Jiaheng Wang

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Employment

- Postdoctoral researcher — University of Edinburgh, (2023) -

Education

- Ph.D. student — University of Edinburgh, 2020 - (2023)
  Advisor: Heng Guo
- B.Sc. *summa cum laude* in Computer Science *(Turing Class)* — Peking University, 2016 - 2020

Visiting

- Basic Algorithms Research Copenhagen (BARC) — (2023/07 - 2023/08)
  Host: Radu Curticapean
- University of Oxford — 2023/06
  Host: Andreas Galanis and Leslie Ann Goldberg
- Queen Mary, University of London — 2022/06
  Host: Mark Jerrum
- Shanghai University of Finance and Economics — 2020/05 - 2020/09
  Host: Pinyan Lu
- University of Edinburgh — 2019/07 - 2019/08
  Host: Heng Guo
- Institute of Computing Technology, Chinese Academy of Sciences — 2018/09 - 2020/01
  Host: Xiaoming Sun

Research Interests

- General theoretical computer science, especially algorithms and complexity of counting problems.
- Discrete mathematics, including extremal combinatorics and probabilistic combinatorics.

Research Articles

[8] **Approximate counting for spin systems in sub-quadratic time.**
Konrad Anand, Weiming Feng, Graham Freifeld, Heng Guo and **J. Wang**.
submitted
arXiv: 2306.14867

[7] **Inapproximability of counting independent sets in linear hypergraphs.**
Guoliang Qiu and **J. Wang**.
submitted
arXiv: 2212.03072

[6] **Towards derandomising Markov chain Monte Carlo.**
Weiming Feng, Heng Guo, Chunyang Wang, **J. Wang** and Yitong Yin.
64th IEEE Symposium on Foundations of Computer Science (FOCS 2023)
arXiv: 2211.03487

Last update: 01/07/2023 dd/mm/yyyy. Author lists are sorted in the alphabetical order.

[5] **A simple polynomial-time approximation algorithm for the total variation distance between two product distributions.**
Weiming Feng, Heng Guo, Mark Jerrum and **J. Wang**.
TheoretiCS, Volume 2 (2023), Article 8, 1–7
Conference version: *6th SIAM Symposium on Simplicity in Algorithms (SOSA 2023)*
arXiv: 2208.00740

[4] **Swendsen-Wang dynamics for the ferromagnetic Ising model with external fields.**
Weiming Feng, Heng Guo and **J. Wang**.
Information and Computation, accepted
arXiv: 2205.01985

[3] **Improved bounds for randomly colouring simple hypergraphs.**
Weiming Feng, Heng Guo and **J. Wang**.
26th International Conference on Randomization and Computation (RANDOM 2022).
arXiv: 2202.05554

[2] **Inapproximability of counting hypergraph colourings.**
Andreas Galanis, Heng Guo and **J. Wang**.
ACM Transactions on Computation Theory, 14(3–4):10, pp. 1–33, 2022
arXiv: 2107.05486

[1] **On the degree of Boolean functions as polynomials over $\mathbb{Z}_m$.**
Xiaoming Sun, Yuan Sun, **J. Wang**, Kewen Wu, Zhiyu Xia and Yufan Zheng.
47th International Colloquium on Automata, Languages and Programming (ICALP 2020).
arXiv: 1910.12458

Honours and Awards

- Informatics Global PhD Scholarship (3.5 years) — University of Edinburgh, 2020
- 4 awards/scholarships during undergraduate study — Peking University

Services and Activities

- Conference reviewer: ICALP'21, SODA'21
- Student organizer of SAGT'18 (organizing volunteers, getting involved in press, etc.)

Talks

- A simple polynomial-time approximation algorithm for the total variation distance between two product distributions
  - Algorithms and Complexity Theory Seminars, Oxford, United Kingdom
  - LFCS Lab Lunch, Edinburgh, United Kingdom
  - SOSA 2023, Florence, Italy
- Improved bounds for randomly colouring simple hypergraphs
  - APPROX/RANDOM 2022, Champaign, IL, United States (virtual conference)
  - Highlights of Algorithms, LSE & QMUL, London, United Kingdom
- Inapproximability of counting hypergraph colourings
  - CS Peer Talk, Peking University, Beijing, China (virtual)
  - Highlights of Algorithms, LSE & QMUL, London, United Kingdom
- On the degree of Boolean functions as polynomials over $\mathbb{Z}_m$.
  - ICALP 2020, Saarbrücken, Germany (virtual conference)

Teaching

- At University of Edinburgh:
  - INFR08026 Introduction to Algorithms and Data Structures — Teaching Assistant/Tutor, 2022/23
  - INFR11201 Randomized Algorithms — Tutor, 2022 Autumn
  - INFR08026 Introduction to Algorithms and Data Structures — Teaching Assistant/Tutor, 2021/22
- At Peking University:
  - 04834010 Randomized Algorithms — Teaching Assistant, 2020 Spring
  - 04833440 Introduction to the Theory of Computation — Teaching Assistant, 2020 Spring
  - 04833040/04832363 Introduction to Computer Systems — Teaching Assistant/Tutor, 2019 Fall
  - 04833440 Introduction to the Theory of Computation — Teaching Assistant, 2019 Spring
  - 04833040/04832363 Introduction to Computer Systems — Teaching Assistant/Tutor, 2018 Fall