Paul Deng

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Work Experience

Senior Machine Learning Engineer
Tesla, Energy (Jul 2025 - Mar 2026); Vehicle (Mar 2026 - Present) *2025 Jul - Present*

- Led Megacharger network planning to support Semi truck sales, designing siting and capacity strategy for 200+ locations and a multi-billion-dollar capital plan across North America, with rollout extending to Europe.
- Built point-based utilization forecasting in PyTorch to size and place new sites at arbitrary candidates, iterating across classical ML (gradient boosting, sequence models, neural ensembles) and LLM-driven autoresearch loops; currently internal, productionizing for customer-facing use.
- Extended firmware to enable trip planner support across new vehicle variants including Cybercab and Semi, contributing firmware code that integrates routing and charging logic for the new platforms.
- Architected and drove adoption of the team's LLM development harness, building and testing new skills, agents, and integration setups to deliver an order-of-magnitude lift in engineering throughput.

Senior Data Scientist
Tesla, Energy - Charging Data Modelling *2020 Oct - 2025 Jul*

- Developed predictive models forecasting charging demand to guide expansion of the global Supercharger Network (4000+ sites) and Level-2 Wall Connector Network, totaling $500M+ in capital.
- Designed and maintained ETL pipelines on PySpark and Airflow, integrating multi-source data into KPIs and ML features.
- Ran statistical analysis and causal inference to inform monthly executive reviews on network performance and investment decisions.
- Partnered with infrastructure to deploy ML models on AWS Lambda and Kubernetes for production serving.

Consultant
WSP, Advisory Services - Systems Analytics Group *2018 Jul - 2020 Sep*

- Built and calibrated travel demand models in Python, R, and EMME for government and transit agency infrastructure investments.
- Improved travel-mode forecasting accuracy with gradient boosting models over legacy logit baselines.

Skills

Languages: Python, SQL

Frameworks: PyTorch, PySpark

ML: Deep learning, time-series forecasting, gradient boosting, causal inference

AI tooling: Agentic AI development workflows, LLM development harnesses

Education

University of Toronto

MASc, Civil Engineering, Transportation specialization *2016–2018*

Thesis: *A metaheuristic approach to vehicle routing problem with movement synchronization* — genetic-algorithm-based metaheuristic for the traveling salesperson problem with drones.

University of Toronto

BASc (with honours), Engineering Science, Infrastructure specialization *2011–2016*

References Available Upon Request