

MANANK PATEL

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EDUCATION

Birla Institute of Technology and Science - Pilani, Goa Campus 2020 - 2024
B.E. Computer Science CGPA: 8.17/10.0

PROFESSIONAL EXPERIENCE

Software Engineer July 2024 - Present
Arista Networks, Pune, India

- Architecting and developing distributed, scalable services leveraging Aeris (Arista's internal custom datastore) with an HBase backend, focusing on high availability, data consistency, and security
- Led initiatives to improve system stability and performance by employing advanced observability and profiling tools such as eBPF, gdb, and core dump analysis, directly contributing to reduced downtime and enhanced reliability for large-scale deployments
- Designed, implemented, and shipped customer-centric features in a fast-paced environment, taking ownership of the full software development lifecycle—including requirements gathering, design, development, testing, and deployment

Software Engineering Intern Jan 2024 - June 2024
Arista Networks, Pune, India

- Optimized memory usage for cloud-managed WiFi services by refactoring database interactions, achieving a 6-8x reduction in memory footprint, which is critical for cost-effective, high-performance storage and compute services at cloud scale
- Contributed to the design and execution of performance benchmarks, identifying and resolving bottlenecks in distributed systems

Software Engineering Intern May 2023 - July 2023
Arista Networks, Pune, India

- Played a key role in migrating production infrastructure from CentOS to AlmaLinux, ensuring compatibility, security, and maintainability for cloud-native environments.
- Drove the containerization of legacy monolithic applications, enabling microservices adoption and streamlined deployment pipelines using Docker and Kubernetes

GSoC Contributor May 2023 - Aug 2023
OSPO UC Santa Cruz Remote

- Developed an io_uring-based communication backend for a networked key-value store, leveraging Linux asynchronous I/O to maximize throughput and minimize latency
- Enhanced buffer management with shared ring buffers and direct packet queuing, significantly reducing memory copies and boosting overall system efficiency.

RESEARCH EXPERIENCE

Undergraduate Research Student May 2022 - Dec 2023
DaSH Lab, CSIS, BITS Goa

- Researched and benchmarked applications of Linux io_uring for reducing latency in data management systems, leveraging tools like eBPF, perf, and flame graphs to analyze and optimize IO performance.
- Studied and implemented distributed systems concepts, including consensus algorithms (Raft, Paxos), message queues (Kafka, RabbitMQ), and large-scale file systems (GFS, Hadoop), providing a strong foundation for cloud storage engineering.

TECHNICAL SKILLS

Low-level systems: C (advanced, memory management, concurrency, performance optimization, performance tuning), Rust (systems programming, async/concurrency, memory safety)

Microservices & Cloud: Go (Golang) cloud-native microservices, Docker/Kubernetes integration.

Areas Of Expertise: Systems programming, distributed systems, networking, and performance-critical backend development. Microservices architecture (Docker, Kubernetes), cloud infrastructure (AWS, Azure). Debugging and profiling (gdb, eBPF, perf, flame graphs, core dump analysis)

Distributed Systems: Design and implementation of distributed systems (consensus algorithms, CAP theorem, scalability, high availability). Experience with HBase, cloud storage, and hybrid cloud environments. Research and hands-on work with message queues (Kafka, RabbitMQ), large-scale file systems (GFS, Hadoop)

Tools & Technologies: Git, Docker, Kubernetes, AWS, GCP, Wireshark, OpenVPN, GDB, eBPF, IDA, Ghidra, KVM, Database management (SQL, NoSQL).