# Jackson Vonderhorst

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## EDUCATION

**University of Notre Dame** | Notre Dame, Indiana — Expected May 2027
*Bachelor of Science* — *GPA: 3.93*
Major: Computer Science | Supplemental Major: Applied and Computational Mathematics and Statistics
Relevant Courses: Fundamentals of Computing, Discrete Math, Systems Programming, Data Structures, Logic Design

## EXPERIENCE

**University of Notre Dame** | Notre Dame, Indiana — May 2025 – Present
*AI-Augmented Scientific Visualization Research Assistant*

- Collaborating with a graduate researcher to integrate AI agents with ParaView using Model Context Protocol (MCP), enabling direct AI-driven manipulation of 3D scientific models through structured tool calls.
- Designing a custom MCP server using pvpython to expose ParaView's Python API, allowing natural language inputs to control operations like isosurfacing, clipping, and slicing.

**University of Notre Dame Engineering and Science Computing** | Notre Dame, Indiana — December 2023 – Present
*Engineering and Science Computing Student Worker*

- Aids customer support staff with building, reimaging and delivering technology to university faculty, staff, and students in the Colleges of Engineering and Science.
- Provides technical support to customers purchasing technology through ESC.

**Sunrise Day Camp** | Pearl River, New York — May 2021 – Present
*Unit Head*

- Supervises camp counselors who support children battling cancer and their siblings in a fun, friendly, and safe environment to provide them with a positive escape from the challenges of living with cancer.

**ACE Mentorship Program** | New York, New York — September 2022 – May 2023
*Intern*

- Calculated and implemented MEP systems such as ventilation, electrical systems, mechanical risers, and internal load calculations into a theoretical museum design.
- Developed team projects through weekly meetings, professional office visits, and use of industry software.

**Bergen Catholic IT Department** | Oradell, New Jersey — September 2021 – June 2023
*IT Associate*

- One of two students selected to provide tech support to staff members, students and parents.
- Configured each student's MacBook and iPad with school software for the first day of classes.

## LEADERSHIP AND ACTIVITIES

**Notre Dame Robotics Football Team** | Notre Dame, Indiana
*Mechanical Design Team* — September 2023 – Present

- Use SolidWorks to create new parts for robots including net holders for wide receivers and bumpers for linemen.

**Bergen Catholic First Robotics Team** | Oradell, New Jersey — September 2021 – June 2023
*Co-Founder and President*

- Team lead for designing, building, and coding the robot for tournament competition.
- The team advanced to the State Championship and won the THINK award.

## RELATED COURSEWORK OR PROJECTS

**FutureMe Web Application** | Personal Project — June 2025
Link: messagefrompastme.org

- The website enables visitors to schedule heartfelt emails, with optional photo attachments, to be automatically delivered to their future selves on the date they choose, inspired for college students to email future graduate selves.
- Designed a cloud-native, full-stack web app using Flask with Gunicorn, vanilla JavaScript, Tailwind CSS, and PyMongo/MongoDB Atlas; implemented secure RESTful API, asynchronous scheduling via APScheduler, Gmail SMTP integration, and Cloudinary for image storage.

**Precision Fishing Bot with Multicore CV for Toontown Rewritten** | Personal Project March 2025

- Created a real-time fishing bot for Toontown Rewritten using Python, OpenCV, and PyAutoGUI to detect fish and cast automatically based on object positions from live screen capture.
- Optimized performance with multithreaded template matching and vector-based targeting, enabling sub-second reaction times and adaptive casting based on fish distance and angle.
- Built a user-friendly control interface with Tkinter and hotkey support, featuring red-error detection and adjustable accuracy thresholds for reliable automated gameplay.

**Video Overlay Timer Tool** | Personal Project April 2025

- Built a desktop application using PyQt5, VLC, and yt-dlp to overlay animated visuals (image or GIF) and a countdown timer on screen while streaming audio from a YouTube video in real-time.
- Created an always-on-top, click-and-drag transparent window with pause/resume and cancel features, dynamic resizing, and real-time progress tracking, ideal for productivity sessions, stream overlays, or event timing.

**Engineering Design, Engineering Computing** | University of Notre Dame August 2023 – December 2023

- Designed various 3D printed projects including a cylinder valve in SolidWorks, using Excel, Arduino software, and servo motors to program the amount of water to let through the valve.
- Created MATLAB application that used graphs to analyze energy consumption at Notre Dame.

**Space Invaders Video Game** | Personal Project December 2023 – March 2024

- Developed a Space Invaders game in Python using Pygame, leveraging object-oriented programming for functionality and problem-solving, while designing all in-game assets through custom pixel art.

## TECHNICAL SKILLS

**Technical:** Proficient in Python, C, Java, MATLAB, SolidWorks, Flask and Excel
Familiar with HTML, CSS, JavaScript, C++, PyAutoGUI, OpenCV, MongoDB, Tailwind CSS