

# Jinming Xing

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## EDUCATION

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### North Carolina State University

Sep 2023 – Present

- Ph.D. in Computer Science.
- **Research Interest:** Machine Learning, Deep Learning, Large Language Models

### Shenzhen University

Sep 2019 – Jun 2023

- B.S. in Computer Science (Honored). GPA: 3.92/4.
- **Coursework:** Probabilities, Linear Algebra, Data Structures and Algorithms, Computer Networks, Internet of Things, Cloud Computing, Database, Machine Learning, Practical Deep Learning, Computer Vision.

## SKILLS

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- Python, C/C++, PyTorch, Hadoop, Spark, Flask, MySQL, Numpy, Pandas, Scikit-learn, Matplotlib, Seaborn
- ML (classification, regression, clustering), DL (CNNs, RNNs, GNNs, Transformers, LLM).

## RESEARCH EXPERIENCE

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### Research Assistant (NCSU)

Oct 2023 – Now

#### Global-Local Spatial-Temporal Aware Graph Attention Network for Network Traffic Forecasting

- A dynamic data-driven spatial-temporal graph was proposed to capture hidden spatial-temporal dependencies.
- Proposed GLSTaGAT, which copes with global-local spatial-temporal patterns simultaneously. A simple yet effective learnable pooling was designed, and to speed up the convergence, node normalization was proposed.
- An encoder-only transformer was adopted while GAT servers as the graph convolution backbone.
- GLSTaGAT outperforms the average of baselines by 36.37% (MAE), 32.19% (RMSE), and 23.99% (SMAPE).
- Technologies: Spatial-Temporal GNN, Dynamic Time Wrapping, Transformer, Attention Mechanism.

#### A Reinforcement Learning Framework for Application-Specific TCP Congestion-Control

- Proposed  $ASC_{RL}$ , a DRL-based framework that can accommodate clients with various optimization goals.
- Designed a client-server updating mechanism, which decouples the training and inference, reducing the client computational load by up to 91%, making it suitable to be deployed on low-power devices.
- Introduced a fast retraining mechanism for client goals changing, resulting in a 50% reduced retraining time.
- Technologies: PyTorch, DRL, TCP, Network Simulation (NS3), Network Topologies.

### Research Assistant (SZU)

Jun 2021 – Jul 2023

#### Open-World Semi-Supervised Learning Based on Fuzzy Rough Sets

- Proposed a novel sample center identifying method using one-vs-rest strategy and Fuzzy Rough Sets.
- Introduced a one-stage learning strategy for adaptively and iteratively labeling data and classifying them.
- Conducted extensive experiments on artificial and real datasets demonstrating the model's effectiveness.
- Technologies: Open-World Classification, Curriculum Learning, Group Finding.

#### Weighted Fuzzy Rough Sets-based Tri-Training and Its Application to Medical Diagnosis

- Proposed the 'bad-point' technique for dataset de-noising and a high-order information extraction strategy.
- Three modal data 'ORI', 'PCA', and 'DIS' are proposed to initialize tri-training base classifiers.
- Designed a robust weighted fuzzy lower approximation classifier for supervised and semi-supervised problems.
- Technologies: Multi-Modal Learning, Semi-Supervised Learning, Noise Learning, Fuzzy Rough Sets.

## PAPERS

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- **Jinming Xing**, Can Gao, Jie Zhou. "Weighted fuzzy rough sets-based tri-training and its application to medical diagnosis." Applied Soft Computing 124 (2022): 109025.

- Can Gao, Jie Zhou, **Jinming Xing**, et al. "Parameterized maximum-entropy-based three-way approximate attribute reduction." International Journal of Approximate Reasoning 151 (2022): 85-100.
- **Jinming Xing**, Muhammad Shahzad. "A Reinforcement Learning Framework for Application-Specific TCP Congestion-Control." WWW'25 [Under Review].
- **Jinming Xing**, Guoheng Sun, Hui Sun, et al. "Global-Local Spatial-Temporal Aware Graph Attention Network for Network Traffic Forecasting." WWW'25 [Under Review].
- **Jinming Xing**, Zhaomin Xiao, Yingyi Wu, et al. "Network Traffic Forecasting via Fuzzy Spatial-Temporal Fusion Graph Neural Networks." In 2024 11th international conference on soft computing & machine intelligence (ISCM). IEEE, 2024.
- **Jinming Xing**, Ruilin Xing. "Enhancing Link Prediction with Fuzzy Graph Attention Networks and Dynamic Negative Sampling." arXiv preprint arXiv:2411.07482 (2024).
- **Jinming Xing**, Ruilin Xing, Yan Sun. "Comparative Analysis of Pooling Mechanisms in LLMs: A Sentiment Analysis Perspective." arXiv preprint arXiv:2411.14654 (2024).

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## SERVICES

- Teaching Assistant: Computer Network (Grad), Data Structures and Algorithms (Undergrad)
- Reviewer: WWW'25, TFSS, IJCSMA