

# YINXU TANG

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## Professional Summary

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- **PhD Candidate in Computer Science**  
at Yeoh's Optimization and Decision Analytics (YODA) Lab, Washington University in St. Louis, USA
- **Research Interests:** *Explainable AI / Scheduling & Planning / Bandits & Reinforcement Learning*

## Education

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### Washington University in St. Louis

*PhD in Computer Science | GPA: 3.84*

Saint Louis, Missouri, USA

*Sep. 2023 – May 2028 (Expected)*

### ShanghaiTech University (Co-Founded by the Chinese Academy of Sciences)

*Master's in Information & Communication Engineering | Major GPA: 3.7 | Overall GPA: 3.66*

Shanghai, China

*Sep. 2020 – Jun. 2023*

### ShanghaiTech University

*Bachelor's in Computer Science & Technology | Major GPA: 3.5 | Overall GPA: 3.43*

Shanghai, China

*Sep. 2016 – Jun. 2020*

## Research Experience

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### Explainable AI for Human-AI Interaction | *Research Leader*

Sep. 2023 – Present

- ***Dynamic and Personalized Probabilistic Human Modeling***
  - Developed a dynamic probabilistic human modeling framework with *Bayesian Inference* and *Prospect Theory*.
  - Conducted human-subject studies to evaluate the model's effectiveness in *Argumentation-based Dialogues*.
  - *Relevant Paper:*
    - (a) **Yinxu Tang**, Stylianos Loukas Vasileiou & William Yeoh. "Does Your AI Agent Get You? A Personalizable Framework for Approximating Human Models from Argumentation-based Dialogue Traces." AAAI Conference on Artificial Intelligence, 2025 (Accepted (Oral)).
- ***Personalized Explanations for Human (Ongoing)***
  - Applied *Maximum Posteriori Estimation (MPE)* to align human and AI *Problog-based* mental model.
  - Leveraged *Graph Retriever* and *LLMs* to generate context-aware and adaptive explanations, aligning AI and human *Knowledge Graph-based* mental models.

### Scheduling & Planning | *Research Leader*

Aug. 2024 – Present

- Proposed a hybrid proactive-reactive framework for lifelong meeting scheduling, optimizing long-term fairness and efficiency using *Mixed-Integer Linear Programming (MILP)* for solving scheduling optimization problems.
- Developed an *LSTM-based* conflict probability metric to dynamically adapt to scheduling disruptions.
- Conducted experiments to demonstrate that our proposed framework outperformed reactive baselines in reducing disruptions and enhancing fairness.
- *Relevant Paper:*
  - (a) **Yinxu Tang**, Stylianos Loukas Vasileiou, William Yeoh, Alberto Pozanco & Daniel Borrajo. "A Proactive-Reactive Framework for Fairness-Aware Lifelong Meeting Scheduling." International Conference on Automated Planning and Scheduling (ICAPS), 2025 (Under Review).

### Bandits & Reinforcement Learning

Feb. 2019 – Jun. 2023

- ***Constrained Bandits*** | *Research Leader and Active Contributor*
  - Developed algorithms for nonlinear rewards and long-term constraints, enhancing efficiency in dynamic environments.
  - Analyzed theoretical performance using *Upper Confidence Bound (UCB)* and *Lyapunov Optimization*.
  - Simulated diverse scenarios (e.g., emoji prediction with models like *BERT*, *LSTM*, *RNN*) in systems (e.g., edge intelligence) to validate frameworks and showcase performance.
  - *Relevant Paper:*
    - (a) **Yinxu Tang**, Jianfeng Hou, Xi Huang, Ziyu Shao & Yang Yang. "Green Edge Intelligence Scheme for Mobile Keyboard Emoji Prediction." IEEE Transactions on Mobile Computing (TMC), 2024.
    - (b) Xi Huang, **Yinxu Tang**, Ziyu Shao & Yang Yang. "Joint Switch-Controller Association & Control Devolution for SDN Systems: An Integrated Online Perspective of Control & Learning." IEEE Transactions on Network & Management (TNSM), 2021.
    - (c) Jianfeng Hou, **Yinxu Tang**, Xi Huang, Ziyu Shao & Yang Yang. "Green Edge Intelligence Scheme for Mobile Keyboard Emoji Prediction." IEEE International Conference on Communications (ICC), 2021.

