Yige Hong

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Research Interest

My research focuses on fundamental theoretical questions in **large-scale stochastic systems**, particularly in queueing theory, restless bandits, and weakly-coupled MDPs. These models are foundational to modern operations research and computer science, with applications ranging from cloud computing and reinforcement learning to healthcare and ride sharing. By developing new analytical tools and frameworks, I have made significant progress on decades-old open problems, such as removing the global attractor assumption for restless bandits, and proving a new universal bound for the $G/G/n$ queue.

Education

Carnegie Mellon University — Sep 2020 – Present
PhD, Computer Science Department (Advisor: Weina Wang) — *Pittsburgh, USA*

Chinese University of Hong Kong, Shenzhen — Sep 2016 – May 2020
Bachelor of Science in Applied Math — *Shenzhen, China*

Awards & Honors

Young European Queueing Theorists (YEQT) Workshop, *Invited speaker* 2025

INFORMS APS Student Travel Grant 2025

IFIP Performance 2023 Best Paper Award, *Winner* 2023

IFIP Performance Student Travel Grant 2023

ACM Sigmetrics 2021 Student Research Competition, *Second Place* 2021

Conference publications

Xiangcheng Zhang[#*], Yige Hong[*], Weina Wang (2025). Projection-Based Lyapunov Method for Fully Heterogeneous Weakly-Coupled MDPs. *NeurIPS*, Dec 2025. **[Spotlight]** (*co-first-author, #undergraduate student jointly mentored with my PhD advisor)

Yige Hong, Qiaomin Xie, Weina Wang (2024). Near-Optimal Stochastic Bin-Packing in Large Service Systems with Time-Varying Item Sizes. *ACM SIGMETRICS*, June 2024.

Yige Hong, Qiaomin Xie, Yudong Chen, Weina Wang (2023). Restless Bandits with Average Reward: Breaking the Uniform Global Attractor Assumption. *NeurIPS*, Dec 2023. **[Spotlight]**

Isaac Grosof, Yige Hong, Mor Harchol-Balter, Alan Scheller-Wolf (2023). The RESET and MARC Techniques, with Application to Multiserver-Job Analysis. *IFIP Performance*, November 2023.

Yige Hong, Ziv Scully (2023). Performance of the Gittins Policy in the G/G/1 and G/G/k, With and Without Setup Times. *IFIP Performance*, November 2023. **[Best Paper Award]**

Yige Hong, Weina Wang (2022). Sharp Waiting-Time Bounds for Multiserver Jobs. In *ACM Int. Symp. Mobile Ad Hoc Networking and Computing (MobiHoc)*, October 2022.

Journal publications

Yige Hong, Qiaomin Xie, Yudong Chen, Weina Wang (2024). Unichain and Aperiodicity are Sufficient for Asymptotic Optimality of Average-Reward Restless Bandits. *Mathematics of Operations Research*. Articles in Advance. https://doi.org/10.1287/moor.2024.0678

Yige Hong, Weina Wang (2024) Sharp Waiting-Time Bounds for Multiserver Jobs. *Stochastic Systems* 14(4):455-478.

Preprints

Yige Hong (2025). A new $1/(1-\rho)$-scaling bound for multiserver queues via a leave-one-out technique. *arxiv:2510.11015*.

Yige Hong, Qiaomin Xie, Yudong Chen, Weina Wang (2024). Achieving Exponential Asymptotic Optimality in Average-Reward Restless Bandits without Global Attractor Assumption. *arXiv:2405.17882*.

Conference Presentations and Posters

"A new Lyapunov approach for fully heterogeneous weakly-coupled MDPs", Invited 45-minute talk at the Young European Queueing Theorists (YEQT) Workshop, Eindoven, Netherland, Nov 2025.

"A new $1/(1-\rho)$-scaling bound for multiserver queues via a leave-one-out technique", INFORMS Applied Probability Society Conference, Atlanta, GA, June 2025.

"Unichain and Aperiodicity are Sufficient for Asymptotic Optimality of Average-Reward Restless Bandits", INFORMS annual meeting, Seattle, WA, Oct 2024.

"Restless Bandits with Average Reward: Breaking the Uniform Global Attractor Assumption", Advances in Neural Information Processing Systems (NeurIPS), New Orleans, LA, Dec. 2023.

"Performance of the Gittins Policy in the G/G/1 and G/G/K, with and Without Setup Times", IFIP Performance Conference, Chicago, IL, Nov. 2023.

"Performance of the Gittins Policy in the G/G/1 and G/G/K, with and Without Setup Times", INFORMS annual meeting, Phoenix, AZ, Oct. 2023.

"Performance of the Gittins Policy in the G/G/1 and G/G/K, with and Without Setup Times", Workshop on Mathematical Performance Modeling and Analysis (MAMA), Orlando, FL, June. 2023.

"Maximizing utilization in large systems serving jobs with time-varying resource requirements", INFORMS annual meeting. Indianapolis, IN, Oct. 2022.

"Maximizing utilization in large systems serving jobs with time-varying resource requirements", (poster) Stochastic Networks Conference. Cornell University, Ithaca, NY, June 2022.

"Sharp waiting-time bounds for multiserver jobs", ACM Mobihoc. Seoul, South Korea, Oct. 2022.

"Sharp zero-queueing bounds for multiserver-job systems", INFORMS annual meeting. Anaheim, CA, Oct. 2021.

"Sharp zero-queueing bounds for multi-server jobs", ACM Sigmetrics SRC. Beijing, China, June 2021.

Teaching experiences

Teaching Assistant Carnegie Mellon University

- **15-859-PP Fundamentals of MDPs and Reinforcement Learning** *Fall 2023*
  - Delivered two guest lectures on advanced topics to graduate students
  - Designed and graded course homework assignments

- **15-259/659 Probability and Computing (PnC)** *Spring 2023*
  - Led weekly recitation sections and held regular office hours
  - Graded homework assignments to provide student feedback

Professional Service

Journal reviewer

- Operations Research
- Management Science
- IEEE Transactions on Networking
- Performance Evaluation Review

Conference reviewer

- Neural Information Processing Systems (NeurIPS), 2024, 2025

References

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Weina Wang (PhD Advisor)
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