CARLA GAVILAN

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Applied Software & AI Engineer | Founder with two Texas Instruments internships in enterprise automation, LLM fine-tuning, and Oracle data systems. Builds software connecting AI, data, and hardware; developing **Lana Robotics**, a crochet-automation product used by **25 customers**.

TECHNICAL SKILLS

Languages: Python, JavaScript, SQL, Oracle PL/SQL.

Web and data: React, Vite, Node.js, SAP Fiori, SAPUI5, PostgreSQL, SQLAlchemy, IndexedDB.

AI and analytics: Open-source LLM fine-tuning, evaluation systems, MediaPipe, pandas, scikit-learn, Plotly Dash.

Hardware and integration: ESP32, Raspberry Pi, Arduino, MCP3008, SPI, Twilio SendGrid.

Tools and testing: Git, GitHub, Figma, VS Code; Node.js unit and integration tests.

EXPERIENCE

Data Engineering Intern May 2025 - August 2025
Texas Instruments, Richardson, TX

- Researched approximately **6 enterprise tools** for mapping **thousands of Oracle tables** and a **multi-million-line legacy codebase**; tested candidate tools' data-processing efficiency under proprietary-data restrictions.
- **Fine-tuned an open-source LLM and built an evaluation system**; one-week prototype results reached **85% accuracy versus 64% for the comparison model**, informing the team's legacy-data roadmap.
- Mapped dependencies for approximately **30-40 legacy batch jobs**, each with about **10 subtasks**; used **PL/SQL** to validate data and document ownership for consolidation, outdated-data cleanup, and mainframe migration.

Software Engineer Intern May 2024 - August 2024
Texas Instruments, Richardson, TX

- Built **5 JavaScript/SAPUI5 screens** for an internal **SAP Fiori tool** replacing decades-old Excel-based data entry and workflow selection for financial and resource-allocation reporting.
- Worked directly with employees across multiple departments to understand recurring, time-sensitive workflows; translated requirements into desktop and handheld **Figma layouts** and documented edge cases.
- Contributed to the team's system that reduced a recurring employee workflow from **roughly a week to about 2 hours**, saving hundreds of hours of manual work.

Founder Present
Lana Robotics | LanaRobotics.com

- Develop a crochet product used by **25 customers**; **end-to-end automation** is in development.
- Speak directly with customers to understand their needs and translate feedback into product improvements.

PROJECTS

Look & Control 2026 - Present
Eye-Controlled Home Automation | JavaScript, MediaPipe, Node.js, ESP32

- Built a **JavaScript/MediaPipe eye-control interface** for a user with quadriplegia to operate household devices; connected browser selections to a **Node.js HTTP gateway** and ESP32 infrared capture/replay.
- Implemented a **5-second dwell selector** with tracking-loss resets and safe profile restoration to prevent stale gaze input or restored settings from accidentally triggering a device command.
- Verified a fan-speed change on physical hardware; passed **23 Node.js unit/integration tests** and **8 infrared-file checks**. Earned an **A+**; further device integration remains in progress.

PROJECTS (CONTINUED)

Morse Code Tutor Completed May 2026

Three-person engineering team

- Co-developed a low-cost **React/Vite and Material UI tutor** integrating keyboard practice, Arduino paddle input, and Raspberry Pi polling; supported **46 characters** and **6 playback speeds from 10-30 WPM**.
- Built hardware-check and reference pages, merged feature branches, and resolved Git conflicts; collaborated on fixes for missed fast paddle inputs, quiz timing, and progress updates after repeat attempts.
- Persisted practice attempts, settings, and scores through the team's **IndexedDB** implementation; completed **2 debugging iterations** and passed **9/9 final functional checks** as a team. Earned an **A+**.

Pump Monitoring & Early-Warning Pipeline August 2025 - December 2025

Three-person engineering team

- Co-developed an early-warning prototype for abnormal pump temperatures using **3 TMP36 sensors**, an **MCP3008 ADC over SPI**, and a **Raspberry Pi 4**; built Python/SQLAlchemy ingestion to store timestamped voltage and temperature readings in PostgreSQL.
- Developed **pandas feature processing** and **scikit-learn Random Forest experiments** using rolling means and temperature/voltage changes; saved the model, median imputer, and feature order for consistent live inference.
- Integrated **Plotly Dash** temperature/history views and **Twilio SendGrid** warning notifications in the team system, with distinct anomaly and failure audio alarms. Completed the three-person project with an **A+**.

EDUCATION

Texas Tech University Expected December 2026

Bachelor of Science in Computer Engineering; GPA: 3.4/4.0

Honors College; Dean's List, Fall 2022 - Spring 2024

New Mexico Junior College August 2023

Associate of Arts; GPA: 4.0/4.0