Luka Valencic

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EDUCATION

California Institute of Technology Pasadena, CA | Jun 2022

Bachelor of Science in Computer Science

Teacher Assistant (TA): Introduction to Software Engineering | Introduction to Computing Systems | Introduction to Algorithms

Advanced Coursework: Operating Systems | Networks | Machine Learning | Relational Databases

WORK EXPERIENCE

TESLA | Firmware Integration Intern Palo Alto, CA | June 2021 – September 2021

Redesigned tester architecture in Python for high voltage hardware bucks to support testing hardware and firmware from multiple vehicle platforms. Improved automated tests using Pytest framework for charge port and power conversion system. Analyzed test results to find and report bugs in tested components. Designed and conducted thermal testing of Plaid cars in support of new charging feature development. Ran regression tests in support of efforts to redesign power conversion system to deal with semiconductor shortages.

UNITED LAUNCH ALLIANCE | Software Engineering Intern Denver, CO | June 2020 - August 2020

Designed and built web-based tool portfolio to enable Software Tools team to better manage the 500+ tools they owned. Developed design document in conjunction with Product Owner, collected metadata about tools, designed and created user interface for portfolio using Perl backend and JavaScript frontend, and created SQL database used by portfolio.

CALTECH | Summer Undergraduate Research Fellow Pasadena, CA | June 2019 - August 2019

Analyzed the prevalence of various forms of supplemental education in California and their relationship with educational outcomes. Created a custom survey and combined data from survey with publicly available government data. Used R to analyze data with probit models, crosstabs, and Pearson correlations.

PROJECTS

CALTECH FSAE Pasadena, CA | October 2018 - Present

- Freshman Year: Gathered power and signaling requirements from low voltage systems. Sized battery, selected components, and assembled 24V battery from 18650s (4.2V cells) to meet requirements. Designed and assembled low voltage wiring for car. Implemented voltage monitoring function of low voltage battery and passed measurement to supervising microprocessor through CAN bus with Arduino. Team passed all technical inspections at Formula SAE Electric Lincoln, team's best result ever.
- Sophomore Year: In order to reduce size of low voltage battery, designed, built, and programmed battery management system of low voltage battery to enable charging of low voltage battery from high voltage battery during car operation. Designed switching system to switch low voltage power from being supplied from low voltage battery to being supplied from high voltage battery via a DCDC converter. Modifications will result in low voltage battery having a seventh of the cells present in the previous year. Work was halted due to COVID-19.
- Junior Year: Redesigned low voltage wiring to address noise issues. Designed cooling controller which modulated power delivered to cooling pump using pulse-width modulation based on system temperature. As Electrical Technical Lead, lead integration effort of electrical subsystems and supervised designs to ensure that they met safety guidelines. Team placed 14th of 51 teams competing in virtual competition, improvement of 8 places over previous competition.

LEADERSHIP

Low Voltage Battery and Cabling Lead | Caltech Formula SAE October 2018 – June 2019

Low Voltage Battery Management System Lead | Caltech Formula SAE July 2019 - June 2020

Electrical Technical Lead | Caltech Formula SAE June 2021 - Present

SKILLS

Languages: C, Java, Python, OCaml, Haskell, Perl, MySQL

Technology: Git, Confluence, Jira, PCAN-Explorer, CANape