

Pablo F. Argote, PhD

PhD Mechanical engineer | Medtech R&D & Imaging | Device Development | Venture Diligence & Translational Research

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PhD Mechanical Engineer with expertise in MRI, medical device R&D, physiological sensing, and numerical modeling. Experienced in developing translational solutions that combine imaging science, device engineering, and regulatory compliance. Co-founded a patented Medtech venture and conducted venture diligence for early-stage startups. A strong cross-functional collaborator and mentor fluent in Spanish and French.

EXPERIENCE

Paul M. Rady Mechanical Engineering Department, University of Colorado Boulder

Boulder, CO

NSF Graduate Research Fellow

Aug 2020-Aug 2025

- Led R&D and **V&V of a novel MRI conductivity mapping technique (MR-EPT)** for early osteoarthritis diagnostics, designing custom phantoms and repeatability studies to confirm measurement accuracy and precision.
- Collaborated with a cross-functional team to validate an **MRI-compatible loading system** for clinical research.
- Developed and validated **automated image processing and statistical pipelines** (MATLAB, HPC, R, Python) to correlate multi-modal patient data sets (T1p, T2, T2*, conductivity, reported outcomes)
- Co-managed a **40-patient ACL reconstruction clinical study**, ensuring data integrity and reproducibility.
- Instructed and mentored **150+ engineering students** in MCEN 3047: Data Analysis and Experimental Methods through experimental design, sensors, and statistics (DAQ/LabVIEW/MATLAB), improving technical writing and data visualization proficiency.

Deming Center Venture Fund, University of Colorado Boulder

Boulder, CO

Investment Associate

Apr 2021-May 2023

- Conducted multi-stage **technical and commercial due diligence** on 20+ early-stage startups with cross-functional teams of JDs, MBAs and Engineering PhDs.
- Evaluated **hardware/software feasibility, market strategy, and commercialization potential**, directly managing **\$300K in investments made**.

Predictive Wear

West Lafayette, IN

Co-Founder

Oct 2016-Dec 2019

- Directed R&D for a **Class II bioimpedance wearable (smart compression garment)** from requirements definition through prototyping, V&V, and commercialization strategy.
- Established and managed the **Design History File** under an ISO 13485-aligned QMS, leading risk management activities and defining the **FDA 510(k) submission strategy**.
- Co-authored the foundational IP for the core sensing technology, resulting in a **secured US patent (11,672,288)**.

Purdue Medical Innovation, Networking, & Design (MIND), Purdue University

West Lafayette, IN

Co-Founder

May 2015-Jul 2019

- Co-founded a **multidisciplinary student organization** focused on medical device innovation, establishing its technical, entrepreneurial, and leadership foundations.
- Led a team of undergraduate engineers in R&D of a **stroke rehabilitation glove**, advancing from concept to a fully functional prototype integrating **custom EMG PCBs, firmware, and e-textiles**.
- Spearheaded award-winning projects to national and international recognition, including **BMES Design Contest Finalists (2016 & 2017)** and a **fully sponsored trip, 3rd place & \$5K at the US-China Young Maker Contest (2017)**.

Cook Medical (COOK Inc.)

Bloomington, IN

Research Engineer Co-Op

Jan 2015-May 2015

- Contributed to development and validation of **Class III trauma stent prototypes**, resulting in successful perfusion and stabilization of **9 vessels in <3 hours** during trauma surgeon usability studies.
- Developed and tested **in-house manufacturing methods** for covered stents, conducting mechanical and adhesion tests, directly de-risking manufacturing alternatives for a **high-priority R&D project**.

Purdue University
Undergraduate Researcher

West Lafayette, IN
Aug 2013-Jan 2018

- Purdue Center for Implantable Devices: Designed and validated **PCBs in Altium** for implantable medical device analog front-ends and power systems, using oscilloscopes, network analyzers, PSRR, and transient load testing.
- Hochschule Luzern: Built and validated a **chemostat bioreactor with integrated fluidics and controls** to simulate yeast growth for ISS spaceflight experiments; presented work at the **Swiss Museum of Transportation**.
- Purdue Soft Tissue Bioengineering Lab: Investigated **strain rate-dependent cartilage mechanics** to study osteoarthritis progression, leading to a **first-author publication in Osteoarthritis & Cartilage (2019)**.
- Purdue Physiological Sensing Facility: Developed environmental control plan for fern spores in **NASA's SporeSat CubeSat (3U)**, flown on **SpaceX CRS-3**, resulting in a **co-author publication in Lab on a Chip**.

