HAOCHENG ZHANG

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SKILLS

Python, Matlab, Simulink, Scikit-Learn, Tensorflow, Pandas, Vector CANalyzer, dSpace ControlDesk

PROJECTS

Hybrid Vehicle Torque Control Strategy — Sept. 2021

- Designed and developed a rule based torque control strategy in Simulink, achieving 79% increase in MPGe
- Optimized algorithm through software-in-the-loop (SIL) development
- Validated algorithm through vehicle-in-the-loop (VIL) track testing

Battery Plant Model — Sept. 2019

- Led equivalent circuit model and battery controller model development for hybrid design team
- Achieved 47% error (RMSE) reduction from existing linear resistor model
- Parameterized cell model using hybrid pulse power characterization (HPPC)

EXPERIENCE

Vehicle Controls Team Lead — May 2019 to Current
University of Waterloo EcoCAR Team

- Re-engineered production SUV into a P4-Parallel-through-the-road hybrid electric vehicle
- Team lead responsible for vehicle supervisory control and battery component control
- Placed 5th out of 11th in a student competition sponsored by General Motors and the US DOE (link)
- Recognized in dSpace publication for overcoming COVID related challenges (link)
- Developed vehicle state machine and component communication interfaces in Simulink
- Conducted one-at-a-time sensitivity analysis on vehicle model to determine effects on vehicle performance

Data Science Intern — Jan. 2020 to Apr. 2020, Jan. 2021 to Aug. 2021
Lixar IT.

- Developed forecasting and anomaly detection models for energy trading using Python, Sklearn, FbProphet
- Designed content based recommendation system using universal sentence encoder for improving energy sales

Battery Modeling Research Assistant — Jan. 2018 to Apr. 2018, Sept. 2018 to Dec. 2018
University of Waterloo

- Developed fault detection algorithm for a commercial Battery Management System sensitive to 0.15% error in MATLAB
- Constructed equivalent circuit models for voltage and state-of-charge models in MATLAB
- Parameterized cells using hybrid pulse power characterization (HPPC) to obtain model fitting data

EDUCATION

University of Waterloo — May 2022
Bachelor of Applied Science Chemical Engineering
Fall 2018 Research Award Recipent
Winter 2017 Dean's List