Pablo F. Argote, PhD

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Systems and sensing engineer building physiological measurement platforms across wearables and imaging. Hands-on with sensor interfaces (BIS, EMG), board bring-up and bench characterization, and validation automation in Python and MATLAB. Translate feature intent into requirements, interfaces, test strategy, and evidence for release in regulated environments.

CORE SKILLS

Systems Integration & V&V: requirements and specs, interface definition, integration planning, verification strategy, risk reviews (FMEA-style), test plans and traceability mindset

Health Sensing & Electronics: bioimpedance and EMG acquisition concepts, electrode-skin/contact variability (textiles), DAQ architectures, PCB design and bring-up (Altium, EAGLE), bench debug (oscilloscope, DMM)

Modeling, Automation & Data: LTspice, Python, MATLAB, LabVIEW, C/Arduino, Git, automated calibration and test scripts, signal processing, DOE and GRR-style studies, QC dashboards and plotting

EXPERIENCE

University of Colorado Boulder – Paul M. Rady Mechanical Engineering Department Aug 2020 – Aug 2025
NSF Graduate Research Fellow – Quantitative MRI & Conductivity Mapping Boulder, CO

- Built and validated a Siemens 3T MR-EPT quantitative conductivity mapping (QCM) pipeline (scan protocols, reconstruction, automated QC), reporting ICCs 0.992-0.999 in stability and repeatability testing
- Implemented MATLAB/Python + HPC batch processing for 40+ human-subject datasets with slice selection, outlier rejection, and dashboards for rapid review
- Designed repeatability and GRR-style phantom studies to quantify stability and variability, isolated artifacts (motion, SNR/coil, reconstruction sensitivity), and tightened protocols and reconstruction settings

Predictive Wear LLC Oct 2016 – Dec 2019
Co-Founder & CTO – Bioimpedance Compression Garment West Lafayette, IN

- Led hardware architecture for a Class II bioimpedance smart compression garment (textile electrodes, AFE, custom PCBs, DAQ) for swelling and edema monitoring, translating sensing needs into measurable requirements and verification tests
- Built calibration and test benches to characterize linearity, hysteresis, and motion artifacts, using DOE-style studies to isolate failure modes and improve SNR and stability
- Defined calibration and acceptance tests plus debug guides for early manufacturing; contributed to ISO 13485-aligned design-control and risk-management activities; co-inventor on US Patent 11,672,288

Deming Center Venture Fund – University of Colorado Boulder Apr 2021 – May 2023
Investment Associate, Director Boulder, CO

- Screened 50+ early-stage startups across industries with a cross-functional team of JD, MBA, and PhD students, assessing technical feasibility, risk, and commercialization, and guided decisions of $300K in investments.

Cook Medical (COOK Inc.) Jan 2015 – May 2015
Research Engineer Co-Op – Vascular Devices Bloomington, IN

- Supported surgeon-led usability studies for Class III trauma stent prototypes; developed alternate manufacturing methods and evaluated them with mechanical and adhesion tests to inform process selection

Purdue University – Spaceflight & Medical Device Instrumentation Labs Aug 2013 – May 2018
Undergraduate Researcher – CubeSat, Implantable & Wearable Systems West Lafayette, IN

- **Physiological Sensing Facility / NASA SporeSat (SpaceX CRS-3)**: developed environmental control plans & models for fern spores in a 3U CubeSat payload flown on SpaceX CRS-3; work contributed to a Lab on a Chip publication.
- **Center for Implantable Devices**: designed & tested multi-rail LDO & analog front-end PCBs in Altium; used LTspice for circuit simulation and characterized PSRR & transient response with oscilloscopes & network analyzers.
- **Purdue MIND / ExoMIND Glove**: co-founded Purdue MIND & mentored teams; contributed to hardware & system design of the ExoMIND stroke-rehab glove (custom PCBs/firmware); team placed 3rd in the 2017 China–US Young Maker Competition.
- **EsthesioTouch (Senior Design)**: Programmed an Adafruit Feather nRF52 microcontroller with BLE using Arduino (C/C++), integrating force sensing & motion/position checks for repeatable measurement workflows.

SELECTED WEARABLES & SYSTEMS PROJECTS

MediTrak (multi-vitals monitor, 2019) | BootMakers Smart Sock (bespoke boot-fit leg measurements, 2018–2019) | LOOMIA (e-textile EMG low-back monitoring, 2020) | ELECTRA (space habitat SE: ConOps, decomposition, requirements, 2021)

EDUCATION

Ph.D., Mechanical Engineering, NSF Graduate Research Fellow, University of Colorado Boulder, Boulder, CO 2025
M.S., Aerospace Engineering Sciences, University of Colorado Boulder, Boulder, CO 2023
B.S., Biomedical Engineering, Purdue University, West Lafayette, IN 2018

PATENTS & PUBLICATIONS

US Patent 11,672,288 (Smart leggings, 2020); **Prov. Patent App. 63/855,127** (MRI of Electromechanics, 2025). Google Scholar Profile