

Vahin Pichairaj

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WORK EXPERIENCE

Big Bang Boom Solutions

June 2025 – July 2025

Intern

India, Chennai

- Interning with Big Bang Boom Solutions, a defense-tech startup developing UAVs, counter-drone systems, and AI-based surveillance technologies for national security.
- The company focuses on indigenous innovation in areas such as unmanned aerial vehicles (UAVs), electronic warfare, counter-drone solutions, AI-based surveillance, and advanced weapon systems.
- Working with the Drone department learning about the intricacies of drone manufacturing and how it is used for defense.

NASA

January 2025 – April 2025

Intern

USA, Indiana / Remote

- Completed the NASA L'SPACE internship program over the 2025 spring semester.
- The 15-week academy is designed to provide unique, hands-on learning and insight into the dynamic world of the space industry.
- Mechanical Engineer, NASA L'SPACE Mission Concept Academy — Designed mechanical subsystems for a NASA-aligned space mission concept, focusing on structural integrity, environmental resilience, and subsystem integration within an interdisciplinary team.

Bhoomika Trust

January 2022 – June 2022

Intern

India, Chennai / Remote

- Volunteered with NGO to teach mathematics to underserved students whose school had shut down due to covid restrictions.
- Created lesson plans to improve students' understanding of integral math concepts such as linear equations.
- Engaged with students from diverse backgrounds, tailoring teaching strategies to individual learning needs.

EDUCATION

Purdue University

CGPA – 3.98/4.00

Aug, 2024 - Present

Bachelor Of Science in Mechanical Engineering

West Lafayette, In

- Publicity Officer, Alpha Lambda Delta Phi Eta Sigma (ALDPES) Honor Society, Purdue University — Responsible for promoting events, managing communications, and enhancing chapter visibility on campus.
- Completed a Summer 2025 study abroad in Singapore as part of the Bioinspired Structures program; visited NTU to explore research on bistable materials.
- Completed a Spring 2025 study abroad program in Greece focused on archaeological exploration—visited and analyzed ancient sites including Delphi, Olympia, and the Acropolis; gained cross-cultural insights and a deeper understanding of classical history and heritage.
- Pursuing minors in Biology, Mathematics, and Physics.
- Planning to conduct semiconductor research in South Korea through a Purdue study abroad program, as part of earning a Semiconductor Certificate.
- Referee in Indian Basketball Association (IBA)
- Participated and represented Purdue University in Collegiate Chess League (CCL) hosted by Chess.com

Undergraduate Research

- **POLITE Lab (Dr. Jessica Collier)** **June, 2025 - Present**
Leading the technical design of a simulated social media environment to support research on how image- and video-based political content on platforms like Instagram and TikTok influences user attitudes and behavior.
- **NeuroProstheses Research Lab (Dr. Kevin Otto)** **Aug 2025**
Will contribute to research on engineering the neuronal response to electrical microsimulation to advance neuroprosthetic systems aimed at improving quality of life.
- **BioCom Laboratory (Dr. Matthew Ward)** **Aug 2025**
Will support research in nerve modulation therapies, computational modeling, and biophysical simulations to drive advancements in neural engineering and bioelectronic medicine
- **Energy & Transport Sciences Lab (Dr. Partha P Mukherjee)** **Aug 2025**
Will contribute to projects investigating materials-transport-interface interactions in battery systems, emphasizing performance, life, and safety. Work will involve exploring stochastic and reactive transport phenomena at the intersection of electrochemistry, electrokinetics, and functional materials manufacturing.
- **Sereno Laboratory (Dr. Anne Sereno)** **Aug 2025**
Will investigate how the brain represents word size—examining whether representations align with real-world dimensions or internal cognitive metrics, gaining hands-on experience in fMRI data analysis and exploring additional linguistic variables such as valence, arousal, and gender

The School, KFI

High School Diploma

May, 2024

Chennai, India

- Ranked in the top 0.1% of Physics exam takers in the central ISC board in India (certified).
- Maintained top grades across all subjects from 9th grade onward, reflecting strong academic consistency and dedication.
- Selected mathematics, physics, chemistry, and art as core electives in 11th and 12th grade.
- Frequently volunteered as a peer tutor, teaching foundational concepts such as differentiation and integration in mathematics.
- Returned to school post-graduation to volunteer as a physics instructor, supporting classroom teaching and student learning.

SKILLS

- **Programming Languages:** C, Python, Java, MATLAB, React, and JavaScript
- **Web-Development:** Experience with designing app using Next.js, Flask, and MongoDB.
- **Communication:** Strong interpersonal skills, adept at explaining complex concepts in simple terms. Taking college level class for communications. Therefore, proficient in power point and presenting.
- **Design Tools:** Utilized Siemens NX for computer aided modeling to design for change by incorporating design intent through dimensioning schemes, parameters, and design tables, worked with the PDM system Aras Innovator to support design collaboration, geometry reuse, and simulate an industry PLM setting, and followed the Engineering Change Process using Engineering Change Orders (ECOs) and approval workflows.

CERTIFICATES

- Purdue Dean's List & Semester Honors – Fall 2024, Spring 2025
- NASA L'SPACE MCA certificate of completion with skill modules: Teaming, Requirements, Risk Management, Project Management, Systems, Heat Transfer, and Siemens NX CAD
- Earned the Siemens NX Design Associate Certificate, demonstrating proficiency in 3D modeling, assemblies, and engineering drawings using NX CAD software.
- Top 0.1% of exam takers for Physics across the central ISC exam board in India.

- AP Scholar with Distinction Award.
- Intercultural Communications Partner certificate from volunteering at the Oral English Proficiency Program at Purdue, which helps international students with English so that they can become teaching assistants.

PROJECTS & EXTRACURRICULAR ACTIVITIES

- Designing and developing a dynamic, responsive social media simulation platform using Next.js, Tailwind CSS, Daisy UI, JavaScript, Flask (Python), and MongoDB; applying principles of UI/UX design, state management, and API integration to support behavioral research on political content consumption as part of the POLITE lab.
- Built a remote-controlled drone equipped with live video feed capabilities.
- Attended a robotics workshop at IIT Madras, gaining hands-on experience in engineering and automation.
- Completed Harvard's CS50: Introduction to Computer Science, culminating in the development of a personal website as the final project.
- Launched a recycling initiative in a residential complex housing over 600 families, promoting sustainable practices within the community.
- Co-founded a small restaurant business with a friend, serving residents within the apartment complex.
- Volunteered to maintain the school garden in high school, planning and planting trees as part of a broader environmental initiative.