Uriel Magaña-Salgado

908 947 6551 | @uriel_magana | umagana1010@gmail.com | Portfolio | Cambridge, MA

Mechanical engineer with 4+ years of industry experience and 2+ years of research experience designing for electromechanical systems within the robotics and medical device industries, from concept through production. Known for being detailed-oriented, curious, and creative. Seeking to enhance my expertise across design, manufacturing, robotics, and AI in my next role.

PROFESSIONAL EXPERIENCE

Medtronic – Surgical Robotics — Boston, MA
Senior Hardware Engineer — 09/2023 – 09/2026

- Mechanical lead for Hugo's Surgeon Console in Sustaining, owning product decisions as the design SME for 1000+ component subsystem
- Owned 2 major design updates as part of a project aimed to increase the use-life of a robotic arm assembly from 250 surgical procedures to 1000, including root cause analyses, rapid prototyping, and testing while minimizing software, clinical, and manufacturing impact
- Investigated failures accounting for 170+ field returns and dozens of manufacturing interruptions since product launch, root causing failure modes making up >50% of them. All recommendations were included in scope of 4X use-life project above
- Drove dozens of Engineering Change Orders triggered by component end-of-life's, vendor changes, manufacturability improvements, and cost reduction across Hugo's subsystems
- 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 improved manufacturing practices across sheet metal bent, injection molded, die cast, and machined parts, gaining experience in designing production-ready components
- Wrote several Python scripts to simplify testing data analyses, mechanical drawing reviews, and failure log parsing for simple ME use
- Led standardization and training of fastener / joint analysis to team of 26 MEs, leveraging industry expert content and VDI 2230 standard

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 V&V 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 significantly reducing upfront 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 Cardiovascular — (virtual) Santa Rosa, CA
Manufacturing Engineering Intern — 06/2021 – 08/2021

- Slashed time spent on monthly material-use calculations by 78% using optical character recognition (OCR) in Python, eliminating full work-days' worth of tedious tasks down to less than two hours
- Independently researched and finalized hopper vendor used to implement faster extrusion equipment in all 15 manufacturing lines

MIT Gear Lab – Prosthetic Foot Team — (virtual) Cambridge, MA
Undergraduate Researcher — 02/2021 – 06/2021

- Designed and CNC machined a precise Instron-mounted fixture that reduced off-axis prosthetic foot loading errors by over 90%
- Guaranteed fixture compliance with prosthetics international standard by using FEA tool for static loading

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

MIT Media Lab – Biomechatronics Laboratory — Cambridge, MA
Undergraduate Researcher — 02/2020 – 05/2020

- Designed 6 small-scale mechanisms to tackle the moving knee center-of-rotation issue in ostheo-integrated exoskeleton legs
- Further simulated and designed a two-part cable-pulley assembly with small off-the-shelf parts to be used in small mice legs

Myomo Inc — Cambridge, MA
Electromechanical Engineering Intern — 06/2019 – 08/2019

- Designed robust mechanical fixture built to withstand all cycle testing for an orthotic device using inexpensive OTS and 3D-printed 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

MIT Tata Center for Technology & Design Cambridge, MA
Undergraduate Researcher 02/2019 – 05/2019

- Implemented high-torque proportional motor control in a torrefaction system aimed to use the ~500 metric tons of biomass currently burned into the atmosphere, using a flex cable resistance as input, Arduino as controller, and Python as a live visualizing tool

MIT d'Arbeloff Robotics Research Lab Cambridge, MA
Undergraduate Researcher 02/2018 – 06/2018

- Improved wearable robotic-limb position control using an Xbox controller interfacing with Python through ROS, improving system usability for potential applications in dangerous work environments
- Expanded functionality of 3D glasses to block and unblock vision using Arduino and ROS to apply voltage drop directly to its battery
- Modeled, 3D printed, and redesigned 5 attachments to robotic system for improved ease-of-use using Solidworks
- Obtained and analyzed limb data from several user studies regarding proprioception improvement

EDUCATION

Massachusetts Institute of Technology (MIT) Cambridge, MA
M.S in Mechanical Engineering (GPA 4.5, focus in biomechanics research, robotics, manufacturing) received 02/2023
B.S in Mechanical Engineering (GPA 4.8, focus in design, controls, and medical devices) received 06/2021

CERTIFICATES & TRAININGS

Lean Six Sigma Green Belt 2024
IEC 60601- O'Brien Compliance Management 2024
EMI Design and Troubleshooting - Silent Solutions 2024
Clinical Immersion Program - Hartford Healthcare 2025
Fundamentals of Threaded Fasteners and Joint Design - MATRIX Engineering 2025
SAFe for Teams - Scaled Agile 2025
ISO 13485 Design Control & Risk Management - AAMI 2026

SKILLS

Manufacturing

DFM: 3+ years designing for injection molding, die / vacuum casting, finishings and coatings
Assembly: 2+ years of advanced fastener selection training and analysis experience

Mechanical

3D Modeling: 8+ years in Solidworks / Creo
Simulation: 3+ years of Ansys for FEA
3+ years of BOM management and configuration experience

Tooling

Machines: Experience using CNC mill, lathe, 3D printing (FDM, SLA, Polyjet), water-jet, laser cutter, metal bender, bandsaw, belt sander, drill press, arbor press

Software

Main: 6+ years of Python scripting experience
Software: Python, Matlab, C++, Git
Analysis: Labview, Minitab, Excel
AI: Claude, ChatGPT, Copilot, Gemini

Mechanical: 8+ years of Solidworks / Creo; 3+ years of Ansys FEA; experience with machine shop tools (CNC mill, lathe, 3D printing, water-jet)
Mechanical: 8+ years of Solidworks / Creo; 3+ years of Ansys FEA; 3+ years of BOM management and configuration experience
Manufacturing: experience designing for injection molding, die / vacuum casting; advanced fastener analysis and calculations
Tooling: experience using CNC mill, lathe, 3D printing (FDM, SLA, Polyjet), water-jet, laser cutter, metal bender, belt sander, arbor press
Software: 6+ years of Python scripting; experience with Matlab, C++, Git, Labview, Minitab, Excel; AI experience testing Claude, ChatGPT, etc