

CONTACT INFORMATION	5 Bayard Road Pittsburgh, PA, 15213	work: 412-951-9187 xuanli1@cmu.edu
SKILLS	Programming: Python, Java, C/C++, R, MATLAB, JavaScript, SQL Machine Learning: Graph Neural Network, NLP, computer vision Data Modelling: stochastic control, spatial-temporal networks, multimodal analysis	
EDUCATION	Carnegie Mellon University Pittsburgh, PA Ph.D., <i>Civil Engineering</i> GPA: 3.9 2016.09 - 2021.08 (<i>expected</i>) • Thesis: Generalizable Predictive Control Framework for HVAC Systems M.S., <i>Machine Learning</i> GPA: 3.9 2018.09 - 2020.5 M.S., <i>Advanced Infrastructure System</i> GPA: 3.5 2014.09 - 2015.12 • Assistantships & Summer Research Internship (\$3000 awarded for top 10%) Dalian University of Technology Dalian, China M.S., <i>Structural Engineering</i> 2011.09 - 2014.06 • Thesis: State Estimation and Optimal Sensor placement of Deepwater Riser • Best Dissertation Award: top 5/57 B.S., <i>Civil Engineering, minor in Economics</i> 2007.09 - 2011.06	
PROFESSIONAL EXPERIENCE	<i>Data Scientist @ LeanFM Technologies</i> 2016.03 - 2016.09 • Wrangled and standardized 1M work orders data, trained Named Entity Recognition models using Conditional Random Field backbone, achieved a F1 score of 0.85. • Designed interactive interface (R Shiny) for visual data analysis and work order labelling, which reduced overall processing time by 30%.	
RESEARCH PROJECTS	(1) Building Energy Prediction Using Multi-Modal Spatial-Temporal Graph Attention Network • Conducted end-to-end ETL on 20G dataset including public transit, traffic flow, building energy profile and climate conditions. • Designed a multi-task ST-GAT model to predict building energy profile using ambient traffic and weather features; improved the RSME by 12.56% compared with SOTA baselines. (2) Enhancing Vision-based Vehicle Detection and Tracking with Traffic Domain Features • Designed CNN+LSTM models by fusing inputs including images, real-time bus locations and traffic speed, which reduced MAE from 0.73 to 0.27 when compared with YOLO and other pure-vision based approaches. • Implemented tracking framework for traffic speed estimation, by fine-tuning detector with 3G vehicle dataset and updating tracker with with LSTM module trained by traffic features, which improved MOTP from 78.5% to 80.6%.	
COURSE PROJECTS	(1) Optimization Setting of Residual Neural Network • Apply reinforcement learning to construct agent that explores the optimal attention mapping (maxout, identity, etc) options for Resnet architecture; trained with REINFORCE Algorithm on ImageNet and verified that the identity connection is optimal. (2) Solving High-Dimensional Semilinear PDEs Using LSTM • Reformulated the time discrete stochastic control problem as BSDE problem, and calibrated recurrent DNN to approximate the gradient of value function at each time stamp. • Explored different network configurations and achieved relative error of 0.2% and reduce computation cost by 80% compared to state-of-the-art models.	
RELATED COURSES	Programming: Introduction to Computer Systems, Algorithms and Advanced Data Structures, Data Structure for Application Programmers, Java and J2EE Programming 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	