

Ford Genereaux

PROTOTYPE AND ROBOTICS ENGINEERING TECHNICIAN

Fremont, CA | (603) 667-3203 | ford.genereaux@gmail.com | LinkedIn | GitHub | fordgenereaux.com

SUMMARY

Robotics and mechatronics technician who takes electromechanical systems from SolidWorks CAD through fabrication, wiring, bring-up, and root-cause debugging. Built two working holonomic robot iterations and a face-tracking mirror, and led a three-person team on pressure-fed rocket hardware. Build videos and write-ups: fordgenereaux.com.

TECHNICAL SKILLS

Mechanical SolidWorks assemblies and drawings; design for tolerances, fasteners, bearings, motors, wiring clearance, and assembly; engineering drawing interpretation; calipers and micrometers; Bridgeport mill, manual lathe, CNC, drill press, bandsaw, grinder

Electrical PCB soldering and rework; connector crimping; wiring harnesses; schematic reading; multimeters, oscilloscopes, bench supplies; motor drivers, encoders, I2C; power distribution; Arduino and Raspberry Pi

Prototyping FDM 3D printing (PLA, PETG); electromechanical assembly; cameras and sensors; hardware bring-up and test; root cause analysis; Python, OpenCV, Linux, Git; AI-assisted CAD, PCB, and software workflows

PROJECT EXPERIENCE

Aegis Smart Coaster V1 | Independent Robotics Project

2025 - Present

- Designed and built two iterations of a three-omniwheel holonomic robot: an 80/20 extrusion test rig, then a compact SolidWorks-designed, 3D-printed chassis with encoder gearmotors, Raspberry Pi 5, Pololu Motoron driver, and an upward camera for gesture following.
- Root-caused a dead drive motor to over-voltage (7.4 V pack on 6 V-rated N20 motors) and added a software duty cap; traced broken holonomic motion to a 30 vs. 220 RPM replacement mismatch and specified matched 12 V encoder motors.
- Diagnosed false cup detections from shadow-based sensing and re-architected perception around retroreflective IR-marker tracking (NoIR camera, 850 nm LEDs, IR-pass filter); wrote a jerk-limited motion profiler and target predictor with unit tests to stop drink sloshing.

Aegis Smart Coaster V2 | Product Design in Progress

2026 - Present

- Leading design of a 112 x 39 mm production version with four-camera 360-degree vision, 12 time-of-flight edge sensors, and KiCad mainboard and sensor PCBs passing ERC/DRC; run an AI-accelerated CAD/PCB workflow with scripted design checks and manage quotes with camera, battery, coupling, and bearing suppliers.

Drive Systems Technologies | Founder and Technical Lead | San Jose, CA

Jun 2024 - Dec 2024

- Led a three-person team through plumbing design, control-software development, and early fabrication of a pressure-fed ethanol and nitrous oxide rocket engine with nitrogen pressurization.
- Established and operated a prototype shop; acquired and moved a Bridgeport mill and two lathes, set up and maintained machinery on three-phase power, operated a forklift, and assigned work across the team.

Smart Mirror | Independent Mechatronics Project

2025

- Built two face-tracking mirror prototypes: a pan/tilt servo head designed in SolidWorks and 3D printed, dual side-mounted cameras with Python and OpenCV face detection, and velocity-limited servo tracking; second prototype runs on Raspberry Pi.

Array Operator | Independent Software Product

2026 - Present

- Built and deployed a full-stack solar-operations platform that consolidates inverter and utility-bill data, tracks long-term performance, and automates reporting and maintenance email through an AI agent.

EDUCATION AND CERTIFICATION

Santa Clara University | Mechanical Engineering Coursework | Junior Standing | 2022 - 2024

Relevant coursework: Statics, dynamics, materials, thermodynamics, circuits, manufacturing, CAD, programming, and engineering design

Forklift operator certified