Adolfo Tec

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EDUCATION

University of California, Berkeley — Berkeley, CA
Bachelor of Science, Mechanical Engineering — Aug. 2015 - Dec. 2017
Coursework: Dynamic Feedback Control Systems, Microprocessor-Based Mechanical Systems, Rigid Body Dynamics, Lagrangian Mechanics, Continuum Mechanics, Advanced Engineering Graphics, Measurement and Instrumentation, Manufacturing and Tolerance

SKILLS

CAD/CAM: PTC Creo/Pro-E, SolidWorks, AutoCAD, Autodesk 3DS Max
Software/Programming: MATLAB, Simulink, ANSYS, LabVIEW, C++, Arduino, JavaScript, Visual Studio, MS Office
Equipment: 3-axis Mill, Lathe, Sheet Metal Bending, 3D Printing, Laser Cutting, CFRP (Carbon Fiber Reinforced Polymer) Fabrication, Test Bench Equipment (e.g. Oscilloscopes, Multimeters, Soldering Iron, etc.)
Languages: Spanish, French

EXPERIENCE

Human-Assistive Robotic Technologies Laboratory — Oct. 2016 - July 2017
Undergraduate Research Assistant — Berkeley, CA

- Conducted research on the efficacy of a pneumatically actuated active-passive exoskeleton to be used for upper limb assistance.
- Performed system identification and developed mathematical models for nonlinear stiffness control of pneumatic cylinders on testing workbench.
- Fabricated key circuit boards for actuating test rig and performing data acquisition.
- Created and maintained documents pertaining to data collection processes, testing, and procedures.

UC Berkeley Human Powered Vehicle Team — Aug. 2015 - Dec. 2017
Drivetrain Member (2015-2016); Suspension Member (2016-2017) — Berkeley, CA

- Collaborated in a team of two to design and manufacture an innovative, compact front suspension system responsible for clearing obstacles and maintaining stability.
- Consulted in creating finite element models for analysis and simulation under various loading conditions.
- Fabricated aerodynamic carbon fiber fairing using wet layup processes and hand-machined vehicle components.

PROJECTS

Siesta Drink Dispenser — Aug. 2017 - Dec. 2017

- Collaborated in a team of five to create a touchscreen-based automatic drink dispenser.
- Developed and integrated control systems for volume control of an array of diaphragm pumps and temperature control for a custom heating element.
- Manufactured key product components using bending machines, mills, and water jets.
- Secured the Frank Jarrett Machine Design Prize due to its functionality, aesthetics, and refinement.

CASE Steam Engine Animation — Oct. 2017 - Dec. 2017

- Led a team of three students to create an animation accurately depicting the assembly and functionality of a CASE steam traction engine.
- Modeled over 50 unique parts along with all material properties for rendering production in PTC Creo Parametric and 3DS Max.

Inverted Pendulum Controller — Aug. 2016 - Dec. 2016

- Developed equations of motion for a rectilinear dynamic cart and pendulum system and ran hardware-in-the-loop (HIL) simulations with Simulink.
- Designed and implemented a state feedback controller to stabilize and self erect an inverted pendulum capable of disturbance rejection.
- Implemented a Luenberger observer scheme to estimate parameters, such as velocities.