EDUCATION

PhD Mechanical Engineering , University of Colorado Boulder	Aug 2025
MS Aerospace Engineering Sciences , University of Colorado Boulder	May 2023
BS Biomedical Engineering , Purdue University	May 2018

SKILLS

Medical Device R&D: Design Controls (21 CFR 820.30), ISO 13485 (QMS), IEC 60601, Risk Management (ISO 14971), FDA 510(k) Strategy, V&V, Design History Files (DHF), GMP/GLP.

Hardware & Systems: PCB Design (Altium, Eagle), Analog Front Ends, Power Electronics, DAQ, Embedded Systems (MCUs, IMUs, EMGs), 3D Printing, E-Textiles, CubeSat Payloads, Bioreactor Design.

Software: MATLAB, R, Python, LabVIEW, High Performance Computing, C, Minitab, Git, AWS.

Materials & Manufacturing: PTFE, Silicone, Biomaterials, E-textiles, Prototyping, Material Testing & Characterization.

Imaging & Modeling: MR-EPT (conductivity, permittivity), qMRI (T1p, T2, T2*), Numerical Modeling, Monte Carlo.

Professional & Leadership: Cross-Functional Team Leadership, Fundraising, Technical Due Diligence, Project Management, Grant/Patent Writing, Teaching/Mentorship.

PUBLICATIONS & PRODUCTS/PROJECTS

Publications:

1. Park, J., ..., **Argote, P.F.**, *et al.*, "An autonomous lab on a chip for space flight calibration of gravity-induced transcellular calcium polarization in single-cell fern spores", **Lab on a Chip**, vol. 17, no. 6, pp. 1095-1103, 2017. Available: 10.1039/c6lc01370h.
2. **Argote, P.F.**, *et al.*, "Chondrocyte viability is lost during high-rate impact loading by transfer of amplified strain, but not stress, to pericellular and cellular regions", **Osteoarthritis and Cartilage**, vol. 27, no. 12, pp. 1822-1830, 2019. Available: 10.1016/j.joca.2019.07.018
3. Miller, E.Y., ..., **Argote, P. F.**, *et al.*, "MRI-derived Articular Cartilage Strains Predict Patient-Reported Outcomes Six Months Post Anterior Cruciate Ligament Reconstruction", **Scientific Reports**, 2025. Available: 10.1038/s41598-025-05306-4
4. Miller, E.Y., ..., **Argote, P. F.**, *et al.*, "Evolving cartilage strain with pain progression and gait: a longitudinal study post-ACL reconstruction at six and twelve months", **MedRxiv**, 2024. Available: 10.1101/2024.09.08.24313289

Products/Projects:

1. R. Swenson, S. Li, S. H. Soon, **P.F. Argote**, "EsthesioTouch: An Electronic Esthesiometer for Accurate Measurement of Tactile Sensitivity in Neuropathy," **Senior Design Project**, 2017. Available: <https://engineering.purdue.edu/BME/Academics/Undergraduate/SeniorDesign/Projects/2017#T6>
2. S. Kuhns, **P. F. Argote**, *et al.*, "Purdue ExoMIND Glove: A Stroke Rehabilitation Device Used to Generate Biofeedback for Physical Therapists and Patients," **Hackster.io**, 2017. Available: <https://www.hackster.io/purdue-mind/purdue-exomind-glove-1b32dc>
3. M. Albaugh, **P. Argote**, *et al.*, "Matter of manufacture of compression legging system and associated uses," **US Patent 11,672,288**, filed [August 26, 2020].
4. C. P. Neu, Y. Youssef, **P. F. Argote**, "Magnetic Resonance Imaging of Electromechanics," **Provisional Patent Application 63/855,127**, filed [July 31, 2025]