# WILLIAM JAMES YERGIN

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## SUMMARY

Mechanical engineer specializing in robotics, mechatronics, and camera systems, with deep experience turning early concepts into manufacturable hardware. Skilled in CAD, DFM, rapid prototyping, and electromechanical integration. Delivered multiple pilot systems at Walmart with measurable performance gains and two U.S. design patents. Blends hands-on mechanical build and test with systems thinking across sensors, optics, and software to produce reliable, scalable products.

## EXPERIENCE

**WALMART, INC., San Bruno, CA**
*Staff Product Design Engineer, Walmart Strategic Exploration, 2023–2025*

- Designed and built the Lightfoot self-powering cart system, integrating a 3-phase permanent-magnet alternator, bridge rectifier, and 15 W buck converter; verified power delivery through electrical bench testing that measured input/output stability to meet converter demands. The unit operated unobtrusively during store pilots—associates could complete shifts without changing established routines.
- Collaborated with legal partners to draft and file multiple patent applications, including one for Lightfoot's energy-harvesting architecture.
- Conducted QA for Walmart's AI Data Assistant, performing interface stress tests and dataset validations to ensure accuracy and usability across enterprise environments.
- Contributed to Project Hardtail, an automated receipt-checking station combining RFID, computer-vision cameras, and a status-light system; assisted with mechanical layout, lighting integration, and deployment logistics. The pilot achieved a 17% reduction in shrink and led to two filed patents.

**WILIOT, INC., San Diego, CA**
*Robotics Lead, Walmart Account, 2022–2023*

- Researched and prototyped permanent-magnet alternators, rectifiers, and current/power-monitoring circuits that became the electrical backbone for Walmart's Lightfoot system.
- Integrated Bluetooth-based cold-chain monitoring modules into powered forklift systems to improve real-time temperature compliance and data visibility across distribution centers.

**WALMART, INC., San Bruno, CA**
*Senior Product Design Engineer, 2022*
*Product Design Engineer, 2021–2022*

- Built and refined the hardware systems for Project Gulfstream, an automated multi-signal checkout platform developed alongside industrial design, software, and deployment teams; fabricated the initial wood and metal prototypes by hand and guided their evolution into durable stainless-steel pilot units deployed across 10 Dallas–Fort Worth stores, contributing to a 20% throughput and 15% NPS improvement.
- Supported mechanical integration for system peripherals including camera mounts and lighting assemblies used for computer-vision capture.
- Partnered with vendors to productionize the weigh-scale subsystem, coordinating calibration and structural validation. These efforts contributed to two U.S. design patents (USD1051647S1 and USD1047548S1, 2024) covering the full checkout-station design.
- Assisted with field installations, hardware refreshes, and pilot sustainment to ensure reliability and consistency across deployments.

## EDUCATION

PURDUE UNIVERSITY, West Lafayette, Indiana
**M.S., Mechanical Engineering (Robotics),** 2024
**B.S., Mechanical Engineering,** 2020

## LICENSURE

*Engineer in Training, state of California,* 2020
*NCEES PE Mechanical: Machine Design and Materials, exam passed 2025*

## PATENTS

USD1051647S1, **2024, Checkout Station**
USD1047548S1, **2024, Checkout Station**

## TECHNICAL SKILLS

- **Mechanical & Fabrication:** 3D Printing, Lathes, Milling, Handheld Power Tools, Soldering, Breadboards
- **Design & Manufacturing:** Computer-Aided Design (SolidWorks, Fusion360, CATIA v5), Design for Manufacturing (DFM), Geometric Dimensioning & Tolerancing (GD&T)
- **Programming & AI:** Python, PyTorch, OpenCV, Flask, Prompt Engineering, OpenAI Agents
- **Hardware & Systems:** Raspberry Pi, Wire Harnesses, Power Monitoring Systems
- **Operating Systems:** Linux (Ubuntu)