Nickolas Franco

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Professional Summary

First year Electrical Engineering student at Wentworth Institute of Technology with hands-on experience spanning ML/AI research, embedded systems, and full-stack development. Built a mechanistic interpretability toolkit for transformer steering, an embedded computer vision sorter from hardware to software, and a dual-sensor edge ML pipeline for non-invasive metabolic sensing. Recognized as an ND FBLA Data Science & AI State Champion, placing in the top 5% nationally, with fluency in Python, C/C++, and TypeScript alongside PyTorch, TensorFlow, ROS2, and edge hardware platforms.

Education

Wentworth Institute of Technology Boston, MA
BS in Electrical Engineering, Minor in Data Science. Recipient of $120,000 Merit-Based Academic Scholarship. *2030*

Minot High School (Magic City Campus) Minot, ND
Activities: FBLA, DECA, Acalympics, TSA, FRC & FTC Robotics, Science Olympiad. *2026*
Relevant Coursework: Dual-Credit: College Composition I & II, Intro to Communication, MAT 119, BOT 110 (Minot State University, Dakota College at Bottineau, Arizona State University)

Skills

ML & AI: PyTorch, TensorFlow, TransformerLens, nnsight, NumPy, Matplotlib

Hardware & Embedded: PCB Routing, Microcontrollers, ROS2, Raspberry Pi, ESP32, SPI/I2C/UART, 9-Axis IMU Sensor Fusion

Languages: Python, C/C++, TypeScript, JavaScript, SQL, HTML/CSS

Dev Practices: Git/Version Control, CI/CD, API Design, Technical Documentation, Debugging & Testing

Tools & Cloud: Linux, Firebase, Supabase, Cloudflare, Vercel, GitHub API

Creative & Design: UI/UX Design, Figma, Prototyping, Design Systems

Certifications: TestOut Security Pro, TestOut IT Fundamentals Pro, UL Robotics Safety, Codecademy HTML & CSS

LANGUAGES: English (Native), Spanish (Native)

PROJECTS

LOBES - Mechanistic Interpretability & Steering Toolkit

- Built a modular Python framework for real-time activation steering and causal feature validation in transformer architectures.
- Implemented a RuntimeController and hook-based intervention engine to scale latent features during inference, enabling direct model steering.
- Designed CausalSweeper to empirically validate feature-trait correlations by measuring behavioral change across alpha-scaled activation deltas.

North Dakota State TSA Website & CMS

- Modernized the state-level TSA platform with a custom content management system for improved maintainability.
- Implemented Firebase authentication and integrated the GitHub API to automate content publishing via an admin panel.
- Deployed infrastructure using Vercel for hosting management and Cloudflare for optimized content delivery.

Krebb Hack MIT Project - Passive Metabolic Sensing via Skin Thermodynamics

- Engineered a real-time biomarker pipeline and dual-sensor edge device (DS18B20 + ambient thermistor on ESP32-S3) to capture postprandial thermogenesis signals over connectionless BLE streaming.
- Formulated an end-to-end ML classification pipeline with per-person calibration to process derived thermal features, skin-to-ambient gradients, and context data for metabolic response classification.

AWARDS & HONORS

• Technical Excellence: 1st Place in North Dakota FBLA Data Science & AI; Top 5% National Finalist. Consistent participant and award-contender in state-level TSA competitions.
• Robotics Achievement: Lead developer and strategic contributor for FRC/FTC competitive robotics teams (2025-Present).

EXPERIENCE

Lead Web Developer 2025 – Present
Minot FIRST Robotics (FRC & FTC)

- Architected and deployed a multi-subdomain web platform representing local robotics programs, built on a unified design system.
- Structured content for recruitment, sponsorship outreach, and competitive representation.

Trainer 2025 – 2026
Dakota Drive LLC

• Coached and mentored new crew members on operational standards, food safety compliance, and task execution under tight shift constraints.