BRYAN GONZALEZ

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EDUCATION

ELECTRICAL & COMPUTER ENGINEER AND BIOMEDICAL ENGINEERING | B.S.E | Duke University — May 2023
BME Design Fellow with certificate in Innovation & Entrepreneurship

PROFESSIONAL EXPERIENCE

R&D ENGINEER | Children's National Hospital | Washington, DC — Jun 2023 – Present

- Develop surgical delivery systems and extraction tools for implantable cardiac devices (pacemakers, loop recorders), advancing them from concept to preclinical validation and pending FDA submission.
- Collaborate directly with surgeons and clinicians in multi-center studies to refine workflows, gather usability feedback, and improve ergonomics and procedural efficiency.
- Conducted preclinical evaluations using both in vitro benchtop models and in vivo animal studies, validating surgical approaches and documenting outcomes to support regulatory submissions.
- Author protocols, test reports, and risk documentation in compliance with FDA design controls (21 CFR 820) and ISO 13485/14971 standards.
- Support failure analysis and design iteration using CAD to optimize safety and reliability of surgical tools.
- Built a Python-based VR platform to accelerate surgical planning and preparation, trained surgeons on its use, and conducted usability studies to measure efficiency and adoption.
- Co-lead daily lab operations, mentor interns, and proactively drive new project ideas and decisions to advance R&D efforts.

DESIGN ENGINEER | DesignHub at Duke | Durham, NC — Oct 2022 – May 2023

- Prototyped devices for clients using CAD, circuit and software development, rapidly iterating concepts into prototypes.
- Held weekly office hours providing mentorship and technical support on electronics, programming, and prototyping to help students and professors advance projects.

SYSTEMS ENGINEERING INTERN | Boston Scientific | Valencia, CA — Jun 2022 – Aug 2022

- Evaluated neuromodulation firmware performance by designing and executing test protocols for spinal cord stimulator leads.
- Conducted benchtop studies to assess effects of lead geometry, voltage, and saline concentration on sensing accuracy.
- Converted and expanded a set of Python data processing scripts into a MATLAB analysis suite, improving testing efficiency.
- Collaborated with systems engineers to analyze results and provide recommendations for device optimization and reliability.

PROJECTS

OVERNIGHT STROKE MONITOR | R&D Engineer | Duke University — Jan 2022 – Dec 2022

- Prototyped a stroke monitoring wearable with Duke Hospital, combining sensing data and Bluetooth caregiver alerts.
- Developed the alarm subsystem and conducted testing to validate usability and performance, contributing to a design recognized with a faculty-given award (2nd place among 18 teams).

LIGHTBOX | Electrical Engineer | Duke University — Aug 2022 – Dec 2022

- Designed and fabricated a single-sided PCB and enclosure for an analog LED blinking system with reverse-polarity protection, voltage regulation, and cost/size/safety constraints.
- Validated performance via oscilloscope testing, ensuring duty cycle and frequency met specifications within error thresholds.

IRRIGATION MONITORING DEVICE | Lead R&D Engineer | Duke University — Jun 2021 – May 2022

- Co-led a year-long global health project with Duke and Kenyan partners, conducting market research, expert interviews, and iterative design reviews to develop a low-cost canal monitoring device for remote villages in Kenya.
- Designed and field-tested an Arduino-based multi-sensor system in Kenya, overseeing prototyping, financial planning, and user feedback collection to guide future iterations; received a research award from Duke's Engineering Department.

SKILLS

Compliance & Standards: Preclinical (in vitro & in vivo) studies, V&V testing, Usability/human factors, FDA design controls (21 CFR 820), QMS (Greenlight Guru), ISO 13485, ISO 14971, Regulatory documentation (protocols, reports, risk files)
Design & Prototyping: SolidWorks, Fusion360, Surgical tool prototyping, PCB design (KiCad), 3D printing, Rapid prototyping
Analysis & Programming: Python, MATLAB, C, Verilog, Assembly, Swift; Signal processing, Automation, Data visualization, Git
Embedded Systems: Arduino, nRF52, ESP32, Raspberry Pi; UART, I²C, BLE, SPI, RTOS; Oscilloscopes, Logic analyzers
Languages: Portuguese (Native), English (Fluent), Chinese (Advanced), Spanish (Intermediate)