STEPHEN ONOCHIE

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EDUCATION

Purdue University – Elmore School of Electrical & Computer Engineering *West Lafayette, IN*
Bachelor of Science, Computer Engineering *May 2029*

- Concentration: Microelectronics & Semiconductors *3.73/4.0*
- Coursework: MATLAB, C++, Python, Calculus, Discrete Math, Physics, Data Structures, Excel

TECHNICAL SKILLS

Languages: C++, Python, Java, Bash
Technologies: Verilog, UVM, RTLs, testbenches, ASICs, Git, KiCAD, Synopsys, VLSI Design, CMOS, CUDA

PROJECTS

Hardware Energy Optimization for Embedded AI Inference *West Lafayette, IN*
Sustainable Computing Subteam Lead *Nov. 2026 – Jul. 2026*

- Conducted hardware/software co-design analysis on **NVIDIA Jetson platforms** to characterize the energy-performance trade-offs of machine-learning inference workloads, leveraging computer architecture principles to identify bottlenecks in GPU execution units and memory hierarchies
- Investigated the impact of specialized processing elements and **MAC (Multiply-Accumulate)** architectures on power consumption, developing optimization techniques that reduced energy usage per inference by optimizing data movement and memory organization
- Applied ASIC design principles to embedded GPU behavior, extending prior award-winning research on sustainable edge **AI systems**

Mars Rover Spectrometer Breakout Board – Boiler Robotics Club *West Lafayette, IN*
Firmware Engineer & Hardware Design Member *Sept. 2026 – Present*

- Developed embedded firmware for the Raspberry Pi to interface with a custom spectrometer breakout board, translating hardware signals into actionable data for the rover's autonomous systems
- Leveraged deep understanding of the KiCad-designed PCB schematic and power interfaces to optimize driver efficiency and ensure reliable communication between the spectrometer and onboard modules
- Maintained version-controlled design files in GitHub, integrating CI workflows that automatically render PCB layouts to support iterative hardware-software validation during team design reviews

Cross-Session EEG Command Decoder - Neural Interfaces 2026 Competition *West Lafayette, IN*
Machine Learning Developer *Aug. 2026 – Present*

- Built a brain-computer interface classifier that decodes **4-second, 41-channel** EEG windows into **3 mental commands**, tuned for balanced accuracy and fast inference on subjects and sessions it hadn't seen
- Engineered a reproducible Python pipeline (EEG preprocessing, cross-subject validation, Dockerized Codabench submissions), competing against **770**+ participants for a $2K top 3 prize

EXPERIENCE

Specere Labs, Purdue University *West Lafayette, IN*
Research Intern. *Jan. 2027*

- Selected for a competitive 3-credit research position within a specialized spectroscopy lab led by Dr. Thomas Beechem, focusing on next-generation ferroelectric **hafnium zirconium oxide (HZO)** memory architectures integrated directly near logic circuits.
- Supporting NSF-funded work on BEOL-compatible HZO films, using localized laser annealing to process below **450°C** while keeping 2Pr above **10 μC/cm²**
- Executing device-level electrical testing (PUND, C-V, and fatigue cycling) on over **50** prototype HZO capacitors to evaluate retention characteristics and switching energy efficiency, targeting a write-energy reduction of **~30%** compared to standard HfO_2-based counterparts

S&N Home Care LLC *Indianapolis, IN*
I.T. & Systems Automation Assistant *Nov. 2022 – Oct. 2025*

- Provided IT systems support for **70+** employees across hardware and network infrastructure for agency
- Automated administrative workflows reducing document processing time by **70%**
- Designed and deployed company website serving **24,000+** unique users

LEADERSHIP & INVOLVEMENT

Purdue University Residences | *Resident Assistant* *Aug. 2026 – Present*

- Fostered an inclusive and engaging community for **46** undergraduate residents by designing and executing monthly social and educational programs

Acacia Fraternity | *Treasurer* *Nov. 2025 - Present*

- Audited and managed **$33,000** in committee funding, reducing excess expenditure by **$14,790** across social, alumni, and recruitment operations.