Jonathan Bonilla

Medford, NY 11763 | (718) 974-1411 | jdbonilla99@gmail.com

Education

Dartmouth College, Thayer School of Engineering Hanover, NH
***Master of Science**, Engineering Sciences and Human-Centered Design* **Sep 2022 - Sep 2024**
***Bachelor of Engineering**, Biomechanics and Bioelectronics* **Sep 2017 - Dec 2022**
***Bachelor of Arts**, Biomathematics and Engineering Sciences* **Sep 2017-Mar 2021**

Experience

Empower Lab, Dartmouth College **Sep 2022 - Jun 2024**
Graduate Student Researcher Hanover, NH

- Conducted first-of-its-kind research in medical devices for toys used in mental health treatment of children
- Integrated human-centered design principles into toys that incorporated sensors for steps, oxygen, heart rate, movement, and voice recognition to monitor child patient health and inform parents and caregivers
- Designed, prototyped, and tested toys to help manage symptoms such as stress and depression in children aged 2-8, achieving 95% likeability of user design, 92% soothing, and 90% accuracy of mood prediction
- Researched and implemented improvements by introducing affordable, more comfortable materials, incorporating music, comforting messages, and alerts for parents; serving as a stress relief tool
- Mentored and delegated projects to graduate and undergraduate students; served as teaching assistant to 4 graduate-level courses in product development, engineering design, and 1 undergraduate calculus course
- Trained in writing grant proposals, composing 5 proposals, and securing over $10,000 in grant funding

Baker Lab, Dartmouth College **Jan 2021 - Aug 2021**
Graduate Student Researcher Hanover, NH

- Analyzed the wear properties of new alloys at room and cryogenic temperatures, achieving 22% and 17% improvement over stainless steel for applications in extreme temperatures, such as rocket engines in space
- Potential applications for these alloys at room temperature include implants, stents, and bone replacements
- Adapted wear tester for extremely low temperatures (-320°F); eliminated external factors affecting results
- Optimized pin-holder design, improving performance by 6% (determined with statistical analysis software)

The NASA L'Space MCA and PWE **May 2020 - Nov 2020**
Team Project Manager and Technical Writer Remote

- Managed a team of 12 undergraduate students across the country designing a mock mission to explore Mars
- Received training, lectures, and feedback from NASA, Boeing, Blue Origin scientists, and technical writers

Analog Lab, Dartmouth College **Sep 2019 - Mar 2020**
Undergraduate Student Researcher, Asthma Symptom Monitoring Hanover, NH

- Developed a wearable device that detects and tracks cough, wheezing acuity, lung function, and inhaler use
- Collected, analyzed, and interpreted information (99.2% accuracy) about a patient's level of asthma control

Projects

Halter Lab, Dartmouth College **Jan 2021 - Mar 2021**
Graduate Student Researcher Hanover, NH

- Designed the mechanical structure of a reliable medical probe used by surgeons in cancer-detection surgery
- Resulted in improved surgeon-user experience and adherence to ISO safety and FDA standard protocols

Coursework

Biomaterials, Bioelectronics, Statistics, Machine Learning, Engineering Design Methodology, Molecular Biology

Leadership & Service

Dartmouth Hitchcock Medical Center, Childlife Volunteer, Hanover, NH **Aug 2023 - Dec 2023**

- Provided emotional support to critically ill children and their families at the Pediatric Inpatient Unit

Guala, Volunteer, Tegucigalpa, Honduras **Feb 2021 - Jul 2022**

- Improved SolidWorks models and made failure analysis for customized 3D-printed arm and leg prostheses
- Participated in the 3D printing, assembly, and distribution of state-of-the-art prostheses for local citizens

Skills & Competencies

Programming Languages: C, Matlab, Solidworks, Blender, Arduino and Python, General R, and VDHL
Technical: Regulatory Compliance, 3D Printing, Quality Control & Assurance, Technical Writing, Data Analysis
Languages: Spanish (native), Italian (proficiency), French (intermediate), Mandarin (basic), and Portuguese (basic)