Yu Lin

+1(716)535-0099 | yu.saturn@gmail.com | Fremont, CA | ylin62

Experience

Lucid Motors
Newark, CA

Lead System Engineer, Powertrain Data
Mar. 2021 - Jan. 2024

- Founder of the Powertrain Data Team
  - Founded and led the Powertrain Data Team, expanding it from a one-person operation to a robust team of seven data engineers and data scientists. Mentored junior engineers and new hires, fostering their professional growth and development through effective communication and guidance. Bridged the gap between powertrain product development and data, enabling data-driven decision-making and research within the powertrain department.
  - Designed and implemented a scalable data management system on AWS using Apache Spark and Apache Airflow, significantly enhancing data accessibility for drive unit testing and manufacturing teams. This system integrated advanced data visualization and reporting features, facilitating robust interdepartmental information flow, cutting data retrieval times from weeks to minutes, and enabling more effective decision-making.
  - Led the end-to-end development and deployment of a machine learning-based anomaly detection model to enhance early defect detection. Defined the problem, conducted research on models, and managed all stages of data preprocessing, training, and tuning. Successfully deployed the model, which played a critical role in preventing potential recalls by continuously improving and evaluating the results.
  - Conducted in-depth analysis of large-scale drive unit manufacturing data in a cloud-based, distributed system, identifying historical trends and seasonal variations to deliver actionable insights and drive continuous improvement strategies.
  - Collaborated closely with R&D and manufacturing engineers on root cause analysis of anomalies and failures, significantly enhancing system performance and operational efficiency. This partnership went beyond data analysis, involving direct engagement in the investigative processes to ensure thorough problem resolution.
  - Correlated manufacturing data with vehicle fleet telemetry, assessing the impact of manufacturing variations at the vehicle level. This ongoing analysis aims to enhance understanding of how production changes influence vehicle performance, potentially contributing to the prevention of future product recalls.
  - Meticulously investigates code and delves into data and analysis methods to ensure robust outcomes. Diligently identifies and resolves underlying issues when results are less-than-ideal, ensuring accuracy and thoroughness in problem-solving.
  - Strategized both short-term and long-term plans to maximize team effectiveness and organizational value. Focused on meeting the department's daily data analysis needs and mentoring new hires in the short term. Defined the team's role, responsibilities, size, direction and trade-offs within the department for long-term planning, crafting a vision for the team's evolution that aligns with corporate goals and delivers significant organizational impact.
  - Spearheaded the definition and development of projects by working with powertrain R&D and manufacturing teams to transform ambiguous ideas into well-defined projects with clear requirements. Led the team through the conceptualization process, providing direction and ensuring projects were actionable, directly contributing to the department's ability to undertake targeted, effective initiatives.
  - Partnered closely with data infrastructure and engineering teams to optimize the big data platform, efficiently analyzing vehicle fleet data and executing ad-hoc tasks. Leveraged strong communication skills to maximize resource utilization, achieving significant cost savings while contributing to data-driven decision-making and operational improvements.

Transportation Research Center Inc.
East Liberty, OH

Research Engineer II at NHTSA Vehicle Research and Test Center (VRTC)
Oct. 2019 - Feb. 2021

- Advanced Data Processing and Analysis for Autonomous Driving Research
  - Developed a suite of data processing and analysis tools for fleet datasets, which includes clustering, characterization, sanity checks, error correction, hyperparameter tuning, and visualization. Produced over 1,000 traffic scenarios datasets, significantly advancing VRTC's autonomous driving safety research.
  - The algorithm, validated against both public and proprietary fleet datasets, has provided a substantial volume of valuable data, enhancing our capability to extract critical safety metrics for autonomous driving research at VRTC.
  - Prepared and delivered detailed reports and presentations, along with publishable-quality data and demonstrations, to NHTSA officials, supporting regulatory and compliance activities.
- Advanced Machine Learning for Traffic Scenario Modeling and Analysis
  - Developed traffic scenario models and extraction algorithms using machine learning to successfully extract and cluster scenarios from traffic and fleet data, enabling precise quantification. This research established a framework for generating autonomous driving test scenarios based on mathematical models, moving beyond reliance on intuition and engineering experience. This methodological advancement offers more robust solutions for shaping future test procedures for the NHTSA.

Tesla Inc. *Fremont, CA*

Hardware Development and Test & Vehicle Dynamics Modeling Intern *Jan. 2019 - Aug. 2019*

- Road profile prediction model.
  - Developed inverse dynamics of 7-Degree-of-Freedom full-car model with Massey-Sain algorithm to predict road surface profile (ISO8608) with vehicle IMU and ride height data. Model was able to successfully predict road profile with data in 3-50Hz frequency.
  - Model built for generalized data source including testing data and customers' real world driving data, giving its ability to build road profile databases for any place with Tesla vehicles.
- Developed LiDAR data processing code for road scan.
  - Built Matlab pipeline for noise removal, accuracy validation, data reduction and data conversion. Created a database for simulation and durability teams for virtual testing and code base for future road scan data processing.
- Run static and fatigue tests for Model S/X drive unit mount.
  - Setup test and data acquisition systems, for the Model S/X front motor mount static strength and fatigue tests. Finished post test inspections and brief data analysis and trouble shoot failures with design engineers.
- Dymola simulation results correlation.
  - Run vehicle model in Dymola with scanned road profile. Compared load and motion results from simulation with proving ground vehicle testing data collected from the road which had been scanned. Analyzed correlation in time and frequency domain. Provided feedback for modeling and testing teams.

Education

M.S. Automotive Engineering, Clemson University *Aug. 2017 - Aug. 2019*

M.S. Mechanical Engineering, University at Buffalo *Jan. 2016 - Aug. 2017*

B.E. Automotive Engineering, Harbin Institute of Technology at Weihai *Aug. 2009 - Dec. 2013*

Skills

Software & Data Python, SQL, ChatGPT, Linux, Git, Pandas, Docker, ETL, Amazon Web Service (AWS), Apache Spark, Apache Airflow, Machine Learning, Scikit-Learn, PyTorch, Seaborn, Plotly, Tableau, Grafana, Apache Iceberg, InfluxDB, PostgreSQL, Trino/Presto, Gitlab-CI/CD, Matlab/Simulink, LaTeX.