

Nihaar Gopalji

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EDUCATION

University of Michigan, Ann Arbor, MI

August 2021 – December 2025

B.S.E. in Computer Science

GPA: 3.99/4.00

B.S.E. in Mechanical Engineering

- **CS Coursework:** Operating Systems, Web Systems, Computer Security, Data Structures and Algorithms, Computer Organization, Foundations of Computer Science, Linear Algebra, Discrete Mathematics, Differential Equations

EXPERIENCE

Stryker, Fort Lauderdale, FL

May – August 2024

Software Engineering Intern

- Developed a **multithreaded C++ framework** implementing a **real-time data processing pipeline** for robot-camera spatial calibration, utilizing abstract interfaces to accommodate diverse hardware and test scenarios.
- Designed **permutation-based algorithm** for robot pose optimization, evaluating 10M+ combinations and applying non-linear techniques to **reduce positional error by 23.3%**. Cut runtime by **87%** via **pruning and parallelization**.

CandleStick, Remote

January 2024 – April 2024

Backend Engineering Intern

- Designed a **database schema** in Firebase for a brokerage app's referral system, optimizing for **high-volume read/write operations** and efficient user relationship tracking.
- Implemented a complex **user attribution system** for 1000+ users, featuring referral tracking and a gamified stock reward mechanism, with **branch.io API integration** for deep linking functionality.

Michigan Strength Augmenting Exoskeleton, Ann Arbor, MI

September 2023 – May 2024

Software Engineer

- Engineered an **end-to-end machine learning pipeline** in Python, integrating data collection from IMU sensors, preprocessing, and feature extraction to train a **scikit-learn model** for real-time human movement classification.
- Developed a **real-time movement detection system** using the trained model, achieving 80% accuracy in classifying walking, running, jumping, and kicking actions.

PROJECTS

Distributed Search Engine

March 2024

Python, Flask, Javascript, React, HTML/CSS

- Developed a distributed search engine, featuring a **MapReduce pipeline** for inverted index creation and multiple **REST API-based Index servers** for efficient data segmentation and retrieval.
- Implemented a **multithreaded Search server** in Python, optimizing query performance through concurrent API requests to distributed Index servers and parallel result aggregation.

Distributed MapReduce Framework

March 2024

Python

- Developed a MapReduce framework to enhance **data processing** performance and **fault tolerance** for large datasets.
- Simulated distributed servers through multiple processes, utilizing **network protocols** for inter-process communication.

Automated Disinfection Device, UofM Multidisciplinary Design Program

September - December 2023

C++, Arduino

- Led design and development of an **automated disinfection system prototype** for Stryker's Altrix device, implementing an **Arduino-based control system** to manage a multi-stage process using sensors and actuators.

TECHNICAL SKILLS

Languages: C++, C, Python, JavaScript/TypeScript, MATLAB, HTML/CSS, SQL, LaTeX

Tools: Vim/Neovim, Linux, CMake, Git, Perforce, Flask, REST API, React, Firebase, Pandas, NumPy, Scikit-learn