

SHAWN AGARWAL

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EDUCATION

University of Oklahoma, B.S. Electrical Engineering

Expected May 2027

GPA: 4.0 • Oklahoma Regents Scholar • Presidential Honor Roll • Distinguished Freshman Award

Norman, OK

Relevant Coursework: Signals & Systems, Electromagnetic Fields & Wave Propagation, Solid-State Electronic Devices, Digital Design Laboratory, PCB Design Principles, Energy Conversion

EXPERIENCE

Operations Intern, Amazon — OKC1 Fulfillment Center

May 2026 – Aug 2026

Robotics-driven fulfillment operations

Oklahoma City, OK

- **Analyzed process and flow data to isolate throughput bottlenecks**; redesigned the station-replenishment SOP and water-spider role, **raising pack rate with modeled savings of \$790K/yr at OKC1 and \$160M+ network-wide**
- **Ran a 280-associate operation** alongside technicians, engineers, and area managers, enforcing safety, quality, and operational-readiness standards against daily production targets

Undergraduate Researcher, Engineering Pathways Fellow

Jan 2026 – Present

Center for Quantum Research & Technology (CQRT), University of Oklahoma

Norman, OK

- **Grew and characterized 10+ epitaxial thin-film samples** (currently MgZnO cubic metastructures) in Dr. Hanjong Paik's group, running vacuum deposition and measurement hardware and logging **25+ hours of HRXRD**
- Evaluated BaTiO₃ / SrTiO₃ / Si heterostructures by comparing HRXRD against transport and optical measurements to assess crystalline quality, strain state, and interface behavior
- **Wrote XRDC, a MATLAB HRXRD analysis tool** with rocking-curve and reciprocal-space workflows, replacing manual peak fitting and standardizing film-quality metrics across the group

Founder & Engineer, Heading Software

Jan 2026 – Present

AI document intelligence for oil & gas land services

Oklahoma

- Built an LLM document-extraction and verification pipeline (OCR, schema validation, citation grounding) end to end with an offline evaluation harness; reached **0.99 per-field precision and recall** on a hand-labeled test set and **cut title-office review from a full day to under 5 minutes**
- Wrote the BullMQ/Redis batch layer with idempotent workers and automated QA catching drift, duplicates, and corrupt inputs; validated with 3 title offices and **onboarded a pilot customer**

Undergraduate Researcher, Machine Learning

Sep 2024 – May 2025

Data Institute for Societal Challenges (DISC), University of Oklahoma

Norman, OK

- Fine-tuned BERT with active-learning uncertainty sampling over 1.6M records, **~95% accuracy with 100 human labels vs. ~90% for standard BERT on 1,000 labels (10× less labeling)**

EMBEDDED & HARDWARE ENGINEERING

Intelligent Ground Vehicle Competition, Electrical Member

Aug 2025 – May 2026

- **Designed, built, and brought up custom PCBs** with power regulation, signal conditioning, and hardware safety interlocks owning schematic capture through layout, assembly, and system-level verification against competition safety requirements
- **Wrote real-time C/C++ firmware on STM32 (ARM Cortex-M) under an RTOS**, using prioritized task scheduling to keep closed-loop actuation deterministic; integrated LiDAR, cameras, GPS, IMU, encoders, and e-stop hardware on a single CAN bus and **built a CAN-to-USB bridge** for live bus monitoring and fault reproduction

Student Tele-Operated Robotics Mission, Electrical Team Lead

Aug 2024 – May 2025

- Designed multi-voltage power rails and buck converters to a **<5% ripple specification** for reliable motor and sensor supply; implemented IR/RF signal decoding integrated with embedded firmware for remote command and control
- **Led the electrical team** through design reviews, subsystem integration, and structured test phases against a fixed end-of-year mission schedule

VEX Robotics Competition, Team Lead — Canadian Valley Technology Center

Aug 2023 – May 2024

- Led end-to-end robot design, build, and test across iterative competition cycles; **competed at the VEX Robotics World Championship**

SKILLS

Hardware: Schematic capture & PCB layout (Altium), power electronics, buck converters, signal conditioning, STM32 / ARM Cortex-M, RTOS, CAN/FDCAN, SPI, I²C, UART, oscilloscope/DMM bring-up and debug, soldering and board rework, Fusion 360

Software: C/C++, Python, MATLAB, Rust, SQL, PyTorch, TensorFlow, Git, LaTeX

Test & Analysis: High-resolution X-ray diffraction, transport measurement, optical characterization, vacuum deposition systems, MATLAB data analysis

Activities: IEEE, Engineers' Club, Sooner Competitive Robotics, Society of Asian Scientists and Engineers