

LIZMARIE COMENENCIA ORTIZ

Address: 481 S Mathilda Ave, Sunnyvale, CA, 94086

Email: lizmariecomenencia@gmail.com Phone: (787) 608-9044 Portfolio: www.lizcomenencia.com

EDUCATION

Stanford University

Ph.D. in Mechanical Engineering, Micro-Scale Sensors

2018

M.S. in Mechanical Engineering, Biomechanics Track

2015

Carnegie Mellon University (CMU)

2013

B.S. in Mechanical Engineering, with honors

Additional Major in Biomedical Engineering, Biomechanics Track

RELEVANT EXPERIENCE

Sr. NPI Manufacturing Engineer, Intuitive Surgical

2018 - Present

- Design and develop early-stage models and electro-mechanical prototypes
- Develop prototype test fixtures for design verification
- Perform initial feasibility and analysis on early-stage sensor prototypes
- Support manufacturing line for next generation instruments. Serve as liaison between different teams, support clinical labs and test prototypes
- Document work with ECO process, lead documentation for manufacturing plan, bill of materials and failure analysis

Graduate Research Assistant, Stanford Micro Structures and Sensors Laboratory

2016 - 2018

Project: Low-Powered and Highly Stable MEMS-Based Oscillators

- Designed and tested micro-scale inertial sensors in harsh temperature (-40 to 85°C) and shock (+5kGs) environments
- Iterative analysis using COMSOL and design layout of temperature compensated resonators for timing applications
- Focused on reduction of power consumption and improvement of frequency stability over time
- Conducted experiments using MATLAB for data acquisition and analysis of patterns

Graduate Research Assistant, Stanford CHARM Laboratory

2014 - 2016

Project: Magnetically Guided Brain Catheter for Endovascular Brain Interventions

- Conceptualized and developed prototypes for a magnetically guided brain catheter with material selection trials and rapid prototyping techniques including high resolution 3D printing and laser cutting
- Analyzed of the deflection of the catheter using FEA tools and performed experiments to compare data

Undergraduate Research Assistant, CMU Experimental Biomechanics Laboratory

2011 - 2013

Project: Robotic Foot-Ankle Prosthesis

- Designed an ankle-foot prosthesis in SolidWorks (with 250+ components) based on an existing prototype to support subjects of 150% more weight than the initial prototype
- Analyzed iteratively custom-manufactured components using FEA to calculate stresses and orient design decisions
- Assisted in pilot testing and development of experimental hardware of the first prototype

Intern, NASA Goddard Spaceflight Center

Summer 2013

Project: Micro-Mechanical Testing, Materials Engineering Group

- Designed a LabView user interface and programed a 6-axis pico-motor motorized aligner to improve the capabilities of an existing micro-scale mechanical testing platform
- Performed micro-scale mechanical testing on recovered insulation material from the Hubble Space Telescope after 20 years of exposure to Space environment to measure degradation

Intern, NASA Jet Propulsion Laboratory

Summer 2012

Project: Capillary Sampling for Laser Spectroscopy, Planetary Science Group

- Built a capillary injection system for tunable laser spectroscopy to control the introduction of water vapor to the chamber
- Developed a computer interface program using LabWindows to support experimental data acquisition
- Performed successful experimental trials and developed a assembled a working prototype

Intern, NASA Goddard Spaceflight Center

Summer 2011

Project: Greenland Rover Project, Engineering and Robotics Group

- Modeled and assembled a prototype of an ultra-light robotic arm to be tethered into robotic vehicles using Solidworks and tolerance analysis
- Performed stress analysis for the chassis of the Greenland Rover (GROVER) using SolidWorks and Catia FEA tools
- Worked with a team to brainstorm ideas and develop a conceptual prototype for a camera mounting mechanism for the End-Effector of the Robotic Refueling Mission

LEADERSHIP AND SERVICE

- BLACK @ Intuitive Ambassador 2020 - Present
- Women in Technology (WitY) Engagement Committee Member 2020 - Present
- Stanford Residential Community Associate 2015 - 2018
- Stanford ME Women in Engineering Group Financial Officer 2014 - 2016
- President, Undergraduate CMU Biomedical Engineering Society (BMES) 2012 - 2013

SKILLS

Software: MATLAB, Solidworks, ProEngineer, COMSOL Multiphysics, ANSYS, Agile, SAP

Lab Techniques: Design and Prototyping, Circuit Design, Soldering, 3D Printing, Laser Cutting, Machining

Relevant Programs: Six Sigma Green Belt, Solidworks Advanced Part Modeling and Surface Modeling

Relevant Courses (Stanford): Intro to Mechatronics, Intro to Sensors, Intro to Robotics, Biodesign Innovation, Product Management, Global Biodesign, Medical Device Design, Intro to Controls, Commercial MEMS Design, Biomechanics

Spoken Languages: Fluent in Spanish and English

AWARDS AND HONORS

- Stanford Accel Innovation Scholar 2016
- NSF Graduate Research Fellowship 2013 - 2018
- NASA MUST Scholar 2008 - 2013
- Pi Tau Sigma ME Honor Society 2011 - 2013
- Tau Beta Pi Honor Society 2012 - 2013
- NASA Student Ambassador 2012 - 2013

SELECTED PUBLICATIONS

Comenencia Ortiz, L., et al. (2020) Low-Power Dual Mode MEMS Resonators With PPB Stability Over Temperature. Journal of Microelectromechanical Systems, pp.190-201.

Comenencia Ortiz, L., et al. (2018) Thermal Effects of Ovenized Clocks on Episeal Encapsulated Inertial Measurement Units. IEEE 31st International Conference on Micro Electro Mechanical Systems (MEMS), Belfast, Ireland, pp. 980-983, 2018.

Comenencia Ortiz, L., et al. (2018) Assessing Failure in Epitaxially Encapsulated Micro-Scale Sensors using Micro and Nano X-Ray Computed Tomography. MRS Communications Journal, pp.1-8, Apr 2018.

Comenencia Ortiz, L., et al. (2018) Enhancing Micro-Oven Power and Stiffness in Encapsulated Devices for Timing Reference Applications. Solid State, Actuators and Microsystems Workshop, Hilton Head, 2018.