Walter W. Krzastek

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Education

University of Notre Dame Notre Dame, IN

Bachelor of Science in Computer Engineering *Expected: May 2027* | *GPA: 3.67*

- **Relevant Coursework:** Data Structures, Logic Design, Discrete Math (**TA**), Systems Programming, Embedded Systems, Linear Algebra, Electrical Circuits, Calculus, Probability & Statistics
- **Involvements:** Notre Dame Rugby Team, Notre Dame Rocketry Team, CSE Teaching Assistant

Projects

Choose Your Hooper | GitHub | Website *Express.js, React.js, Node.js, MongoDB, AWS*

- 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, increasing user engagement by **65%**
- Built frontend with **React**, hosted on Netlify; created backend **API** with **Express.js & Node.js**, hosted on Render
- Established a secure, scalable **MongoDB** database hosted on Atlas with **AWS** integration, ensuring high security

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

- Deployed a **neural network** model using a **ResNet**-based encoder and **LSTM**-based decoder, on the Flickr8k dataset
- Built a **PyTorch** data pipeline that optimized preprocessing, tokenization & batching to reduce training time by **45%**
- Enhanced model performance through data augmentation, drastically increasing caption relevancy & fluency
- Minimized the average loss to **2.42** on the final training epoch, enhancing caption accuracy

Twitter Sentiment Analysis | GitHub *Tweepy, Hugging Face Transformers, Pandas, Twitter API*

- Deployed cardiffnlp's Twitter-RoBERTa model, achieving **97.8%** sentiment analysis
- Processed and analyzed over **100,000** tweets for sentiment analysis, improving accuracy by **5+%** each epoch
- Reduced data processing time by **68%** through optimized data handling and text cleaning techniques
- Developed a streamlined batch processing method that supports sentiment analysis of **10,000** tweets per minute

Experience

University of Notre Dame August 2024 – Current

Discrete Math Teaching Assistant *Notre Dame, IN*

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

Notre Dame Rocketry Team February 2024 – Current

Apogee Control Systems Engineer *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, achieving **0.02%** apogee error

Student Activities Office February 2024 – August 2024

Event Ambassador *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, SQL, HTML/CSS, Java, MATLAB
Frameworks: Node.js, Express.js, PyTorch, TensorFlow, Keras, Django, Flask, React.js, Pandas, NLTK, Scikit-learn
Tools: Git, Docker, AWS, Unix/Linux, MongoDB, Embedded Systems, Arduino, Software Engineering