Aiden Harper

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EDUCATION

University of Delaware — Newark, DE
Bachelor of Mechanical Engineering – GPA 3.67 — Expected: May 2026
Dean's List: Spring 2024 (3.93), Fall 2024 (4.0), Spring 2025 (4.0), Fall 2025 (4.0)

WORK EXPERIENCE

AstraZeneca — Newark, DE
Engineering Co-op — Jan 2026 – Present
- Supported a 5S Kaizen for a multi-use space, contributing to a standardized layout, implementing visual controls, reducing waste, improving safety, increasing accessibility and workflow efficiency.

AstraZeneca — Newark, DE
Engineering Intern — May 2025 – Aug 2025
- Implemented non-destructive leak testing method for sachets resulting in cost savings of $200,000 annually.
- Executed equipment qualification (IQ/OQ) protocols for vision-based inspection system, permanently eliminating a recurring $1000/incident deviation with 25 previous incidents.
- Verified serialization for new market launches by running protocols and writing reports for 3 SKU's.
- Utilized change control packages (requirements, risk assessments, protocols, reports) to ensure traceable deliverables and audit readiness.
- Organized and met with vendors to conduct line trials in a cGMP environment for a 100% in-line induction seal inspection system to collect capability data.

Polymer Interfacial Mechanics Lab – University of Delaware — Newark, DE
Undergraduate Researcher — Aug 2024 – Present
- Designed and produced custom sample holders enabling Y-shape/pure-shear cutting of small, brittle polymer and plant specimens, expanding minimum testable width to 2mm.
- Created a mechanism for sample holders to control pre-strain, reducing variability in pre-stretch force by 55%.
- Established a reproducible pure shear cutting method for ≥2mm width samples, internal validation ongoing with polymer materials, methods manuscript planned.
- Produced SolidWorks models and GD&T drawings/assemblies for custom parts, collaborated with shop to fabricate and iterate prototypes.
- Executed fracture experiments and processed datasets in Python and Excel, presented weekly findings to group.

PROJECTS

Senior Capstone - Stanley Black & Decker — Aug 2025 – Dec 2025
- Designed and rapidly prototyped a modular tool storage system for work at height (ladders, scaffolds, lifts) to improve safety and efficiency, tracked all expenses in a BOM and aligned with existing storage ecosystems.
- 3D printed a fully integrated CAD assembly emphasizing modularity, ergonomics, and ease of use, conducted design validation through hand calculations and scaled 3D-print testing.
- Performed failure mode analysis (DFMEA) and structural assessments/calculations, addressing top failure modes and iterated design to meet all constraints and metrics.
- Applied design for manufacturing principles for high volume polymer processes, selecting materials and features to reduce part count/cycle time and to prepare for tooling.
- Completed end user surveys for initial product features as well as for final product feedback.

Automated Tablet Bottle-Filling System – Awarded: Most Innovative Design — Aug 2024 – May 2025
- Managed a 10 person team to design, prototype, build, and validate a fully autonomous, modular bottle-filling machine, integrating 5 different subsystems.
- Led design team for highest performing cap descrambling subsystem with a 96% success rate.
- Validated overall system efficiency and accuracy, resulting in a 90% system success rate.
- Developed custom software using Arduino and sensors to enable real-time tracking and state monitoring of bottles, optimizing system throughput and performance under variable input conditions

ADDITIONAL EXPERIENCE & AFFILIATIONS

International Study Abroad – College of Engineering – Dubai, United Arab Emirates — *Jan 2025*
- Adapted to and embraced new customs and social norms while learning about the engineering behind Dubai.

American Society of Mechanical Engineers – Member — Aug 2024 – Present

SKILLS & CERTIFICATIONS

Software: SolidWorks, Arduino IDE, Microsoft Office, SimScale, OnShape, Finite Element Analysis, Adobe, Veeva, SAP
Programing: Python, MATLAB, C/C++
Certifications: Six Sigma Yellow Belt (2025)