

# KUSHAL PATEL

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## Education

### University of Michigan - Ann Arbor, MI

May 2026

*Bachelor of Science in Computer Science*

*GPA 3.84*

- **Relevant Coursework:** Data Structures and Algorithms, Web Systems, Discrete Math, Programming & Intro Data Structures, Introduction to Computer Organization, Foundations of Computer Science, Introduction to Computer Security

## Experience

### Next Play Games

May 2024 – August 2024

*Software Engineer Intern*

*San Mateo, CA*

- Designed and implemented **3 dynamic pages** using **React**, **CSS**, and **Figma** to add support for fantasy baseball.
- Engineered and documented **5 REST API** endpoints for baseball, effectively managing a **PostgreSQL** database encompassing over **2,087 athletes** and **30 MLB teams**.

### University of Michigan ITS

Jan 2024 – Apr 2024, Aug 2024 – Dec 2024

*Student Software Engineer*

*Ann Arbor, MI*

- Building **3 plugins** that automatically generate alt text via **AI** for images, ensuring web accessibility on university sites and accelerating the workflow for over **50 web developers** at U of M.
- Leveraging **Microsoft Azure** and **GPT-4V** to generate alt text based on image and user specific suggestions.
- Supporting applications for **WordPress**, **Drupal**, and **Google Slides** platforms using **PHP** and **JavaScript**

### Infinite Degrees

Aug 2022 – Dec 2022

*Software Engineer Intern*

*Ann Arbor, MI*

- Developed an optimized algorithm that quantifies **398 skiing/snowboarding tricks** based on difficulty & extrapolated to measure individual skills.
- Measured accuracy on a sample of **101 olympic athletes**: <https://idx.style/rankings>.
- Accessed **PostgreSQL** database to apply the algorithm to **46 active users** based on uploaded tricks and routines.

## Projects

### Search Engine | Python, React, HTML, CSS, AWS

- Created **Hadoop** style MapReduce server in **Python** using **TCP** and **UDP** sockets to facilitate manager to worker protocol and fault tolerance. Handled different sockets and program functions through **threading**.
- Built a **MapReduce pipeline** that runs the tf-idf algorithm to form an **inverted index** of **2,936 Wikipedia pages**.
- Developed a **Flask app** and **REST API** to return a list of page hits, based on **PageRank** and **tf-idf**.
- Built frontend UI & deployed to **Amazon Web Services**: <https://kushal5294.github.io/search.engine.html>.

### NFL Spread Predictor | Python, HTML, CSS

- Leveraged **Selenium** and **Pandas** to build a dataframe of **304 metrics** for all NFL games in the past **7 years**.
- Used **TensorFlow** to build a **neural network regression model** that computes the spread of future NFL games.
- **58% win rate** and finished **+25 units** against DraftKings spread from week 10 to Super Bowl.
- Built a templated static site generator (**Jinja2**) to share bets: [https://kushal5294.github.io/nfl\\_spread.html](https://kushal5294.github.io/nfl_spread.html).

### Bank Simulator | C++

- Created a bank wire transfer simulator using **priority queues** and **maps** to efficiently apply credits and debits in the order they are set to be executed, while still flagging fraudulent ones.
- Built reporting modes including a list of transactions that took place between timestamps, revenue the bank made, and a summary of the customer's outgoing and incoming transactions.

## Technical Skills

**Languages:** Python, C++, JavaScript, ReactJS, HTML/CSS, TypeScript, Java, SQL, PHP

**Technologies:** Pandas, Flask, Hadoop, TensorFlow, Docker, NodeJS, AWS, SQLite, PostgreSQL, BeautifulSoup

**Concepts:** Object-Oriented Programming, Machine Learning, Web Development, App Development, Computer Vision