Luis Mesias

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EDUCATION:

Case Western Reserve University, Cleveland, Ohio (CWRU)
- Ph.D. candidate in Electrical Engineering, 3.82 GPA — Sep 2025
- Bachelor of Science in Engineering: 3.96GPA, Summa Cum Laude. — Aug 2020
  Electrical Engineering Major, Biomedical Engineering Minor

Hillsborough Community College, Tampa, Florida (HCC) — May 2018
- Associates in Arts - Engineering concentration, Honors Institute, 3.95GPA

EXPERIENCE:

- Design of a Haptic Interface Based on Surface Electrical Nerve Stimulation — Feb 2024 – Present
  - Designed a low profile wearable haptic interface compatible with **Meta Quest** 3 optical hand tracking.
  - Integrated electrical stimulation to deliver intensity modulated haptic feedback to all five fingertips without occluding them or the palmar surface.
  - Reduced number of trials with sensations on undesired locations from 27% to 4% and increased the number of trials with sensations at the fingertips from 70% to 92%.
  - Develop a publicly available data collection tool to record haptic sensation location
  - Appearances: 2024 **IEEE** Conference on Telepresence (doi.org/10.1109/Telepresence63209.2024.10841536)
- An Operator-centric Design of an Avatar System using Digital Nerve Stimulation — Jun 2020 – Present
  - Developed a **VR** interface that gave the operator manipulation and locomotion control of a robot that was more than 2,000 miles away.
  - Transformed pressure data from the robot's fingertips into haptic feedback at the operator's fingertips at low latencies using electrical stimulation.
  - Implemented low latency video interfaces into the **VR** environment using **WebRTC** technology.
  - Appearances: 2022 Robotics Science and Systems (**RSS**) conference, **National Geographic** June 2022 issue, **PBS** News Hours, Human Fusions Institute submission to the ANA avatar **XPRIZE semifinals**
- Vestibulo-Ocular Reflex (VOR) diagnosis and evaluation using VR — Aug 2020 – Present
  - Developed eye tracking **VR** applications used to diagnose VOR disorders using the **VARJO** HMD
  - Developed a fruit catching **VR** rehabilitation game to help veterans with TBI improve their convergence by 40% over an 8 week period.
- Artificial touch feedback through skin-surface electrical stimulation — Jun 2019 – Dec 2023
  - Developed a new haptic technology that used surface electrical stimulation to convey intensity modulated sensation to the fingertips.
  - Generated sensation at the targeted finger in 84% of the trials.
  - Aided in the patenting process of the stimulation technology **patent licensed** to **Afference Inc. (**no. WO2023244529A1) as the lead inventor, and a stimulation glove design **provisional patent**
  - Appearances: Published in the **Journal of Neural Engineering** (DOI: 10.1088/1741-2552/ad0563)

SKILLS:

- **Programming Languages:** C#, Java, Python, R, C++, MATLAB, Swift, Assembly
- **Programming Tools:** Unity, n8n, Arduino, Android studio, Simulink, MongoDB, Firebase, Xcode, Amazon Alexa, Microsoft Azure, ModelSim
- **Other Technical Skills:** Analog circuit design, neural interfaces modeling, PCB design, CAD
- **General Skills:** Statistical analysis, IRB approval experience, Native Spanish speaker, Human subject data collection

LEADERSHIP EXPERIENCE:

- Journal Reviewer for Virtual Reality, Journal of NeuroEngineering and Rehabilitation, IEEE Transactions on Biomedical Circuits and Systems — May 2023 – Present
- Conference paper reviewer for multiple conferences — Jan 2022 – Present
- Faculty Search Committee: graduate student representative — Jan 2022 – May 2022
  - Served in a search for an electrical engineering faculty with emphasis in biomedical applications