

# Ta-Yang Wang

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## PROFESSIONAL SUMMARY

Computer Science Ph.D. specializing in building predictive models for complex systems. Proven ability to leverage state-of-the-art machine learning — especially Graph Neural Networks and Bandit Sampling — to solve problems in noisy, data-sparse environment. Passionate about developing novel algorithms that creative technologies, with a track record of bridging the gap between theoretical research and real-world applications.

## EDUCATION

### University of Southern California (USC)

*Ph.D. in Computer Science*

Los Angeles, CA

*Aug. 2019 – Present*

- Dissertation — Heterogeneous Graph Representation Learning: Algorithms and Applications

### National Taiwan University (NTU)

*B.S. in Mathematics | Overall GPA: 3.96 | Rank: 2nd*

Taipei, Taiwan

*Sep. 2014 – June 2018*

- Honorable Mention, 9th S.-T. Yau College Student Mathematics Contest
- National Taiwan University Presidential Award (2016 & 2018)

## EXPERIENCE

### Data Science Lab, University of Southern California

*Graduate Research Assistant*

Los Angeles, CA

*Aug. 2019 – Present*

- Developed a novel bandit-sampling approach to address a key challenge in real-world graph representation learning — missing node attributes in Heterogeneous Graph Neural Networks (HGNNs).
- Accelerated large-scale HGNN training by 50% while maintaining state-of-the-art (SOTA) accuracy, publishing an adaptive sampling method with a theoretical convergence guarantee.
- Optimize resource allocation and network throughput in complex MIMO D2D wireless networks by designing and applying HGNN models to simulate 5G/IoT systems.

### Medical Data Analytics Lab, National Center for Theoretical Sciences

*Research Assistant*

Taipei, Taiwan

*Sep. 2018 – June 2019*

- Collaborated with National Taiwan University Hospital to advance medical imaging for clinical applications.
- Designed a novel model for prostate cancer histopathology image classification using persistent homology.

### Taiwan Chapter of the Society of American Baseball Research (SABR)

*Co-founder*

Taipei, Taiwan

*Sep. 2017 – June 2018*

- Architected an end-to-end data pipeline to ingest and analyze large-scale TrackMan datasets, delivering a novel quantitative player evaluation system for Taiwan's Professional Baseball League (CPBL).
- Developed predictive models using StatCast and PITCHf/x data to create objective, data-driven metrics for Major League Baseball (MLB) pitch quality, informing player assessment.

## SELECTED PUBLICATIONS

- **Ta-Yang Wang**, Rajgopal Kannan, and Viktor Prasanna. “Effective and Generalizable Pre-Trained Heterogeneous Graph Neural Networks with Bandit Samplers.” [Under Review]
- **Ta-Yang Wang**, Rajgopal Kannan, and Viktor Prasanna. “TypeBandit: Leveraging Type-Based Bandit Sampling for Effective Attribute Completion in Heterogeneous Graph Neural Networks.” *IEEE Transactions on Big Data*. [Under Review]
- **Ta-Yang Wang**, Rajgopal Kannan, and Viktor Prasanna. “Heterogeneous Graph Neural Network based on Bandit Sampling for Attribute Completion.” *The 15th IEEE International Conference on Knowledge Graphs (ICKG)*, 2024.
- **Ta-Yang Wang**, Rajgopal Kannan, and Viktor Prasanna. “Training Heterogeneous Graph Neural Networks using Bandit Sampling.” *The 32nd ACM International Conference on Information and Knowledge Management (CIKM)*, 2023.
- **Ta-Yang Wang**, Hongkuan Zhou, Rajgopal Kannan, Ananthram Swami, and Viktor Prasanna. “Throughput Optimization in Heterogeneous MIMO Networks: A GNN-based Approach.” *The 1st Graph Neural Networking Workshop (GNNet)*, 2022.

## SKILLS

**Programming Languages:** Python, C/C++, R, Matlab, SQL

**Frameworks & Libraries:** PyTorch, TensorFlow, Keras, NumPy, Pandas, Matplotlib, SciPy

**Developer Tools:** Git, Docker, VS Code, Visual Studio, PyCharm

**Teaching:** USC CSCI 570 (Analysis of Algorithms), CSCI 270 (Algorithms & Theory), CSCI 170 (Discrete Methods), and NTU MATH5425 (Cryptography), mentoring 4,000+ graduate/undergraduate students across 7 years (2018-2025).