

Gabriel Sanchez Rangel

El Paso, TX | gsanchezra@miners.utep.edu | Full CV at gabrielresume.com

Solutions-driven Computer Engineer adept at resolving hardware/software integration issues and delivering production-ready designs under tight deadlines.

EDUCATION

The University of Texas at El Paso

El Paso, TX

Bachelor of Science in Electrical Engineering | Overall GPA: 3.50 | Major GPA: 3.52 | 12 / 2024

Master of Science in Computer Engineering | GPA: 3.70 | Expected: 12 / 2025

Doctor of Philosophy in Electrical and Computer Engineering | GPA: 3.70 | 12/2028

Thesis Research

One Step Fabrication: Software-Automated Printed Circuits via Multi-Material Additive Manufacturing

- ❖ Automated the fabrication of resistors, inductors, capacitors and printed circuit boards.
- ❖ Developed customizable, code-based 3D models in OpenSCAD.
- ❖ Robust engineered software to ensure repeatability and performance.

HONORS & ACTIVITIES

- ❖ Texas Instruments Foundation Scholarship (\$1250), 2026
- ❖ Best Senior project award: Chaotic Shift Keying Communication System, 2024
- ❖ Accelerated Fast Track Program: Reduced degree time by one year and saved \$7,000 in tuition, 2025
- ❖ Graduated Cum Laude, 2024
- ❖ University Honors Program, member, 2020 – 2024
- ❖ IEEE, member, 2022 – Present
- ❖ Scholarship for Monterrey Institute of Technology, 60% funded by university, 2020

WORK EXPERIENCE

W.M Keck Center for 3D Innovation

Research Assistant

Master's Research Assistant

El Paso, TX

04/2023 – 12/2024

12/2024 – 08/2025

- ❖ Designed custom ESP32-based PCBs end-to-end: created schematics, generated BOM and pick-and-place files, and coordinated fabrication and global shipping of finished boards.
- ❖ Engineered Bash automation scripts to install all dependencies and libraries for local web hosting on Raspberry Pi, enabling offline website development and testing in under 5 minutes per device.
- ❖ Developed automated shell scripts to deploy Raspberry Pi OS at scale, configuring headless SSH access and Bluetooth support out of the box.

Madera y Sus Productos (Wood Manufacturing)
Engineering Consultant

Cd. Juárez, México
07/2025 – 12/2025

- ❖ Operated CNC machinery and optimized tool trajectories, doubling production speed.
- ❖ Catalyzed company's expansion from raw wood sales to manufactured goods including chairs, tables, and bookshelves.
- ❖ Built furniture automation software (OpenSCAD + Python), reducing CAD/CAM workflows from hours to seconds.

Confidential Client (via Handshake)
AI Data & Evaluation

Remote
12/2025 – Present

- ❖ Designed AI training datasets and prompt libraries for evaluating large language models on EDA and CAD tasks.
- ❖ Developed structured rubrics to assess LLM outputs for scientific accuracy, clarity, and reasoning depth in specialized engineering subfields.
- ❖ Identified failure modes in model outputs and informed prompt optimization strategies.

FrontierPCB LLC
Founder & CEO

El Paso, TX
4/2026 – Present

- ❖ Founded and operate a PCB fabrication and 3D printing service targeting prototype-focused customers in the El Paso / Cd. Juárez border corridor.
- ❖ Built and deployed quoting APIs (FastAPI, PostgreSQL on Railway) for 3D printing and PCB quoting, integrated with Stripe and ShipEngine.
- ❖ Developed PCB milling pipeline on Genmitsu 3018 CNC achieving 8-mil clean traces with autolevel compensation and custom fixturing. Software and hardware built on open-source foundations.
- ❖ Established business operations: Texas LLC formation, banking, multi-state sales tax compliance, foreign contractor management.
- ❖ Pursuing ISO 9001 certification through TMAC.

SKILLS

Languages & Scripting: C (advanced) | C++ | Python | Rust | JavaScript | HTML | CSS | Assembly | Bash | Zsh |

Tools: Git | GitHub | Linux CLI | VI | Nano | Kali Linux (Ethical hacking) | Pthreads | RTOS | QT6 | ESP-IDF |

Protocols: TCP | UDP | SSH | SPI | I2C | UART |

Platforms: Raspberry Pi | ESP32 | MSP430 | Arduino |

Languages: English (fluent) | Spanish (fluent) | French (A2 level) |