

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, 2027

- **Relevant Coursework:** Data Structures and Algorithms, Object Oriented Programming, Data Science Programming, Data Analytics, Assembly-language programming.

EXPERIENCE

The Computational Optics Group at UW-Madison

Jan. 2025 – Present

Undergraduate Researcher

Madison, WI

- Developing low-level software for **NLOS** imaging hardware, under the guidance of Dr. Andreas Velten.
- Developing **computational imaging** and **machine learning** solutions to reconstruct high-resolution images and videos from sparse event data streams.

Data Science for Sustainable Development

Aug. 2024 – Present

Software Developer

Madison, WI

- Part of a software development team that recently built a **full-stack web application** for the Local Energy Alliance Program (LEAP), a non-profit organization centered in Virginia.
- Integrated a streamlined form to directly connect users to the extensive data available on LEAP's back-end server.
- Integrated dynamic UI elements using **APIs**, efficiently leveraging **Express.js**, **Tailwind CSS** and **React.js** to deliver the most optimal product for LEAP.

CompSci Kids

Aug. 2022 – May 2024

Web Developer, Board Member

Hoffman Estates, IL

- Maintained a **full-stack web application** to connect 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 | *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.

WebScrapers | *JavaScript, React, Vite, Firebase, Tailwind CSS*

- Founded a **web development** group specializing in **React.js**, designing platforms for Chicagoland businesses.
- Developed a **full-stack web application** for a local non-profit, enhancing their national presence and receiving **50+** volunteer hours in the process.
- Recruited junior developers to work alongside us, building their skills in **web development**.

TECHNICAL SKILLS

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

Frameworks/Libraries: Node.js, React, Tailwind CSS, pandas, BeautifulSoup, Tkinter, NumPy, OpenCV, Transformers, Pytesseract, Matplotlib, Express, Scikit-learn, Natural Language Toolkit, Vite

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