Will Krzastek

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Education

University of Notre Dame | Notre Dame, IN — May 2027
Bachelors of Science in Computer Engineering — *GPA: 3.91 CSE | 3.7 Cumulative*

- **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

University of Notre Dame, London Global Gateway | London, UK — June – August 2024

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

Crypto Guardian | *Next.js, TypeScript, Python, Flask, ARIMA, CoinGecko API*

- Built a full-stack web app with **Next.js** to provide users with a safety assessment of cryptocurrencies
- Calculated a safety score (out of 100) using token vesting schedules, liquidity metrics & GitHub activity
- Deployed predictive models **(LSTM, ARIMA, Prophet, GRU)** via Flask for real-time forecasting
- Developed interactive graphs allowing users to explore historical data, predictive trends & detailed safety metrics

Minitorch | *Python, Numba, CUDA, Parallel Computing, LSTM, ResNet, NLTK, Streamlit*

- Built a deep learning library from the ground up w/ **autodifferentiation**, **backpropogation**, & 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
- Earned an invitation to publish the work in Ready Tensor AI's 2024 Computer Vision Expo by training an AI Image Captioning model with Minitorch, achieving an average loss of **2.42** on the final epoch

Experience

Drone Response — Notre Dame, IN
Autonomous Systems Researcher — January 2025 – Present

- Designed drone-based system to deliver AEDs to first responders with a winch and DC motor mechanism
- Implemented servo-actuated latch for defibrillator release, operated via dual-channel PWM remote control

University of Notre Dame — Notre Dame, IN
Discrete Math Teaching Assistant — August 2024 – December 2024

- 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

Notre Dame Rocketry — Notre Dame, IN
Apogee Control Systems Engineer — February 2024 – Present

- 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

Technical Skills

Languages: Python, C/C++, JavaScript, TypeScript, HTML/CSS, SQL, MATLAB, Bash/Shell
Frameworks: React, Next.js, Node.js, Express.js, Flask, PyTorch, TensorFlow, Keras, Numba, Pandas, NumPy
Tools: Git, Docker, MongoDB, AWS, Unix/Linux, CUDA, Arduino, Raspberry Pi, Streamlit, Excel
Interests: Rugby, Manchester United & New York sports, Web3, Embedded Systems & IoT, Space Exploration