

Brendan Desjardins

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EDUCATION

Clemson University

B.S. in Computer Science; Minors in Mathematical Sciences & Artificial Intelligence

GPA: 3.89/4.00

Clemson, SC

Graduating December 2026

EXPERIENCE

Software Engineer Intern

Microsoft

May 2026 – Jul. 2026

Redmond, WA

- Built a Python deployment orchestration service within Azure Compute coordinating VM policy generation, snapshots, versioning, and PRs across three repositories, cutting deployment time from ~3 hours to ~20 minutes.
- Designed an MCP server with 10+ tools for launching deployments and inspecting per-file policy diffs, persisting each run to Azure Blob Storage for a durable, auditable history.
- Created verification tools exposing Kusto queries as agent-callable checks, reporting live rollout status for policies across 20,000+ machines in production, including machine-pool assignment, deployment state, and error logs.

Data Science Intern

NT Concepts

Jun. 2025 – Jul. 2025

Vienna, VA

- Built and scaled an adversarial robustness library in Python/PyTorch to stress-test military YOLOv5 object detection models, engineering attacks that reduced mean average precision (mAP) by 40% across 1,000+ images.
- Automated large-scale robustness evaluations with Kubeflow and MLflow, orchestrating pipelines that logged metrics and artifacts for reproducible experiments across 5,000+ images and multiple attack types.

Undergraduate Researcher

Clemson Advanced Imaging Lab (NSF-Funded)

Aug. 2025 – Present

Clemson, SC

- Engineered a spatiotemporal fusion pipeline in Python, PyTorch, and OpenCV to align event-camera and RGB streams via feature tracking and object motion, capturing synchronized datasets for a research paper.
- Evaluated DiFix3D+ diffusion model with and without reference image conditioning on Palmetto HPC clusters.

Head Teaching Assistant

Clemson University

Jan. 2024 – Dec. 2025

Clemson, SC

- Head TA for a 100+ student introductory Python course; designed lab assignments and autograders and directed a team of 7 TAs running weekly labs and student support.

PROJECTS

UFC Fight Prediction & Analytics Platform | *Python, Go, PostgreSQL, Redis, GCP, ONNX, MLflow*

- Developed an end-to-end, multi-service UFC fight-prediction platform in Go and Python with a live inference service over an NN + XGBoost ONNX ensemble, sustaining 65%+ live accuracy across 6+ months of real events.
- Automated an MLflow retraining pipeline with experiment tracking, a model registry, and accuracy-gated promotion, deployed as a scheduled Cloud Run Job that verifies training and serving parity before each release.
- Engineered a Go inference service to achieve ~18ms p99 latency, 0% errors under k6 load test; deployed a Cloud Run pipeline that scrapes and engineers 56 features, storing results in PostgreSQL.

LSM-Tree Storage Engine | *C++17, CMake, GoogleTest*

- Built a persistent, crash-safe LSM-tree key-value store in C++17 with a write-ahead log, memtable flushing, and Bloom-filtered indexed SSTables, sustaining ~113K buffered writes/sec at 2.86x write amplification.
- Implemented crash recovery, size-tiered k-way compaction with tombstone resolution, and range scans, validating correctness with randomized differential tests against a std::map reference model.

Natural Language-Based Playlist Generator | *Python, FastAPI, Spotify API, React, Qdrant, Docker, GCP*

- Built a full-stack NLP playlist recommender mapping free-text descriptions to personalized song picks over 600K+ Spotify title embeddings in a Qdrant vector DB, with a FastAPI service, and GitHub Actions CI running pytest.

User-Mode Threading Library | *C, POSIX, ucontext*

Operating Systems

- Implemented a pthreads-style user-mode threading library in C on ucontext/swapcontext (create/join/yield/exit, mutexes, condition variables) with setitimer-driven preemption and interrupt-masked critical sections.

TECHNICAL SKILLS

Languages: Python, C++, C, Go, JavaScript, SQL, Java

Backend & Full-Stack: FastAPI, React, Docker, REST APIs, CMake, pytest, GitHub Actions CI, GCP, Azure

Data & ML: PostgreSQL, Redis, Qdrant, PyTorch, ONNX, MLflow, Pandas, NumPy

Systems: Linux/POSIX, concurrency, multithreading, storage engines, gdb