

# Matthew Hansen

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## EDUCATION

### University of Delaware

*Bachelor of Computer Science (Honors), Bachelor of Mechanical Engineering (Honors)*

GPA: 3.94

Newark, DE

May 2024

**Awards & Honors:** Hispanic Scholarship Fund Scholar, Most Innovative Junior Design Award (Fall '22, Spring '23), Dean's List (All Semesters)

**Coursework:** Data Structures, Algorithms, Operating Systems, Databases, Parallel Computing, Web Development, Linear Algebra, Statistics

## SKILLS

- Languages: C++, C, Python, Java, JavaScript, SQL, Typescript, CSS, HTML, C#
- Technologies: Linux, Unix, Git, Gitlab, React.js, Node.js, ROS, Spring Boot, Maven, Docker, Postman, Azure, Agile (Scrum), JSON

## WORK EXPERIENCE

### M&T Bank | Software Engineering Intern – [Awarded 1<sup>st</sup> place for Best Intern Project among all 35+ teams](#)

June 2023 – Aug 2023

- Developed an internal product to self-enable M&T's **10,000+** employees to create AI-based financial document models to extract **100** desired data fields and **save 10+ hours** of manual document parsing per employee for data analysis/processing.
- Utilized **TypeScript**, **Angular** for industry-standard **front-end** and **Java**, **Spring Boot**, **Maven** to implement **RESTful API** endpoints on **back-end** rigorously tested with **Postman**, reducing external services in the model creation process of **\$0.05 per page to no cost**.
- Designed a robust **relational database** using **SQL** to guarantee data integrity, accessibility, and **scalability** of an expanding user base.
- Streamlined user input queries with **Spring Boot**, swiftly retrieving desired models from the database, enhancing user productivity.
- Employed Agile (Scrum) methodologies and Jira project management tool.

### University of Delaware | Software Engineering Student

Oct. 2022 – Dec. 2022

- Managed an Agile team of 3 to create a top-down, intuitive interior design website in **Typescript** with **React.js** allowing users to drag and drop various items and floor tiles onto a 2D map for a layout view, greatly improving the creative design process.
- Deployed through **GitHub** pages using GitHub Actions **CI/CD** to streamline the development workflow.

### DuPont de Nemours, Inc. | Project Engineering Intern

June 2022 – Aug. 2022

- Led and implemented energy-saving initiatives, resulting in **annual savings** of approximately **\$450,000+** and a **6-month ROI**.
- Collaborated with 4 project and field engineers to develop an automated building energy reduction template.

## PROJECTS

### Interview.io | (Typescript, ChakraUI, React.js, Node.js, OpenAI)

- Identified need for speech-based interview practice through surveys of **50+** CS students leading to **90% satisfaction**.
- Managed development of dynamic web application for realistic job interviews simulations, using speech-based interactions.
- Leveraged the **OpenAI API** to generate relevant interview questions and evaluate user responses, **leading to greater job outcomes**.

### QuizApp – M&T Bank Hackathon | (Typescript, React.js, Python, OpenAI, Flask)

- Headed a team of **5** to develop a quiz app for overwhelmed grade-school teachers to save **50+ hours annually**, leveraging AI to instantly generate and evaluate tailored assessments based on individual student's needs.
- Engineered an innovative chatbot solution leveraging the **OpenAI API** allowing students to receive real-time feedback.

### Mobile Robotics | (Python, ROS, Vision, UNIX, OpenCV)

- Cooperated in a team of 3 to program a Roomba using **Python/C++** in a **UNIX** environment, enabling **fully autonomous** tasks such as wall following, obstacle navigation, and soccer ball dribbling.
- Established a talker-listener model with ROS Humble Edition, allowing for real-time, **low-latency** data transfer.
- Integrated **Raspberry Pi**, **LiDAR**, 4-D RGBD camera, infrared sensors (IR), odometry, and AprilTag detection to facilitate precise movement and interactions. Utilized **SLAM** and **computer vision** techniques for line detection and identifying soccer (or tennis) balls.

### Junior Design – Sponsored by Norwalt Design – [2x Most Innovative Design Winner \(Fall 2022, Spring 2023\)](#) | (Arduino, C++)

- Collaborated yearlong in a team of 10 to develop an automated monoblock pill bottle filling system for small batch manufacturers.
- Programmed and wired an Arduino microcontroller in low-level **C++** to implement precise break sensor beam detection and simultaneous control of **4+** stepper motors, **improving performance by 454%** compared to manually filling the bottles.

### Process Scheduler | (C, UNIX)

- Utilized **C** in **UNIX** environment to implement a round robin scheduler in Xv6 (Educational OS) with a 4-level priority queue.

**ACTIVITIES:** Society of Hispanic Professional Engineers (member) & Competitive Programming Club (member), Intramural Soccer