

EXPERIENCE

| | | |
|----------------------|--------------|----------------------------|
| Data Engineer | Tesla | July 2021 – Present |
|----------------------|--------------|----------------------------|

- Modified TwinCAT Beckhoff PLC codebase at cell/cooling-tube assembly to incorporate new Cognex barcode scanners and ensure 100% traceability of battery cells to battery packs.
- Standardized paint quality inspection process globally. Subsequently, orchestrated ETL pipeline in Airflow to centralize data in MS SQL data warehouse and enable leadership to compare paint quality across all Tesla factories.
- Delivered Python application that centralizes communication for Fremont battery assembly lines. Deployed application on Kubernetes and implemented observability tools such as Splunk and Grafana to reliably run application 24/7.
- Architected pipeline from components -- including Kafka, FTP Server, Clickhouse, Elasticsearch, and S3 -- that streams images and results from thousands of battery cell inspections per hour and provides search capabilities on data.
- Constructed HMI in Ignition that assists technicians in removing non-conformance battery cells when automated cell scan equipment is down or when there is significant non-conformance fallout, eliminating 4 hours downtime per week.

| | | |
|-------------------------------------|---------------------------|----------------------------|
| Product Development Engineer | Ford Motor Company | Jun 2020 – Jun 2021 |
|-------------------------------------|---------------------------|----------------------------|

- Designed, built, tested, and deployed data-intensive web application on AWS to monitor Electric Vehicle (EV) smart charging at Ford Greenfield Labs (GFL) and enable load balancing and predictive analytics.
- Presented application to Ford executives, including Director of Research and Advanced Engineering (R&A), resulting in decision to scale product to Ford's broader network of charging stations (> 12,000).
- Defined startup landscape pertaining to application of Artificial Intelligence (AI) to Materials R&D and initiated new project at Ford Greenfield Labs to explore integration of AI into Ford R&A.

| | | |
|---|-------------------|----------------------------|
| Sr. Materials & Process Engineer | Kitty Hawk | Jun 2015 – Aug 2019 |
|---|-------------------|----------------------------|

- Optimized data acquisition platform for full-scale structural testing (fuselage, landing gear, wing, etc.) by standardizing hardware, data management, and LabVIEW code. Saved 3 weeks/year of work hours per structurally tested part.
- Specified quality control procedure (Statistical Process Control and A/B testing) to detect anomalous manufacturing processes and batches of material. Eliminated all failures occurring during structural testing.

EDUCATION

| | | |
|----------------------|-----------------------------------|-----------------|
| GPA: 3.71/4.0 | Carnegie Mellon University | Dec 2020 |
|----------------------|-----------------------------------|-----------------|

- M.S. in Electrical and Computer Engineering
- Intro to Deep Learning, Advanced Probability and Statistics, Mathematics for Machine Learning, Intro to Machine Learning, Intermediate Deep Learning

| | | |
|----------------------|--|-----------------|
| GPA: 3.70/4.0 | University of Southern California | May 2015 |
|----------------------|--|-----------------|

- B.S. in Chemical Engineering
- Ronald G. Minet Award for Best Senior Design Project in Chemical Engineering Department

PROJECTS

-
- **ETL Pipeline from S3 to Redshift** (Spring 2021). Created pipeline from JSON logs in S3 of user activity and metadata into Redshift database with star schema and distribution strategy that reduced time of common queries by 10 – 60%.
 - **Spark ETL from JSON to Parquet** (Spring 2021). Utilized EMR cluster with Apache Spark to extract JSON files from S3, process data in distributed manner, and load tables back into S3 in the form of partitioned Parquet files.
 - **Easy Object Detection with TensorFlow Hub** (Fall 2020). Developed interface with TensorFlow Hub Object Detection API allowing researchers to benchmark state-of-the-art object detection models on personal hardware with one line of code.
 - **Machine Learning Models from Scratch** (Fall 2019/2020). Coded APIs for dense neural network, CNN, RNN, VAE, RBM, Word2Vec, HMM and decision tree with NumPy as the only external library.
 - **IoT System to Enable Adaptive Sampling** (Spring 2020). Prototyped IoT system to enable adaptive sampling of stream surface velocity and depth. Presented system to USGS which led to more funding of project.

Skills

Python, SQL, JavaScript, C++ / React, HTML, CSS / Linux, Docker, Kubernetes, Airflow, AWS, Github / Redshift, PostgreSQL, MongoDB, S3, EMR, Lambda, DynamoDB / Grafana, Dash, Tableau / Tensorflow, NumPy, OpenCV, Scikit-learn