SURYANSH SIJWALI

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EDUCATION

Bachelor of Science Degree, The Pennsylvania State University — Expected May 2027
Majors: Computer Science, and Physics (Computational)
Minors: Computer Engineering, Mathematics, and Cybersecurity Computational Foundations
Honors: Dean's List (All Semesters), and President Walker Award

PUBLICATION & APPLIED RESEARCH

Fixing Performance Bugs Through LLM Explanations — Jan 2025 - Jul 2025
Authors: Suryansh Singh Sijwali, Angela Marie Colom, Anbi Guo, and Suman Saha
Accepted at IEEE AITest 2025 (CISOSE) — Acceptance Rate: 31.6%

- Worked under the mentorship of Dr. Suman Saha and two other undergraduate researchers
- Created a novel LLM-powered framework for performance bug detection and explanation in Java systems
- Built a dataset of 490 Java performance bugs and fine-tuned an LLM achieving 83.7% accuracy
- Outperformed baseline models by over 12% and developed a 5-category bug taxonomy
- Delivered code improvement suggestions with 79.6% efficacy and 87.8% correctness
- Applied skills in LLM fine-tuning, Java optimization, prompt engineering, and scientific evaluation design

Ongoing Research Extension — Summer 2025

- Developing an experimental dataset for performance bugs in C code
- Working to generalize LLM bug diagnosis across programming languages
- Building a universal platform to detect and mitigate performance issues using LLMs

RESEARCH EXPERIENCE

Undergraduate Researcher (REU Program) — Jun 2024 - Jul 2024
Center for Engineering Outreach and Inclusion (CEOI), Penn State — Middletown, PA

- Collaborated on a multidisciplinary project on UAV-based disaster management with Dr. Seth Wolpert
- Designed UAV-based disaster mitigation systems using LiDAR, SLAM, and object detection
- Developed optical communication solutions for real-time aerial data exchange
- Presented findings at symposium, addressing both technical and ethical implications

INTERNSHIP AND TEACHING EXPERIENCE

Full-Stack Mobile App Developer (Intern) — Feb 2025 - Present
Flourish: Grow with Self-Care — Remote

- Collaborate with the design team to implement frontend UI elements from Figma wireframes
- Develop, test, and maintain frontend code for seamless, user-friendly experience across iOS and Android
- Assist with backend architecture, database design, and API integration
- Optimize the application for performance, scalability, and reliability
- Coordinate with cross-functional teams to iterate features based on user feedback

Jump Start Program Mentor — May 2025 - Jun 2025
Center for Engineering Outreach and Inclusion, Penn State — Remote

- Serve as a Teaching Assistant and facilitator for PHYS 212 (Electricity and Magnetism)

- Provide academic and social mentorship to incoming engineering students
- Collaborate with instructors, peers, and program staff on planning and student support

Peer Tutor Aug 2024 - Dec 2024
Russell E. Horn Sr. Learning Center, Penn State Harrisburg Middletown, PA

- Tutored Mathematics, Physics, and Computer Science students one-on-one and in small groups
- Created tailored academic resources and strategies for student success

PROJECTS

Wynlabs.ai

- Collaborating with a cross-institutional team to build an AI-powered copilot for the manufacturing industry
- Focusing on real-time workflow optimization, predictive analytics, and intuitive interfaces

OpenScholar Hub

- Developing a centralized research collaboration platform to support networking, data sharing, and project management
- Built with a full-stack framework; expanding into a student-led team
- Targeting pilot integration with the Penn State Research Circle by Fall 2025

VeriChain

- Built a decentralized platform for issuing, verifying, and managing academic and professional credentials on the blockchain
- Developed smart contracts in Solidity, integrated Arweave and IPFS for secure, immutable storage
- Designed responsive UI using Next.js, Tailwind CSS, and atomic design principles with MetaMask-based authentication

SKILLS

Programming Languages	Python, Java, C, C++, Golang, JavaScript
Frameworks & Libraries	React.js, Next.js, Node.js, Express.js, Flask, TensorFlow, PyTorch
Tools & Technologies	Git, Docker, AWS, Firebase, RESTful APIs, Figma

ACTIVITIES

EECS Peer Mentor Jan 2025 - May 2025
Penn State University Remote

- Mentored five first-year students in EECS through structured academic support

President, Cyber-Lions Club Aug 2024 - Dec 2024
Penn State Harrisburg Middletown, PA

- Spearheaded cybersecurity initiatives and promoted awareness through workshops, CTFs, and technical talks
- Organized and led weekly club meetings, fostering member engagement and technical development
- Collaborated with campus IT and faculty to execute university-wide cybersecurity outreach events

Computer Science Lead Assistant Jan 2024 - Dec 2024
IEEE Student Branch, Penn State Harrisburg Middletown, PA

- Co-developed the HackPSH hackathon platform using Next.js and Supabase
- Facilitated technical workshops on algorithms, data structures, and web development
- Contributed to the control systems and data analytics teams for the IEEE PSH Radio Telescope project
- Promoted community engagement and technical growth among peers in IEEE-led initiatives

Community Service Volunteer Mar 2024
Envision Cleveland Cleveland, OH

- Participated in a week-long service program addressing urban challenges in Cleveland

- Contributed to community improvement efforts, education programs, and refugee support
- Gained hands-on experience in sustainability, mentorship, and urban development

Volunteer STEM Instructor Oct 2023 - Nov 2023
IEEE Student Branch, Penn State Harrisburg Middletown, PA

- Taught circuits, Arduino fundamentals, and introductory programming at Middletown Public Library
- Led hands-on, interactive STEM sessions tailored to various age groups
- Promoted collaborative learning and interest in technology within the local community

Winner, HackPSH IEEE Hackathon Fall 2023

- Collaborated with a team to win in a campus-wide hackathon focused on innovation and impact