

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 modeling, multimodal analysis	
EDUCATION	Carnegie Mellon University Ph.D., <i>Civil Engineering</i> GPA: 3.9 2016.09 - 2021.08 (<i>expected</i>) • Generalize 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 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</i> , <i>minor in Economics</i> 2007.09 - 2011.06	
EXPERIENCE	<i>Data Scientist @ LeanFM Technologies</i> 2016.03 - 2016.09 • NLP: Designed raw text processing framework, implemented Named Entity Recognition algorithm on 100M work order dataset to support facility management. • Designed interactive interface (R Shiny) for visualization analysis and work order labelling.	
RESEARCH PROJECTS	(1) Building Energy Prediction using Multi-modal Spatial-temporal Transportation Features • Implemented real-time data processing & feature selection pipeline on 10G transportation dataset from 3 different sources • conducted detailed correlation analysis, identified key factors, tested on various spatial-temporal regression model and achieved an overall R2 at 0.91. (2) Enhancing Vision-based Vehicle Detection and Tracking with Traffic Domain Features • Designed and implemented 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. • Refined tracking-by-detection framework for traffic speed estimation, by fine-tuning detector with 3G+ vehicle dataset and replacing the state-estimator in tracker with LSTM module trained with traffic features. The fused model improved MOTP and MOTA from 78.5% – 80.6%, and 65.7% – 68.3% respectively.	
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, Dynamic Programming, Stochastic Control and Application in Finance	