

# WALTER W. KRZASTEK

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## EDUCATION

**University of Notre Dame** | Notre Dame, IN May 2027

*Bachelor of Science, Computer Engineering*

- Player: Notre Dame Varsity Rugby Team GPA: 3.667
- Relevant Coursework: Discrete Math, Embedded Systems, Fundamentals of Computing, Linear Algebra

**Delbarton School** | Morristown, NJ May 2023

## EXPERIENCE

**University of Notre Dame** | Notre Dame, IN August 2024 –Current

*Teaching Assistant: Discrete Mathematics (CSE 20110)*

- Hosted weekly office hours and recitations where I was responsible for helping students answer questions about course material such as logic fundamentals, axiomatic set theory, functions, combinatorics, number theory, and graph theory
- Graded weekly problem sets and exams, providing feedback in a proof heavy course

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

*Apogee Control Systems Engineer*

- Designed mechanical device that creates drag to control rocket's peak apogee
- Wrote data filtration and launch algorithms to determine the correct ACS deployment time
- Interfaced Raspberry Pi logic circuit with mechanical airbrake system
- Final rocket won 1<sup>st</sup> place in NASA's 2024 Student Launch Competition

**Student Activities Office** | Notre Dame, IN February 2024 –Current

*Event Ambassador*

- Served as the primary event ambassador for special events and assisted in emergency situations
- Provided courteous customer service to anyone who entered an SAO building
- Monitored and reported the logistics for over 20 high-profile events at Notre Dame

## PROJECTS

**Choose Your Hooper** | Dynamic Website October 2024 – Present

*Tech Stack: MERN (MongoDB, Express.js, React, Node.js)*

- Built a crowdsourced rankings site for fantasy basketball with 1,000+ users
- Developed interactive features including a rankings page, trade calculator, and keep/trade/cut game
- Frontend written in React and hosted on Netlify; backend written in Express.js & Node.js and hosted on Render
- Established a secure MongoDB database hosted on Atlas with AWS
- <https://github.com/wkraz/dynasty-basketball>

**Twitter Sentiment Analysis** | Natural Language Processing Tool November 2024 – Present

*Tech Stack: Python, Hugging Face, Twitter API*

- Trained on the cardiffnlp/twitter-roberta-base-sentiment-latest model
- Features interactive mode for user-input sentiment analysis, and a hashtag-based analysis of tweets from Twitter API.
- <https://github.com/wkraz/twitter-sentiment>

**AI Image Captioning** | Neural Network with PyTorch November 2024 – Present

*Tech Stack: PyTorch, NLTK*

- Deployed a neural network model using a ResNet-based encoder and LSTM-based decoder, on the Flickr8 dataset
- Built a custom PyTorch data pipeline to preprocess, tokenize, and batch images and captions for LSTM input
- Enhanced training efficiency with optimized data loading and loss calculation by tuning model parameters.
- <https://github.com/wkraz/ai-image-captioning>

## SKILLS

**Technical:** Python, C/C++, SQL, Java, JavaScript (Express, React, Node), Flask, MATLAB, HTML/CSS

**AI/ML:** PyTorch, Scikit-learn, NLTK, Hugging Face, TensorFlow, Keras, Pandas, Neural Networks

**Other:** Git, Unix, MongoDB, Microsoft Office, Research, Cross-Team Collaboration, Arduino, Embedded Systems