

Uriel Magaña-Salgado

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📁 Portfolio

📍 Cambridge, MA

EDUCATION

Massachusetts Institute of Technology (MIT)

M.S in Mechanical Engineering (GPA 4.5, focus in robotics and manufacturing)

B.S in Mechanical Engineering (GPA 4.8, focus in design, controls, and med device)

Cambridge, MA

received 02/2023

received 06/2021

EXPERIENCE

Medtronic – Surgical Robotics

Boston, MA

Senior Hardware Engineer

09/2023 – Present

- Acted as the mechanical lead for the Surgeon Console subsystem in RPE, driving dozens of Engineering Change Orders (component end-of-life, vendor changes, manufacturability improvements) and becoming the SME for the 1000+ component system
- Owned mechanical changes aimed to increase the use-life of a Hugo RAS subsystem from 250 surgical procedures to 1000, including root cause analyses, rapid prototyping / iteration, and testing while minimizing software, clinical, and manufacturing impact
- Co-led mechanical updates to reduce subsystem cost by 25% by leveraging multi-body Ansys FEA simulations, tolerance analyses given GD&T, engineering testing, and DFA conversations with our contract manufacturer
- Led dozens of vendor DFM conversations to implement mfg changes across sheet metal bent, injection molded, die cast, and machined parts
- Wrote several Python scripts to simplify testing data analyses, mechanical drawing reviews, and failure log parsing for simple ME use
- Led effort to standardize fastener analysis and joint design across team of 26 MEs, trained by industry experts on standards like VDI 2230
- Investigated 12+ failure modes accounting for 170+ field returns since product launch, root causing those making up 50%+ of them

Illuminant Surgical Inc

Cambridge, MA

Mechanical Engineering Co-op

02/2023 – 08/2023

- Revamped the design of the surgical navigation system, reducing weight by 40 lbs, increasing stability parameters 4-fold, and decreasing manufacturing cost by 20%
- Drafted FDA pre-submission validation & verification protocols based on 300+ pages of IEC 60601 standards and collaterals
- Designed and integrated a low-cost full system enclosure with powder coated aluminum and polished ABS, allowing contaminant coverage
- Integrated pneumatic solution to arm extension that reduced its 45-pound weight lifting to less than 10 pounds
- Delivered files (DXF, STEP, STL) to 4 contract manufacturers to ensure outsourced parts fell within desired tolerances

MIT Device Realization Laboratory

Cambridge, MA

Graduate Researcher

09/2021 – 02/2023

- First-authored journal paper proposing novel frame-to-frame tracking technique of ultrasound features requiring less initial manual work, but matching accuracy Deep Neural Network computer vision algorithms, published in the BioMedical Engineering Online journal
- Designed and conducted human study with 26 subjects, analyzing physiologic data from 20+ skin-adhered sensors and markers
- Developed Python code repository for MIT Immersion Lab to facilitate the post-processing and feature-tracking of ultrasound videos
- Used signal processing techniques (full and windowed fast Fourier transforms, Welch's method) of accelerometer signals for tremor detection

Medtronic – Diabetes

(virtual) Northridge, CA

Mechanical R&D Engineering Intern

06/2020 – 08/2020

- Expedited materials compliance with all applicable American (RoHS, Prop65) and European (EU MDR, REACH) entities by developing 3 intuitive tools (custom flowchart for new materials, workbook for previously-used materials, and decision-card for material selection)
- Established a minimum alarm tone level for a diabetes pump through unpaired t-tests of sample tolerance intervals using Minitab

Myomo Inc

Cambridge, MA

Electromechanical Engineering Intern

06/2019 – 08/2019

- Designed robust mechanical fixture built to withstand all cycle testing for orthotic system using inexpensive parts and 3D parts
- Revised and delivered a certified testing protocol to the company's contract manufacturer
- Conducted 3 material testing protocols (fatigue, excessive deflection, and impact) for a redesigned component
- Modeled, 3D-printed, and redesigned 5 attachments to robotic system for improved ease-of-use using Solidworks

SKILLS

Manufacturing

3+ years of DFM for plastic injection molding and die / vacuum casting considerations, surface finishing and coatings
2+ years of advanced fastener selection training and analysis experience

Mechanical

8+ years of Solidworks / Creo modeling
3+ years of Ansys use for multi-body FEA
3+ years of BOM management and configuration experience

Tooling

Experience using CNC mill, lathe, 3D printing, waterjet, laser cutter, metal bender, bandsaw, drill press, arbor press, mostly 2017-2023