Tony Antoine Abdo
tonyabdo.com

Education

University of California, Berkeley

M.S. - Mechanical Engineering | Concentration in Controls — May 2017
B.S. - Mechanical Engineering | Minor in Electrical Engineering and Computer Science — May 2016

Relevant Coursework: Feedback Controls, Model Predictive Control, Mechanical Behavior of Engineering Materials, Artificial Intelligence, Machine Learning, Robotics, Embedded Systems, Vehicle Dynamics, Signals and Systems

Relevant Experience

Private Tutor – JEI Learning Center — Jul 2022 – Present
- Identify learning challenges in a wide array of students to work within their capabilities with the purpose of achieving mastery in Math, English, and occasionally other subjects

Co-Founder – Friends of Falkon Robotics Inc. 501 (c)(3) — Feb 2021 – Present
- Created non-profit with a group of alumni to facilitate greater STEM education for High School students
- Search for and complete grants to fund team with a budget that has grown from ~$30k to $100k+

Engineering Mentor (FRC/Berkeley PiE) — Sp. 2014, Jan.– Mar 2018, Feb 2021 – Present
- Mentored 20 high school students in the PiE robotics competition, receiving Outstanding Mentor Award
- Teach students how to design and build a robot while taking into account real physical principles
- Develop design and manufacturing workflow to allow 100+ student organization to create a robot effectively

Co-Founder – Leaf Suit Inc. YC W20 (Wearable Air Conditioner) — Jun 2018 – Jan 2021
- Designed, built, and programmed a 1" x 2" PCBA controlling 6 fans, 2 diaphragm pumps, and smart button
- Designed and made pattern to allow comfort for wearer while still achieving conformity and cooling coverage
- Worked with professional grant writers to define targets and put together grant submissions for NHS and military
- Worked with patent attorney to draft a non provisional patent along with PCT filing

Mechatronics Engineer – Tesla — Apr 2018 – Dec 2019
- Conceptualized, designed, and brought up manufacturing of plastic parts in over 50,000 Model S/X vehicles
- Worked with suppliers to enable launch of Model 3 vehicles in Chinese market ensuring feature parity
- Designed and built machines for operators to use in seats manufacturing, increasing production by 30%
- Developed a controller utilizing CAN protocol to command seat motions when isolated from the car

Hardware Engineer – Dash Robotics Internship — Jun 2016 – Aug 2016
- Self-taught C to prototype, design, and implement the firmware infrastructure needed to support future accessories on the Kamigami robot's existing i2c communication bus to boost future sales
- Designed and manufactured tools to aid in improving the assembly line yield from 70% to 90%

Product Engineer – Texas Instruments Internship — Jun 2015 – Aug 2015
- Built a test jig, designed in SolidWorks and optimized for cost, to isolate inductive and capacitive sensors
- Automated the test jig above for motion and data collection using LabVIEW and TestStand

Technical Skills

- 3D Modeling: Inventor, CATIA, SolidWorks FEA, SolidWorks certified
- Programming: MATLAB (proficient), Python (proficient), C++ (proficient)
- Other: Altium PCB design, machining on lathe and mill, 3D printing, soldering, i2c, SPI, CAN, LIN

Projects
tonyabdo.com/projects

Line Following Car
- Designed and manufactured circuit boards for BLDC motor control and power regulation
- Wrote the firmware for reading sensor data within an interrupt-driven control loop for accurate and tight timing
- Incorporated embedded feedback controls with gain scheduling for steering angle and velocity control

Drone Controller
- Derived 3D physics model using matrix representation
- Implemented various control and state estimation techniques determined from MATLAB simulations

Adaptive Cruise Control (ACC)
- Designed the electrical system for two cars to drive autonomously with off-the-shelf components
- Implemented the embedded controls for both the lead and follow cars, as well as the data collection infrastructure