

RYAN HARTUNG

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EDUCATION

The University of Notre Dame

Ph.D. in Computer Science & Engineering

Notre Dame, IN

Expected May 2029

- M.S. in Computer Science & Engineering (August 2025)
- Research Focus: Portability, Reliability, and Scalability of Distributed Systems and High-Performance Computing

The University of Texas at Austin

Bachelor of Science in Physics (Computation Option)

Austin, TX

Aug 2020 – May 2024

- Certificate in Elements of Computing

TECHNICAL SKILLS

Programming Languages: Bash, C, Java, JavaScript/NodeJS, Python, Rust, SQL

Web Development: CSS, Django, HTML, Jekyll, React

Technologies: ABB, Docker, Git, Honeywell, Linux/UNIX, MPI, OpenFOAM, OpenMP, ParaView

Languages: Intermediate Spanish

EXPERIENCE

The University of Notre Dame

Graduate Research Assistant

Notre Dame, IN

Jan 2025 – Present

- Contributed to the design and implementation of xGFabric, an architectural framework connecting remote sensor edge networks to HPC centers via 5G.
- Developing low-latency data pipelines to facilitate real-time inference across heterogeneous edge-HPC infrastructure.

Hargrove Engineers and Constructors

Controls & Automations Engineering Intern

Katy, TX

May 2024 – Aug 2024

- Automated the migration of 200,000+ lines of Dow MOD5 to Honeywell Experion with no loss of functionality.
- Tracked, analyzed, and documented over 7,000 variables to design flow diagrams visualizing variable definitions.
- Developed several algorithms to expedite migration and variable mapping processes, improving overall efficiency.

Hargrove Engineers and Constructors

Controls & Automations Engineering Intern

Katy, TX

May 2023 – Aug 2023

- Instantiated existing library modules to complete Westlake's PVC plant Reactor and Train configuration.
- Performed safety testing on all module and sequence configurations on simulated ABB hardware.
- Successfully configured Modbus communication between the ABB and HIMA system controllers.
- Updated structured text configuration to handle cross-controller communications.

The University of Texas at Austin

Undergraduate Research Assistant

Austin, TX

Jun 2022 – Dec 2023

- Engineered an open-source Python tool analyzing star-spot patterns across 6,000+ star systems with optimized array processing algorithms.
- Evaluated star-spot contrast ratios using observational data from NASA Kepler and TESS missions to establish baseline metrics for exoplanet detection.
- Integrated parallel processing and multi-core compilation to optimize data throughput and execution runtime.

SELECTED PUBLICATIONS, PRESENTATIONS & LEADERSHIP

Publications: Co-authored "Hybrid Edge-HPC Systems for Low-Latency Data-Driven Inference" and "xG-Fabric: Coupling Sensor Networks and HPC Facilities...". 2025 & 2026

Supercomputing '25: Invited panelist on edge-to-HPC loop architectures; demonstrated real-time end-to-end data transfer and simulation pipelines at the Department of Energy booth. Nov 2025

Academic Leadership: Graduate TA for Elements of Computing II and Principles of Computing. 2024 – 2025

Community Leadership: Science Olympiad Competitor, President, Event Supervisor, and Lab Coordinator 2011 – Present

Club Involvement: Member of several STEM, sports, and faith related clubs 2024 – Present