

# Jiaheng Wang

Laboratory for Foundations of Computer Science,  
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## Education

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

## Visiting (for research purpose)

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- Queen Mary, University of London 2022/06  
*Advisor: Mark Jerrum*
- Shanghai University of Finance and Economics 2020/05 - 2020/09  
*Advisor: Pinyan Lu*
- University of Edinburgh 2019/07 - 2019/08  
*Advisor: Heng Guo*
- Institute of Computing Technology, Chinese Academy of Sciences 2018/09 - 2020/01  
*Advisor: Xiaoming Sun*

## Honours and Awards

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- Informatics Global PhD Scholarship (3.5 years) University of Edinburgh, 2020
- Turing Class Scholarship Peking University, 2019
- May 4<sup>th</sup> Scholarship Peking University, 2018
- Merit Student Award Peking University, 2018
- Award for Academic Excellents Peking University, 2017

## Research Interests

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- Algorithms and complexity of approximate counting.
- Extremal combinatorics.

## Research Articles

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- [7] **Inapproximability of counting independent sets in linear hypergraphs.**  
Guoliang Qiu and **Jiaheng Wang**.  
*preprint*  
arXiv: 2212.03072
- [6] **Towards derandomising Markov chain Monte Carlo.**  
Weiming Feng, Heng Guo, Chunyang Wang, **Jiaheng Wang** and Yitong Yin.  
*submitted*  
arXiv: 2211.03487
- [5] **A simple polynomial-time approximation algorithm for the total variation distance between two product distributions.**  
Weiming Feng, Heng Guo, Mark Jerrum and **Jiaheng Wang**.  
*6th SIAM Symposium on Simplicity in Algorithms (SOSA 2023)*  
arXiv: 2208.00740

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*Last update: 19/12/2022*

- [4] **Swendsen-Wang dynamics for the ferromagnetic Ising model with external fields.**  
Weiming Feng, Heng Guo and **Jiaheng Wang**.  
*submitted*  
arXiv: 2205.01985
- [3] **Improved bounds for randomly colouring simple hypergraphs.**  
Weiming Feng, Heng Guo and **Jiaheng Wang**.  
*26th International Conference on Randomization and Computation (RANDOM 2022)*.  
arXiv: 2202.05554
- [2] **Inapproximability of counting hypergraph colourings.**  
Andreas Galanis, Heng Guo and **Jiaheng Wang**.  
*ACM Transactions on Computation Theory*, to appear  
arXiv: 2107.05486
- [1] **On the degree of Boolean functions as polynomials over  $\mathbb{Z}_m$ .**  
Xiaoming Sun, Yuan Sun, **Jiaheng Wang**, Kewen Wu, Zhiyu Xia and Yufan Zheng.  
*47th International Colloquium on Automata, Languages and Programming (ICALP 2020)*.  
arXiv: 1910.12458

## Teaching

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- 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

## Services and Activities

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

## Talks

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- A Simple Polynomial-Time Approximation Algorithm for Total Variation Distances Between Product Distributions
  - 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)