Bhaskar Pardeshi

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Summary

Seeking Ph.D. internship opportunities in Computer Science with a focus on datacenter networks and operating systems. Specializing in network congestion control, compute overload control, end-host network stacks, and CPU scheduling.

Education

- **Georgia Institute of Technology** — Atlanta, GA
  Ph.D. in Computer Science, CGPA: 4.0/4.0 — Aug 2023 – Present

- **College of Engineering, Pune** — Pune, India
  B.Tech in Computer Engineering, CGPA: 9.6/10 — Aug 2017 – Jun 2021

Research and Professional Experience

- **Georgia Institute of Technology** — Atlanta, GA
  Graduate Researcher, Prof. Ahmed Saeed's group — Aug 2023 – Present
  - Studied interference between two end-host controllers - overload controller and CPU core allocator, and implemented a lightweight coordination protocol, achieving up to 6% higher throughput, $1.7\times$ lower latency, and $1.4\times$ higher CPU utilization.
  - Designing a unified overload controller for datacenter applications, that handle requests with varying resource demands and execution paths, providing a holistic approach for consistently high throughput and low latency, with initial prototype achieving $2\times$ throughput increase and $6\times$ latency reduction for CPU- and memory-bound workloads.

- **Nutanix** — California, USA
  Intern, Member of Technical Staff — May 2025 – Aug 2025
  - Designed and implemented a delta-scan API for RocksDB, retrieving only changed key–value pairs after a base scan.
  - Improved scan efficiency, achieving up to $1000\times$ faster performance compared to the existing full-scan implementation.

- **NVIDIA** — California, USA
  GPU System Software Intern — May 2024 – Jul 2024
  - Updated the user-space power, temperature, and acoustic controller for Nvidia GPU notebooks to accept inputs from a platform-specific service instead of ACPI.
  - Ensured power draw remained within limits and reduced testing/debugging time by replacing SBIOS-based ACPI logic with user-space control.

- **VMware, Inc.** — Bengaluru, India
  Member of Technical Staff 2, Datapath Networking Team — Jan 2021 – Jul 2023
  - Created a simulated SmartNIC-based ESXi setup, reducing the need to procure expensive NVIDIA BlueField SmartNICs for testing.

- Led a 3-person team to make ESXi's TCP/IP stack IPv6-compliant (RFC 8200/8201) and improved Cubic congestion control performance by 10–50% over NewReno, contributing to FreeBSD.
- Enhanced virtual NIC to distribute incoming IPsec packets across multiple threads, scaling throughput proportionally.
- Resolved 100+ TCP/IP and virtual network stack bugs and conducted knowledge transfer sessions for new engineers.

Projects

- **Userspace Multi-threading Library**: C library implementing the one-one, many-many, and hybrid userspace threading models.

- **Credit-based Scheduler for Userspace Threads**: Preemptive CPU scheduler for userspace threads, achieving proportional core allocation across threads.

- **Distributed Key-Value Store**: In-memory store with sharding and replication for high availability; maintained eventual consistency during host failures.

- **Userspace Asynchronous IPC Library**: Userspace asynchronous IPC library using shared memory and ring queues, with a high-level API for seamless communication with a local compression service.

- **User-space Write-Ahead-Log-based File System**: A persistent file system with crash recovery using an on-disk redo (write-ahead) log, including transaction APIs and a circular-queue log structure to ensure consistency.

- **Command-line Iterpreter**: A UNIX command-line interpreter supporting process control, IPC, piping, I/O redirection, built-in commands, and job handling.

Publications

- **CoreSync: A Protocol for Joint Core Scheduling and Overload Control of μs-Scale Tasks**
  Bhaskar Pardeshi, Eric Stuhr, Ahmed Saeed   *IEEE ICNP 2025*

Technical Skills

- **Languages**: C, C++, Python, Go, Bash, JavaScript, SQL

- **Tools**: Git, Perforce, Make, GDB, Wireshark, gRPC, DPDK, RDMA, Redis, Memcached, RocksDB