

# WALTER W. KRZASTEK

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## EDUCATION

University of Notre Dame | Notre Dame, IN Expected Graduation: May 2027 | GPA: 3.67  
B.S. in Computer Engineering

- **Involvements:** Notre Dame Rugby Team, Notre Dame Rocketry Team, CSE Teaching Assistant
- **Relevant Coursework:** Discrete Math, Embedded Systems, Fundamentals of Computing, Linear Algebra

## PROJECTS

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

- Developed and launched a full-stack website for crowdsourced fantasy basketball rankings with **1,000+ 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

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

- 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

AI Image Captioning | GitHub Python, 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 and 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

## EXPERIENCE

University of Notre Dame | Discrete Math Teaching Assistant August 2024 – Current

- Led weekly office hours and recitations for **70+ students** where I answered students' questions about course material such as logic fundamentals, axiomatic set theory, combinatorics, number theory, and graph theory
- Graded weekly problem sets and exams, providing feedback for proofs on set theory, number theory, graph theory, etc.

Notre Dame Rocketry Team | Notre Dame, IN February 2024 – Current

Apogee Control Systems Engineer

- 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 | Notre Dame, IN February 2024 – August 2024

Event Ambassador

- Served as lead ambassador for special events and assisted in emergency situations
- Oversaw and ensured the success of **20+** high-profile events at Notre Dame and delivered exceptional customer service

## SKILLS

**Languages:** Python, C/C++, JavaScript (Node.js, Express.js, React), SQL, HTML/CSS, Java, MATLAB,  
**Frameworks:** PyTorch, TensorFlow, Keras, Scikit-learn, NLTK, Hugging Face, Pandas, Flask, Django  
**Tools:** Git, Docker, AWS, Unix/Linux, MongoDB, Embedded Systems, Arduino