

Physics graduate and end-to-end builder: AI automation pipelines with paying clients, self-hosted LLM infrastructure, and low-cost scientific instruments in use by university researchers. Trained on resource-constrained problems.

AI & Automation

Founder — Trawl · AI lead-generation & outreach pipeline Mar 2026–Present

- Designed, built, and operate an end-to-end AI pipeline — Google Places API sourcing → Hermes enrichment → Hermes + DeepSeek qualification → DeepSeek-drafted outreach modeled on each client's example email — serving paying clients; shipped and maintained solo.
- Each qualified lead is delivered as a complete dossier with the model's reasoning for why it's viable — clients see the why, not just a score.
- Orchestrated on a self-managed Docker stack (n8n, NocoDB); LLM calls served first from self-hosted models, then migrated to the DeepSeek API.

Self-Hosted AI Infrastructure & Workflow Automation Mar 2026–Present

- Built a local LLM inference server from salvaged datacenter GPUs — NVIDIA V100 SXM2 modules adapted to a Threadripper Pro workstation with PCIe carrier boards and multi-PSU power.
- Operate a self-hosted automation stack (Docker: n8n, NocoDB, Hermes) powering personal projects; experimented with KV-cache compression (TurboQuant) to extend model context on legacy silicon.

Ventures

Founder — ALE · Affordable Lab Equipment 2024–Present

- Founded a venture making scientific instrumentation affordable for university labs; designed, fabricated, and delivered 6 instruments and tools — silicon-wafer CNC scribe, glass/ceramic thermal-stress cycler, centrifuge adapters, dexterity-test rigs.
- Carried VSSI (vibrating sharp-edge spray ionization) from faculty research into a commercial assembly for Thermo Scientific mass spectrometers — in development, with one instrument being produced for Pepperdine.

Research & Campus Engineering

MAAX — NASA SMEX Mission Concept · Student Collaboration (SC) pilot 2024

- One of two pilot students on the Student Collaboration (SC) component of MAAX, a NASA Heliophysics Small Explorer mission concept selected — 1 of 4 nationally — for a competitive Phase A concept study (Univ. of Michigan PI; partners incl. NASA Goddard, UC Berkeley SSL, SwRI, Pepperdine).
- General component selection and design outline, serving as proof of concept that student engineers could meet mission-grade engineering standards — support that kept the SC element in the bid.

De Facto Engineer — Pepperdine STEM Departments 2023–2026

- With no engineering program on campus, became the builder faculty turned to: ~22 documented hardware projects across 4 STEM departments.

Home Manufacturing Lab

End-to-End Fabrication · self-built home shop 2021–Present

- Operate a complete design-to-part pipeline at home — CAD/CAM through 3-axis CNC machining, fiber and CO2 laser, FDM/SLA printing, and TIG welding — used to prototype and produce ALE instruments and campus builds.
- Pieced together from industrial auctions and salvage, then rebuilt into production equipment: a junkyard CNC restored to service, automation added across both lasers, and a scratch-built wire EDM in progress.

Education

B.S. Physics — completed in 3 years
Pepperdine University — May 2026

AI & Automation

Docker · n8n · NocoDB · self-hosted LLM inference · DeepSeek API · workflow design · prompt engineering

CAD

SolidWorks · Shapr3D

CAM

Fusion 360 · LightBurn · OrcaSlicer

Fabrication

3-axis CNC · fiber & CO2 laser · FDM/SLA printing · TIG welding