

Hector Adrian Ramirez Lara

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Education

ETH Swiss Federal Institute of Technology, Zurich (CH) August 2020 - January 2023

Masters in Biomedical Engineering | Bioelectronics Track

GPA: 5/6

Courses: Physical Modeling and Simulations, Bioelectronics and Biosensors. Analog Signal Processing , Neuromorphic Engineering, Neuro-informatics, Energy Efficient Analog Integrated Circuits

Northeastern University, Boston MA (US) August 2014 - December 2019

Bachelor of Science in Mechanical Engineering and Electrical and Engineering | Minor in Biomechanical Engineering

GPA: 3.63/4.0

Courses: Advanced Electronics, Systems Analysis and Controls, FEA Assistive Robotics, Robotics, Design of Implants, Linear Systems, Noise and Stochastic Processes.

Honors: Dean's List (4), Honors Program, Presidential Global Scholarship, Pai Tau Sigma & Tau Beta Pai

Extracurricular Activities: NEU American Society of Mechanical Engineers (**President**/Workshop/Outreach), ADDITIVE Learning (Founder/ Tech Lead), NU Club Taekwondo (B-Team)

Work Experience

Instituto Italiano di Tecnología, Génova Liguria (IT) January 2019 - July 2019

Research Mechatronic Intern

- Design of a PDI tuning test bench for an Integrated Servo Actuator (ISA) in a hydraulic robotic quadruped with high stress and small footprint scenarios using NX and Nastran FEA analysis.

Farm Product Development, Nashua NH (US) July 2017 - December 2017

Medical Product Development Intern

- Verification of the IEC 60601-1 Stability Requirements on various product lines by designing and manufacturing a medical cart with a modular center of gravity and its corresponding kinematic model in PTC Mathcad.
- Launched a product past clinical trials through SOP's, assembly instructions, and fixtures for design verification.

Corindus Vascular Robotics, Boston MA (US) July 2016 - December 2016

Electro-Mechanical Engineer Intern

- Development of a mechanical articulation in a robotic arm through FEA, tolerance analysis, part sourcing and force tests to verify their compliance with ISO and FDA Standards.
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Research Experience

Institute of Neuroinformatics, UZH & ETH, Zurich September 2021- November 2022

Research Projects

- Designed and produced a battery powered electronic system capable of turning photoplethysmography signals into spike signals.
- Created an emulation of an S1 cortex circuit in the neuromorphic chip DynapSE-2, to understand the mechanism of adaptation for myo-prosthetic ulnar nerve stimulation.
- Designed a synaptic integrator circuit in Cadence for a design competition utilizing Monte-Carlo simulations to optimize time constant and area real estate.

Energy Efficient Circuits and IoT Systems Group, ETH, Zurich January 2021-September 2021

Research Projects

- Produced an AFE prototype for capacitive neural recording of in-vitro neurons through a PCB prototype.
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Skills

Programs: Python, Matlab/Simulink, Cadence Virtuoso, Spice/OrCAD, SolidWorks (CSWA), Altium (PCB design), NX, Verilog, Fusion 360, Creo, Arduino, Lab View, Photoshop, Illustrator, Abaqus, Mathcad, LaTeX

Hands-On: Lathe, Mill, Basic Workshop Tools, PCB Soldering, FDM Printing, Laser Cutting

Languages: Spanish (native), Italian (conversationally fluent), German (B2), English(fluent)

Special Interests: Drawing: Digital Illustration\Graphic Novels, Guitar: Classical/Jazz/Indie, Tae-Kwon-Do (Black belt 1st dan)