

# 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

Online portfolio: [www.ajmel.me](http://www.ajmel.me)

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