barclays *Pune, India*
Software Developer *Jul 2019 - Jul 2022*

- Created **12 RESTful APIs** for a high-volume banking app **(150 TPM)**, streamlining loan payments for customers
- Implemented a performance monitoring library and parallelized API calls to **improve performance by 30%**
- Led the development (design, implementation, and testing) of a tool for bank agents that **automated analysis** for **60,000+** bank debt cases, saving **232 hours weekly** (equivalent to **5.8 FTEs**)
- Designed distributed **AWS** microservices to create repayment cases for delinquent accounts received from **Apache Kafka, reducing the latency** for case creation by **24 hours**
- Developed **CloudFormation templates** to provide one-click deployment of auto-scaling **ECS** clusters, **MSK** clusters, and **RDS** on the AWS cloud platform; achieving a **40% cost reduction** through demand-based scaling
- ***Tech used:*** AWS, RESTful APIs, Java SpringBoot, Python, Groovy, Kafka, Kubernetes, Docker, Jenkins, JUnit

Projects (Full project catalog)

C Debugger (▶️ Demo)

- Engineered a debugger that allows users to control the execution of a process and inspect the register set and memory, facilitating efficient bug detection in user applications
- Features include setting breakpoints; stepping in/out of instructions; reading/writing virtual memory and registers
- ***Tech used*:** C/C++, ptrace, GCC, GDB, x86 and x64 ISA, SIMD and FPU register sets

Cross-Platform Multimedia Library (▶️ Demo)

- Architected a library enabling developers to build comprehensive GUI desktop apps for Windows and Linux
- Features include graphics rendering, audio, device inputs, window management, memory management, and file I/O
- ***Tech used*:** C/C++, Python, GLSL, GDI, X11, XKBLib, WASAPI, ALSA, OpenGL

3D Model Viewer (▶️ Demo)

- Built an application to view 3D models with realistic lighting and material properties
- Features provided by this application are perspective projection camera; Phong lighting interacting with ambient, diffuse, and specular materials; and shadow-mapping
- ***Tech used*:** C/C++, GLSL, stb, Assimp, GLFW, MSVC, RenderDoc, OpenGL

Education

Northeastern University *Boston, MA*
Master of Science in Computer Science (GPA: 4/4) *Sep 2022 - May 2024 (Expected)*

K.J. Somaiya College of Engineering *Mumbai, India*
Bachelor of Technology in Computer Engineering (GPA: 8.56/10) *Aug 2015 - May 2019*