

Yang Zhao

tur77155@temple.edu — 704-903-7791
Google Scholar — GitHub — LinkedIn
1835 Arch Street, Philadelphia, PA 19103

Expected Start Date: I am available to begin in early May 2025 and can continue through the full legally allowed duration of the internship.

Research Interest Summary I focus on AI for Science (AI4S), specializing in biomedical data imputation (image, text, video), knowledge graph construction for medical records, and uncertainty quantification in deep learning.

Education

Temple University , PA, U.S.	Sep. 2023 – Present
Ph.D., Computer and Information Science (AI track)	Qualified
University of North Carolina at Charlotte , NC, U.S.	Sep. 2021 – Jun. 2023
Ph.D., Infrastructure and Environment System	(3.9/4.0) Top 5%
Chang'an University , Xi'an, China	Sep. 2018 – Jun. 2021
M.A.Sc., Transportation Planning and Management	(3.82/4.0) Top 10%
Chang'an University , Xi'an, China	Sep. 2018 – Jun. 2021
B.S., Traffic Engineering (Bilingual Program)	(3.51/4.0) Top 15%

Publications and Conferences

Ongoing Works

- An Explainable Diagnose Agent: Learning and Reasoning with **LLM** and **Knowledge Graph**.
- ChromDiffusion: Super-resolution of chromatin interaction images with **latent-conditioned diffusion** models.

Under Review Papers

- Conditional Uncertainty Quantification for Tensorized Topological Neural Networks. (ICLR 2025)
- Uncertainty Quantification of Spatiotemporal Forecasting with Topological Neural Networks. (ICLR 2025)
- TOYffusion: Topology-Aware Dynamic **Diffusion Model**. (ECML PKDD 2025)
- TopoSGM: Topology Augments Score-based **Generative Models**. (ICML 2025)

Accepted Papers

- DKGM: A **diffusion knowledge graph model** for **medication recommendation** leveraging medical and drug information. (ICHI 2025)
- Safety and public protection: Predicting and analyzing incidents with **large language model**-based zigzag graph neural networks. (PAKDD 2025)
- Critical Factors Analysis of Severe Traffic Accidents Based on Bayesian Network in China. (Journal of Advanced Transportation, 2020)
- Lane-changing Intention Identification on Highway. (100th Transportation Research Board Conference, 2021)
- Optimized Strategy Design for Network-Level Maintenance Based on Decision Tree Algorithm. (19th COTA International Conference, 2019)

Research Experience

Temple University

Aug. 2024 – Present

- NSF Project: DREAM-KG: Dynamic, Responsive, Adaptive Knowledge Graphs for Explainable AI in homelessness research.
- **Knowledge Graph** Construction, Completion, and MedRAG framework.
- Topological and Zigzag Aware Graph-Based Neural Network Models.
- **DDPM** and **Conformal Prediction**-Based Uncertainty Quantification.

UNC Charlotte

Aug. 2021 – Dec. 2022

- USDOT Project: Cooperative Lane Changing Model for Connected and Autonomous Vehicles.
- Developed a Q-learning Based Reinforcement Learning Framework in Carla Simulation.

Competition Experience

Traffic Network Congestion Identification

2020, Digital China

- GPS Data Processing and Trip Extraction using Hadoop + Spark.
- Map Matching using Hidden Markov Model (HMM) in Barefoot Framework.
- Identified congestion points via trajectory analysis.

Optimized Bike Sharing Allocation

2021, Digital China

- Applied Louvain Algorithm for unbalanced area detection.
- Developed CNN+LSTM Model for traffic demand prediction.
- Designed vehicle allocation via multi-objective optimization.

Skills

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- Programming: Python, C++, Java, MATLAB
 - Machine Learning: Deep Learning, Graph Neural Networks, Diffusion Model, Reinforcement Learning
 - Data Processing: Hadoop, Spark, SQL
 - GIS and Mapping: ArcGIS, QGIS, OpenStreetMap
 - Operation System: Ubuntu on HPC and Docker
 - Optimization: Multi-Objective Optimization, Decision Trees, Bayesian Networks
 - Software Tools: TensorFlow, PyTorch, Scikit-learn, LaTeX

Honors and Awards

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| • Roy D. Williams Memorial Scholarship, UNC Charlotte | 2022 |
| • Outstanding Graduate, Chang'an University | 2021 |
| • First-Class Algorithm Competition Award, Digital China | 2020 |
| • Second-Class Academic Scholarship, Chang'an University | 2020 |
| • First-Class Academic Scholarship, Chang'an University | 2019 |
| • Distinguished Graduate Student, Chang'an University | 2019 |
| • Guest Speaker, 3rd WTC Trajectory Identification Seminar | 2019 |
| • Scholarship for Admission Exemption, Chang'an University | 2018 |