Xuan Li **https://milanlx.github.io**

CONTACT INFORMATION
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SKILLS

Programming: Python, Java, C/C++, R, MATLAB, JavaScript, SQL
Machine Learning: graph neural networks, computer vision, NLP, fraud detection
MLOps: AWS, Spark, Docker, SageMaker, PyTorch

EXPERIENCE

(1) *Applied Scientist* @ Amazon 2021.11 -

- maintained and improved 3 fraud detection ML models for credit & payment products including Cobranded Credit Card, Private Labeled Credit Card and Shop With Points; reduced fraud rate by 32% YoY with ~10M of volume.
- leveraged meta and contrastive learning on tabular data under semi-supervised scenarios; empirically and theoretically proved equivalence between AUC and contrastive loss; paper accepted and presented at AMLC (internal ML conference).
- leveraged tree-based embedding, masked pre-training and transformer to boost fraud detection AUC with tabular inputs, outperforming STOA tree-based methods; developed and prototyped models through AWS SageMaker and Docker on ~100GB of data.
- implemented online A/B testing experiments to examine different proposals for credit card acquisitions by tweaking ML models; analyzed and presented results to broader audience including product and business teams.
- won two Kaggle alike ML competitions (graph ML, ranked 3/82; RL, ranked 5/51) held by Amazon MLU (internal).

(2) *Data Scientist* @ LeanFM Technologies 2016.03 - 2016.09

- designed interactive interface (R Shiny) to facilitate visual data analytics and real-time labelling; improved overall labeling efficiency by 30%.
- implemented and productized ETL to process 1M work orders data; calibrated Named Entity Recognition models for fine-grained text classification; achieved a F1 score of 0.85.

RESEARCH PROJECTS

(1) *Multimodal Spatial-Temporal Graph Attention Network*

- conducted end-to-end ETL and EDA on 20GB dataset, including public transit, traffic flow, energy demands and climate conditions, for spatiotemporal feature engineering.
- designed graph attention network to forecast campus energy demands given crossmodal and spatiotemporal features; improved RMSE by 12.56% compared with SOTA baselines.

(2) *Enhancing Vision-based Vehicle Detection and Tracking with Transportation Signals*

- designed CNN+rLSTM detection models by fusing inputs including images, bus locations and traffic flow; reduced MAE from 0.73 to 0.27 compared with fine-tuned YOLO.
- implemented vehicle tracking framework with fine-tuned detector and LSTM tracker trained with transportation features; improved MOTP from 78.5% to 80.6%.

EDUCATION

Carnegie Mellon University Pittsburgh, PA
Ph.D., *Civil Engineering* GPA: 3.9 2016.09 - *ABD*
- Thesis: Generalizable Predictive Control Framework for HVAC Systems

M.S., *Machine Learning* GPA: 3.96 2018.09 - 2020.5

Dalian University of Technology Dalian, China
M.S., *Structural Engineering* 2011.09 - 2014.06
- Thesis: State Estimation and Optimal Sensor placement of Deepwater Riser

B.S., *Civil Engineering*, minor in *Economics* 2007.09 - 2011.06

RELATED COURSES

Machine Learning & Modelling: Introduction to Machine Learning, Machine Learning with Large Datasets, Machine Learning for Text Mining, Reinforcement Learning, Deep Learning, Convex Optimization, Stochastic Control and Application in Finance
Programming: Introduction to Computer Systems, Algorithms and Advanced Data Structures, Data Structure for Application Programmers, Java and J2EE Programming