KUSHAL PATEL

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Education

University of Michigan   **Ann Arbor, MI**
MS in Computer Science   *Expected May 2026*
BS in Computer Science, GPA: 3.8   *May 2025*

- **Relevant Coursework:** Advanced Scalable Systems, Distributed Systems, Database Management Systems, Web Systems, Advanced Compilers, Computer Organization, Data Structures & Algorithms, Discrete Math, Theory of Computation

Experience

Amazon   **May 2025 – Aug 2025**
Software Development Engineer Intern   *Bellevue, WA*

- Accelerated RGB-D camera calibration by 6x with a multithreaded, **Linux C++** shared library that computes 4×4 transformation matrices for adjacent units via RANSAC plane detection & ICP edge-refined point cloud stitching.
- Designed a **10,000 TPS** AAA microservice that executes the calibration pipeline via **AWS Lambda** & **DynamoDB**.
- Extended library to automate re-calibration, providing **CloudWatch** alerts to sustain device accuracy and uptime.

University of Michigan, ITS   **Jan 2024 – Apr 2024 & Aug 2024 – Dec 2024**
Software Engineer Co-op   *Ann Arbor, MI*

- Improved image publishing pipeline by **66%** for **50+** UM web developers by building **3** plugins that automatically generate alt text via **generative AI** from Azure OpenAI Service & OpenAI GPT-4o LLM.
- Released open source **Google add-on**, **Drupal module**, & **WP plugin**: https://kushal5294.github.io/auto_alt.html.

Next Play Games   **May 2024 – Aug 2024**
Software Engineer Intern   *Los Angeles, CA*

- Launched a fantasy baseball app by syncing MLB data for **2,087** players into a **PostgreSQL** database hosted on **AWS**.
- Built **8** REST API endpoints using **Express.js** and **Redis** to efficiently serve live stats, projections, and news to users.
- Ensured **100%** app reliability by writing automated tests via **Jest** to validate daily box scores and player stats.

Infinite Degrees   **Aug 2022 – Dec 2022**
Machine Learning Intern   *Ann Arbor, MI*

- Quantified a snowboarder's skill by devising an **ANN** model via **TensorFlow** to weigh **398** tricks on difficulty.
- Assigned snowboarding skill rating to **87** active users by applying the ML model on user's uploaded tricks and data.

Projects

Sharded KVStore | *Golang*

- Achieved **100%** linearizable consistency by running multi-instance **Paxos** across replicas to decide each log index.
- Enabled **horizontal scaling** by sharding keys into **16** groups & re-balancing server load via a centralized shardmaster.
- Ensured **fault tolerance** under replica crashes and network unreliability via RSM replay & duplicate RPC detection.

NFL Spread Predictor | *Python, HTML, CSS*

- Engineered a **Pandas** data frame of **304** metrics for all NFL games from past **7** years by web scraping with **Selenium**.
- Predicted score differential of future games by building a **DNN** via **TensorFlow** library & data frame.
- Accomplished **61%** win rate and finished **+37 units** against DraftKings spread across **181** NFL games.
- Shared weekly picks by scripting a static site generator (**Jinja2**): https://kushal5294.github.io/nfl_spread.html.

Search Engine | *Python, JavaScript, CSS*

- Built **inverted index** of **2,936** Wikipedia pages by running tf-idf algorithm through **MapReduce** pipeline.
- Delivered top **10** page hits by creating **Flask** REST API to consult inverted index & PageRank score.
- Constructed frontend UI & deployed to **AWS EC2**: https://kushal5294.github.io/search_engine.html.

Skills

Languages: C++, Python, Go, Java, C, JavaScript, Typescript, HTML/CSS, SQL, Bash
Technologies: Hadoop, Docker, MySQL, MongoDB, NoSQL
Concepts: Computer Vision, OOP, Agile, Neural Networks, Unit Testing, Full Stack