Guanlve Li

(+86) 184-8369-3208 | liguanlue@bupt.edu.cn
https://github.com/liguanlue | https://sites.google.com/view/liguanlue

Personal Profile

- I'm a research assistant in Data Science and Analytics Thrust at The Hong Kong University of Science and Technology (Guangzhou), supervised by Prof. Jia Li. I received my Master's degree from Beijing University of Posts and Telecommunications, supervised by Prof. Jinlin Li.
- **Research Interests:** Graph Neural Networks, Drug Discovery, Data Mining, AI for Science, Biomedical applications, Multi-Agent System Decision Making

Academic Experience

The Hong Kong University of Science and Technology (Guangzhou) *Jun. 2022 – Present*
Research Assistant Advisor: Jia Li

Beijing University of Posts and Telecommunications *Sep. 2019 – Jun 2022*
Master in Computer Technology Advisor: Jinlin Li

Southwest Jiaotong University *Sep. 2015 – Jun 2019*
Bachelor in Communication Engineering (GPA: 3.68/4.00 Top 5 %)

Related Courses: Data Warehouse & Data Mining (93) Digital Image Processing (92) Signal and System A (99)
Data Structures (96) Advanced Program Course Design (97) Digital Electronic Technique A (96)

Publication/Preprint

First Author: Guanlve Li, Guiyang Luo, Quan Yuan, Jinlin Li. Trajectory Prediction with Heterogeneous Graph Neural Network. PRICAI 2022: Trends in Artificial Intelligence, 375–387

Co-First Author: Weiqi Zhang*, **Guanlve Li***, Jianheng Tang, Jia Li, Fugee Tsung. Missing Data Imputation with Graph Laplacian Pyramid Network. (Under Review)

Projects

Geometric and Graph Deep Learning for Drug Binding Structure Prediction *Jun. 2022 – Present*
Researcher Advisor: Jia Li

- Utilized a Hyperspherical Variational Auto-encoder to model the interaction of molecules and proteins
- Designed a pooling operator for 3D structures and investigated thoroughly the hierarchical representation of proteins
- Independently generated translation, rotation and torsion rotation of molecules during inference and updated position iteratively
- Implemented the encoder and decoder pair based on equivariant graph neural networks

Trajectory Prediction with Heterogeneous Graph Neural Network *Oct. 2020 – July. 2021*
Researcher Advisor: Jinglin Li

- Designed a trajectory prediction system to model interactions between mobile agents
- Achieved multi-modal destination prediction by VAE to generate more diverse and plausible trajectories
- Investigated the interactions between different types of mobile agents by heterogeneous transformer graph network
- Improved the calculation efficiency through distributed computing techniques and increased the trajectory accuracy by 5.8 %

Framework for Multi-agent Trajectory Tracking, Smoothing and Forecasting *May. 2020 – Sep. 2020*
Researcher Advisor: Jinglin Li

- For tracking: Utilized the attention mechanism to encode spatiotemporal dependencies of agents ; added occlusion states during the attention association process to reason about occlusion agents
- For smoothing: Implemented the Kalman Filter to reduce data noise and provide more accurate trajectories
- For forecasting: Employed LSTM to predict trajectories and utilized social pool to learn interactions among agents

Q-Learning Path Planning for Multi-Agent System in Traffic Networks *Nov. 2018 – May. 2019*
Researcher Advisor: Penglin Dai

- Maintained global and local Q-tables to overcome the drawbacks of sub-optimal convergence and unstable Q-values
- Used Q-learning to update Q values of each action; allowed mobile agents to submit traffic conditions for congestion reduction
- Tested systematically how different scales of traffic, learning rate and greedy rate affect the model ability through the modification of multiple parameters

Social Network Articles Webcrawling and Text Classification Based on Naive Bayes *Nov. 2019 – Dec. 2019*
Team leader

- Cracked the interface parameters required for ajax dynamic loading
- Classified crawled articles using the Naive Bayesian algorithm and TFIDF algorithm feature selection
- Led a team and built an online system that takes raw texts as queries and returns classification results with almost 90 % accuracy

Internship

Users Data Analysis *Jun. 2018 – Aug. 2018*
Guoxinan Base Chengdu, China

- Built an online system that analyzes user's data and shows their portraits using DJango
- Used HTML, CSS, JavaScript to visualize user portraits and display an analytics dashboard; utilized Ajax to update web pages dynamically.

Technical Skills

Languages: Python, Matlab, C++, HTML/CSS
Tools/Frameworks: Pytorch, Deep Graph Library, Linux, OpenCV
English Capability: IELTS 6.5