- (d) Xin Gao, Xi Huang, **Yinxu Tang**, Ziyu Shao & Yang Yang. “History-Aware Online Cache Placement in Fog-Assisted IoT Systems: An Integration of Learning & Control.” IEEE Internet of Things Journal (IoT-J), 2021.
- (e) Xi Huang, **Yinxu Tang**, Ziyu Shao & Yang Yang. “Joint Switch-Controller Association & Control Devolution for SDN Systems: An Integration of Online Control & Online Learning.” IEEE/ACM International Symposium on Quality of Service (IWQoS), 2020.
- (f) Xin Gao, Xi Huang, **Yinxu Tang**, Ziyu Shao & Yang Yang. “Proactive Cache Placement with Bandit Learning in Fog-Assisted IoT Systems.” IEEE International Conference on Communications (ICC), 2020.
- (g) Junge Zhu, Xi Huang, **Yinxu Tang** & Ziyu Shao. “Learning-Aided Online Task Offloading for UAVs-Aided IoT Systems.” IEEE Vehicular Technology Conference (VTC), 2019.
- **Constrained Graphical Bandits** | *Active Contributor*
  - Accelerated online learning by utilizing additional observations through graph feedback mechanisms.
  - Conducted theoretical analysis to identify key factors influencing algorithm performance via Graph Theory, such as independence number or degree centrality of the feedback graph.
  - Simulated various feedback graphs to support analysis and highlight performance.
  - *Relevant Paper*:
    - (a) Shangshang Wang, Simeng Bian, **Yinxu Tang** & Ziyu Shao. “Social-Aware Distributed Meta-Learning: A Perspective of Constrained Graphical Bandits.” IEEE International Conference on Communications (ICC), 2023.
    - (b) Simeng Bian, Shangshang Wang, **Yinxu Tang** & Ziyu Shao. “Social-Aware Edge Intelligence: A Constrained Graphical Bandit Approach.” IEEE Global Communications Conference (GLOBECOM), 2022.
- **Privacy-Preserving Constrained Bandits** | *Research Leader*
  - Integrated local Differential Privacy ( $\epsilon$ -DP) mechanisms to ensure robust user privacy protection.
  - Conducted theoretical analysis on the effect of privacy levels ( $\epsilon$ ) on algorithm performance.
  - Simulated varying privacy levels to validate the analysis and emphasize performance.
  - *Relevant Paper*:
    - (a) Tianyi Zhang, Shangshang Wang, **Yinxu Tang**, Ziyu Shao & Yang Yang. “Privacy-Preserving Edge Intelligence: A Perspective of Constrained Bandits.” IEEE Wireless Communications and Networking Conference (WCNC), 2024.
- **Bandits with Nash Equilibrium** | *Research Leader*
  - Designed an algorithm integrating online learning with the Deferred Acceptance Mechanism.
  - Analyzed the algorithm’s effectiveness through theoretical evaluation and simulations in SDN systems.
  - *Relevant Paper*:
    - (a) **Yinxu Tang**, Tao Huang, Xi Huang, Ziyu Shao & Yang Yang. “Learning-Aided Stable Matching for Switch Controller Association in SDN Systems.” IEEE International Conference on Communications (ICC), 2022.

## Networks | *Active Contributor*

Nov. 2023 – Mar. 2024

- Proposed a 6G-based deployment framework for RAG-enhanced generative services, emphasizing real-time knowledge base updates, service customization, and edge intelligence integration.
- Addressed key challenges using techniques such as data fusion, dynamic KB distribution, service customization, and user-interaction optimization in 6G environments.
- *Relevant Paper*:
  - (a) Xi Huang, **Yinxu Tang**, Junling Li, Ning Zhang & Xuemin Shen. “Toward Effective Retrieval Augmented Generative Services in 6G Networks.” IEEE Network, 2024.

## Technical Skills

Languages: Python (PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas), C++, C, Matlab.

## Awards & Honors

- National Scholarship for Graduate Students — Ministry of Education of China Oct. 2022
- Merit Student — ShanghaiTech University Dec. 2021
- Meritorious Winner — Mathematical Contest in Modelling Jun. 2018

## Teaching

### Probability & Mathematical Statistics

Fall 2022 & Fall 2021

Teaching Assistant

ShanghaiTech University

- Led weekly tutorial sessions for 70-80 students, focusing on exercises, discussions, and interactive learning.
- Designed and graded assignments, including weekly exercises, project proposals, and exam papers.
- Provided mentorship to students through one-on-one consultations and tailored guidance during office hours.