ALVARO J. MELENDEZ

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Self-motivated and enthusiastic mechanical engineering student with experience in EE & CS in a wide diversity of projects with a passion for mechatronics systems and product development.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Candidate for B.S. in
Mechanical Engineering
Class of 2019
Cambridge, MA

ACADEMIA BRITANICA CUSCATLECA
IB Diploma Program
Class of 2015
El Salvador

SKILLS

MECHANICAL

Manual/CNC Mill and Lathe (ProtoTRAK, HAAS VF2)
Waterjet (OMAX)
Lasercutter (EPILOG, Universal)
3D Printing (UP!, Makerbot, Ultimaker, Stratasys, Dremel)
Injection Molding (Engel)
GD&T (as per ASME Y14.5-2009)

HARDWARE

Raspberry Pi
Arduino
National Instruments

SOFTWARE

SolidWorks (CAD, Simulation, EPDM)
ANSYS
CAM (MasterCAM, HSMWorks)
MATLAB
Basic ROS
Siemens NX
Java
Python

INTERESTS

Mechatronics
Power Electronics
Manufacturing
Biking
Sailing

WORK EXPERIENCE

CLEARMOTION Product Development Intern Woburn MA — May-Aug. 2018

- Development of an active suspension system through design, simulation, testing and validation
- Component R&D selection, thermal analysis and simulation for PCB development
- Created testing fixtures using professional drawings and tolerancing stack-ups for unit testing
- Developed and 3D printed models to aid with design for assembly

OPTIMUS RIDE Hardware Intern Boston, MA — June-Aug. 2017

- Designed serviceable autonomous-driving sensor mounts and covers for vehicle transport
- Designed a new computing electronics enclosure with proper cooling and waterproofing

LUCID MOTORS Powertrain Intern Newark, CA — June-Aug. 2016

- Responsible for managing battery pack mechanical testing, both at the cell and subunit level
- Devised a rig that would reliably set cells into thermal runaway for testing purposes; prepared thermal tests

PROJECTS & ACTIVITIES

MIT MOTORSPORTS (FORMULA SAE) Cambridge, MA — Aug. 2016-Present

CONTROLS ENGINEER
- Responsible for design and testing of controls algorithms for launch control and anti-lock braking

ELECTRICAL HARNESS AND ENCLOSURE LEAD
- Designed and manufactured electrical harnesses and enclosures for all external PCBs, addressing noise, EMI, waterproofing and vibration, ensuring the integrity and reliability of the electrical system

BATTERY PACK MECHANICAL ENGINEER
- Designed a custom in-house battery pack made from 18650 Li-ion cylindrical cells
- Responsible for designing a fully serviceable, electrocution safe enclosure for the pack's high voltage electronics
- 1st place winner of the MIT Luis de Florez Award for Undergraduate Design

PHARMACY ON DEMAND Mechanical Engineer Cambridge, MA — Jan. 2018

- Developed a compact, portable pharmaceutical manufacturing system that can be reconfigured to produce a variety of drugs on demand

MIT ELECTRIC VEHICLE TEAM Mechanical Engineer Cambridge, MA — Sept.-May 2016

- Designed a frame to accommodate batteries and used SolidWorks simulation to evaluate its performance under acceleration and collision conditions

RAMEN-STYLE YO-YO Cambridge, MA — Sept.-Dec. 2018

- Led a team of 5 members to design, test, and manufacture 50 identical ramen-style yo-yo's for MIT class 2.008: Design and Manufacturing II

LEADERSHIP

PAPPALARDO LABS Teaching Assistant Cambridge, MA — Feb. 2018-Present

- Taught and assisted students through the design, testing, and manufacturing process for MIT Class 2.007: Design and Manufacturing I

MIT EDGERTON CENTER Outreach Volunteer Cambridge, MA — Sept. 2015-Present

- Teach and introduce students to engineering, art and science, assisting them with their personal projects; travelled to Beijing, China to teach over 100 students

MIT MAKERLODGE Mentor Cambridge, MA — Sept. 2016-Jan 2017

- Provide mentorship to and enable students interested in the maker community

HIGH SCHOOL MAKERSPACE Founder Santa Tecla, El Salvador — Sept. 2014-May 2015

- Created the first makerspace at school and provided help to students