

# Vedant Patel

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## EDUCATION

### University of Wisconsin-Madison

Madison, WI

*Bachelor of Science in Computer Science, Bachelor of Science in Data Science*

*May 2028*

- **GPA:** 3.69
- **Relevant Coursework:** Java Programming, Machine Organization and Programming, Intro to Discrete Mathematics, Data Structures and Algorithms, Data Science Programming, Data Science Modeling, Machine Learning for Engineering Research.

## EXPERIENCE

### The Computational Optics Group @ UW-Madison

Jan. 2025 – Present

*Undergraduate Research Assistant*

*Madison, WI*

- Collaborated with Dr. Andreas Velten and a team of graduate students in a cutting-edge **research** lab to clean and process millions of data points for **non-line-of-sight vision** experiments.
- Developed **low-level C** software for NLOS imaging systems, integrating **SPAD arrays** and **picosecond lasers** to capture photon collision timings and reconstruct out-of-sight scenes.
- Spearheaded a team of students to design a **MATLAB** script to integrate **Gaussian filtering** to our image processing pipeline, enhancing feature extraction and reducing noise in optical datasets.

### Data Science for Sustainable Development

Aug. 2024 – Present

*Software Developer*

*Madison, WI*

- Member of a software development team building **full-stack** software solutions for global nonprofit organizations.
- Partnered with the Local Energy Alliance Program to build a streamlined **React**-based end-user form, connecting **450+** Virginian households to energy-saving programs near them.
- Leveraging dynamic full-stack technologies, including **Vite**, **React**, **Node.js**, and **Express.js**, and integrating seamless **APIs** for efficient data handling and delivering a fast, responsive user experience.

### CompSci Kids

Aug. 2022 – May 2024

*Web Developer, Board Member*

*Hoffman Estates, IL*

- Maintained a **full-stack web application** to connect customer-facing membership forms to a back-end database, effectively allowing seamless connection between session organizers and parents.
- Developed and managed the curation of **40+** hours of computer science curriculum for 7th and 8th graders.
- Introduced brand-new concepts relating to **robotics**, **data analysis**, and **machine learning** to young coders, giving them strong foundational skills to later build their own projects independently.

## PROJECTS

### Amazon Product Analyzer | AWS, SQL, Python, Natural Language Toolkit, Scikit-learn, pandas

- Developed a product analyzer delivering **sentiment analysis** on Amazon products based on customer reviews.
- Analyzed **over 250 million** individual Amazon product reviews from multiple datasets, using dynamic **SQL** concepts like **aggregates**, **string functions**, **JOINS**, and **CTEs**.
- Developed and trained a sentiment analysis **machine learning** (ML) model to detect negative, positive, and neutral emotions, utilizing **Scikit-learn** and **MySQL** to process and clean test datasets.

### Raspberry Pi OCR Summarizer | Python, NumPy, OpenCV, Transformers, Pytesseract

- Programmed an autonomous system to capture raw **Raspberry Pi** images and summarize extracted text data.
- Used **OpenCV** image processing techniques like **color manipulation**, **edge detection**, **contour tracing**, and **homography** to clean image data, optimizing the efficiency of text collection.
- Performed **natural language processing** by utilizing a **trained summarization pipeline** on extracted text.

## TECHNICAL SKILLS

**Languages:** Java, SQL(MySQL), C, C++, R, JavaScript, Python, Swift, CSS, HTML

**Frameworks/Libraries:** Node.js, React, Pytorch, pandas, BeautifulSoup, Tkinter, NumPy, OpenCV, Transformers, Pytesseract, Flask, Angular, Matplotlib, Express, Scikit-learn, Natural Language Toolkit, MATLAB

**Developer Tools:** VS Code, PyCharm, IntelliJ, Eclipse, Xcode, Git, Android Studio, Firebase

**Interests:** Manchester City, World Endurance Championship, Formula 1, Running, Weightlifting