Tolga Bilgis

Systems · Cloud · Infrastructure Engineering

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EDUCATION

Clemson University
Expected May 2028

B.S. Computer Engineering · Minor in Mathematical Sciences · GPA: 3.9 / 4.0

TECHNICAL SKILLS

Languages: C, C++, Python, Bash, Java, JavaScript, MATLAB, Lua, SQL

Systems: Linux, Rocky Linux, systemd, TCP/IP, POSIX sockets, NFS, InfiniBand/RDMA, x86/ARM

Infrastructure: Ansible, Kubernetes, Docker, Podman, AWS, Terraform, cloud-init, GitHub Actions, GitLab CI/CD, Prometheus, Grafana

HPC / Performance: Slurm, MPI, OpenMP, Spack, HPL/HPL-MxP, perf, xCAT, performance benchmarking

EXPERIENCE

Los Alamos National Laboratory
May – Aug 2026

HPC Intern, AI Infrastructure

- Automated containerized Linux/HPC infrastructure for the CIRCE AI platform with Ansible, GitLab CI/CD, Slurm, and Podman.
- Benchmarked five vector database backends using 2.7 million 4,096-dimensional vectors, evaluating throughput, latency, scalability, and resource use.
- Identified a retrieval backend delivering roughly 20× the existing setup's throughput in the evaluated workload for an HPC-hosted RAG platform using a 2 TB arXiv corpus.

Clemson University
Dec 2024 – Present

HPC System Administrator

- Administer the Rocky Linux student HPC cluster; configure distributed workloads and tune performance using Slurm, MPI, HPL, and HPL-MxP.
- Co-built and performance-tuned a heterogeneous cluster with NVIDIA A100 GPUs. Served as system administrator at SCC25; returning for SCC26.
- Co-built a 16-node Raspberry Pi cluster for student cluster competition work.

Outlier AI
Jan 2024 – Jan 2026

AI Coding / Math Expert

- Wrote, tested, reviewed, and refined programming and mathematical solutions in C++, Python, Java, Kotlin, and JavaScript.

Clemson University
Aug – Dec 2024

Undergraduate Robotics Researcher

- Integrated sensors using Python and C++ and built real-time telemetry displaying a robotic vehicle's speed, position, and sensor readings for a digital twin.

SELECTED PROJECTS

Linux & Kubernetes Homelab
Linux · Kubernetes · Ansible

- Built a three-node Ubuntu Kubernetes cluster, automated host configuration with Ansible, and added GitHub Actions validation for Ansible.
- Deployed Prometheus, Grafana, and local persistent storage; tested pod replacement and a worker failure that demonstrated node-local storage limits.

NetProbe
C · Linux · POSIX sockets

- Built a TCP client/server tool measuring round-trip latency and sending throughput, with configurable host, port, duration, and buffer size.
- Implemented monotonic timing, min/average/max and p95/p99 reporting, and socket I/O handling partial transfers and interrupted calls.

Distributed Edge AI
Jetson · Python · YOLO

- Split detection, facial recognition, and web alerts across two NVIDIA Jetson devices with local inference; earned 2nd Place, Best Use of Hardware at CUHackit 2026.