

# Vatsal Bhargava

Potomac, MD • vatsalbhargava2024@u.northwestern.edu • 301-529-8249

## EDUCATION

**Northwestern University – McCormick School of Engineering**  
*Bachelor of Science in **Computer Science**, Minor in **Mathematics***

**Evanston, IL**

*Expected June 2024*

- **GPA:** 3.91/4.00 | SAT Math II: 800/800 | SAT: 1520
- **Relevant Coursework:** Data Structures & Algorithms, Operating Systems, Scalable Software, Linear Algebra, Artificial Intelligence, Web Development, Relational Databases, Graph Theory, Machine Learning, Deep Learning

## WORK EXPERIENCE

**Alarm.com**

**Tysons, VA**

*Software Engineering Intern – Access Control*

*June 2023 – August 2023*

- Reduced potential security breach opportunities by 12% by developing proactive security measures for scheduled access control. Managed full-stack, from site-wide UI additions to C# backend and MySQL database modifications.
- Collaborated intensively with Mercury Hardware staff and controllers in conjunction with unit tests to guarantee hardware integration and functionality. Refactored current controller interactions to increase reliability by ~10%.
- Implemented feature toggles and an internal troubleshooting page to optimize beta testing procedures and enhance client usability, contributing to improved client satisfaction and quicker issue resolution.

**KBR**

**Fulton, MD**

*Software Engineering Intern – Cloud Edge Optimization*

*June 2022 – August 2022*

- Developed high-compute applications for edge computing to test validity of edge distribution algorithm in Rust using test-driven development: 4th order differential equation solver and neural networks.
- Analyzed and documented information from 15 research papers to assist Cloud Team in decision-making regarding edge computing techniques and relevant technologies, primarily Docker and WebAssembly as containers for edge.
- Presented bi-weekly progress updates showcasing code progress via React App and WebAssembly to Space and Science Program then fielded in-time questions from senior leadership and relevant contractors.

**Northwestern University Football Team**

**Evanston, IL**

*Data Analyst*

*June 2021 – April 2022*

- Extracted relevant features from 1,000+ row historical data sets, then preprocessed and produced actionable reports with in-depth analysis and personal insights using industry standards tools such as Jupyter, Pandas, and Plotly.
- Led a team of 4 coders and organized 8-12 person meetings with coaching staff and analysts to discuss status of current reports and future areas of interest to provide competitive advantage to staff by narrowing scope of film sessions.

## PROJECTS

**NFL Spread Predictor:**

*October 2023 – Present*

- Spearheading the development of an NFL Spread classification model using Vegas betting lines and historical game data for ML course final project, features will include general offensive/defensive stats and several advanced analytic metrics.
- Using convolutional neural networks, targeting the industry benchmark accuracy of 52.4% (betting profitability).

**NBA Newsletter:**

*March 2023 – June 2023*

- Developed a user-centric bet analysis app utilizing OpenAI's GPT-3.5 Turbo API, NBA API, and Selenium for data scraping. Users input a date and bet, receiving a tailored summary with options for follow-up queries.
- Built frontend with React, backend in Python, and utilized Firebase for data storage. Awarded "Best Project in Class".

**Tweet Filtration Bot:**

*July 2022 – August 2022*

- Leveraged the Twitter API v2 and Tweepy to build a bot that filters NBA injury news, reducing notifications by 70% with under 1-second latency. Integrated with the Discord API to deliver notifications post-data processing. Created scale by deploying a cloud-based architecture on AWS, supporting 100+ daily notifications to a 75-member group.

## ADDITIONAL

**Programming Languages:** Python, Rust, C++, C#, Java, C, MATLAB, HTML, CSS, JavaScript, TypeScript, SQL

**Tools/Frameworks:** Git, Linux, NumPy, AWS, Pandas, REST, Selenium, Jira, Ember.js, Object-Oriented Principles

**Involvement:** Pi Kappa Alpha – Philanthropy Chair, NU Relay For Life – Fundraising Chair, Kappa Theta Pi (Career Mentor), Blockchain Club, Chess Club, Nerds 2 the Rescue (K-5 tutoring – Founder)

**Interests:** Travel, Chess, Pickleball, Poker, Golf, Podcasts, Basketball, Pond Fishing, Weight Lifting