Brady Wozniak

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Education

Michigan State University, East Lansing **May 2027**

BSE in Computer Science

- Courses: Computer Systems, Cloud Computing, Linear Algebra, Data Structures & Algorithms, OOP Software Design

Work Experiences

Dassault Systèmes **May 2026 - Present**

Robotics Engineer Intern *Royal Oak, MI*

- Built a multi-language robot program compiler in Python translating between ABB RAPID, FANUC, and DELMIA BMX-XML via a custom intermediate representation, then extended it with a hybrid RAG pipeline grounding a local LLM (Qwen3) in spec docs, cutting per-translator development time from ~12 weeks to 6–8 weeks.
- Redesigned a production C++/CAA data exchange framework with runtime type introspection, replacing 4 hardcoded controller profiles with arbitrary support and enabling a company-wide JSON migration with zero code modification.
- Built a fault-tolerant XML sanitizer reconstructing full-precision floats from corrupted DELMIA OLP exports, fixing a gripper collision caused by a 0.09° orientation error, and eliminated silent data loss across 85 production programs.

Michigan State University **Feb. 2024 - Feb. 2026**

Research Assistant *East Lansing, MI*

- Designed and trained an MLP-based autoencoder in PyTorch to encode and decode protein structures, achieving 99% reconstruction accuracy across a dataset of ~2,000 structures through optimized preprocessing (normalization, denoising).
- Investigated Feynman-Kac correctors for improving sample efficiency in protein structure diffusion generation, deriving partial steps toward the governing integral.

Magna International **May 2025 - Aug. 2025**

MES Intern *Troy, MI*

- Built a Copilot agent integrating the Runn API with Azure scheduling data and internal MES documentation, surfacing time-off/on-call overlaps and giving 10+ engineers a conversational interface for technical troubleshooting.
- Diagnosed and resolved 5+ display bugs (connectivity drops, incorrect data) across factory locations using Node-RED and FlowFuse, restoring accurate real-time tracking of robot pass/fail status and cycle time.

Project Experiences

CUDA Neural Network Framework | C++, CUDA **May 2026 - Present**

- Implemented a custom reverse-mode autodiff engine in C++ with broadcast-aware gradient reduction, supporting dynamic computational graphs and gradient propagation across tensor ops (matmul, elementwise ops, activations).
- Designed a shared-storage view system for zero-copy tensor ops (reshape, transpose, squeeze/unsqueeze), with ref-counted shared_ptr memory management across CPU/CUDA backends.

LanguageExplorer | Python, JavaScript, React, FastAPI **Jan. 2026 - Feb. 2026**

- Designed and deployed a full-stack language parsing tool, converting user-defined regex tokens and context-free grammar rules into interactive AST visualizations.
- Engineered a dynamic grammar generation pipeline using Lark to construct ASTs from arbitrary, highly variable user-defined token and grammar input, overcoming inconsistent input formatting to render accurate parse trees.

Technical Skills

Languages: C++, Python, C, CUDA, Assembly, JavaScript, TypeScript

Libraries: Pytorch, Numpy, Pandas, React, Flask, FastAPI

Tools: Docker, Linux, GIt, MongoDB, Azure, CMake, AWS, Kubernetes

Concepts: Embedded systems, Distributed Systems, Concurrency, Multithreading, Performance Optimization, Robotics