

Will Krzastek

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EDUCATION

University of Notre Dame

Notre Dame, IN

Bachelors of Science in Computer Engineering

Expected: May 2027 | GPA: 3.67

Coursework: Data Structures, Discrete Math (**TA**), Logic Design, Systems Programming, Embedded Systems

Activities: Notre Dame Rugby Team, Notre Dame Rocketry (**NASA 2024 USLI Winner**), Quant Club

PROJECTS

Choose Your Hooper | *React.js, Express.js, Node.js, MongoDB, AWS, RESTful API*

- Developed and launched a full-stack website for crowdsourced fantasy basketball with **2,500+** active users
- Implemented a rankings page, trade calculator, and keep/trade/cut game to increase user engagement by **65%**
- Built a scalable frontend (**React.js**) and RESTful API (**Node.js/Express.js**), ensuring seamless integration
- Architected a **MongoDB Atlas** database with efficient indexing, integrated with **AWS** for scalability

Minitorch | *Python, Numba, CUDA, Parallel Computing, Tensors, Streamlit*

- Built a deep learning library from the ground up w/ **autodifferentiation**, **backpropagation**, & custom **tensors**
- Reduced training time by **85%** through **parallel processing** and **CUDA acceleration**
- Designed neural networks with matrix multiplication, gradient-based optimization and **tensor broadcasting**
- Integrated advanced layers including **1D/2D convolutions** and pooling mechanisms for feature extraction

AI Image Captioning | *PyTorch, CUDA, NLTK, LSTM, ResNet, Pandas*

- Deployed a **neural network** using a **ResNet**-based encoder & **LSTM**-based decoder, trained on Flickr8k dataset
- Designed a **PyTorch** data pipeline that optimized tokenization & batching time by **45%**
- Leveraged **NVIDIA CUDA** GPUs for training, reducing computation time by **6x** compared to CPU training
- Minimized the average loss to **2.42** on the final training epoch, enhancing caption accuracy

EXPERIENCE

Discrete Math Teaching Assistant

August 2024 – Present

University of Notre Dame

Notre Dame, IN

- Held weekly office hours and recitations for **70+** students, answering questions and re-teaching material
- Graded weekly problem sets and exams, providing feedback on set theory, number theory & graph theory proofs

Apogee Control Systems Engineer

February 2024 – Present

Notre Dame Rocketry

Notre Dame, IN

- Wrote hardware-in-the-loop simulations and fail-safe flight software including device drivers, state detection, Kalman filtration, and PI control algorithm to actuate drag flaps
- Contributed to **1st place win** (of 49) in NASA's 2024 Student Launch Competition with a **0.02%** apogee error

Event Ambassador

February 2024 – August 2024

Notre Dame Student Activities Office

Notre Dame, IN

- Led the coordination and management of special events, ensuring safety protocols during emergency situations
- Managed **20+** high-profile events at Notre Dame, delivering exceptional customer service

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript/TypeScript, HTML/CSS, SQL, MATLAB, Bash/Shell
Frameworks: React, Node.js, Express.js, PyTorch, TensorFlow, Numba, Flask, Django, Pandas, NumPy
Tools: Git, Docker, MongoDB, AWS, Unix/Linux, CUDA, Arduino, Raspberry Pi, Streamlit
Interests: Rugby, [Movies](#), Manchester United, Traveling, Basketball