Shengwei ZHOU

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s.arthur.zhou@gmail.com • sites.google.com/view/shengweizhou

Research interests

Fair Division, Algorithmic Game Theory, Mechanism Design, Online Algorithm, Approximation Algorithm.

Education

2021 – 2025 **Ph.D. in Computer Science**, *University of Macau*, Macao S.A.R.
Thesis: *"Fairly Allocating Indivisible Chores to Symmetric and Asymmetric Agents"*
Supervisor: Prof. Xiaowei Wu

2019 – 2020 **M.Sc. in Urban Informatics**, *King's College London*, London, UK
Dissertation Supervisor: Dr. Angus Roberts

2014 – 2019 **B.Eng. in Urban-rural Planning**, *Wuhan University*, Wuhan, China
Minor in Geography Information Science

Research experience

2025 – Present **Research Fellow**, *Nanyang Technological University*, Singapore
Supervisor: Prof. Xiaohui Bei

2021 **Research Assistant**, *University of Macau*, Macau S.A.R.
Supervisor: Prof. Xiaowei Wu

Honors and scholarships

2025 **Best Student Paper Award**, *Conference on Web and Internet Economics (WINE)*
1 out of 225 submissions

2025 **Taihu Scholarship**, *University of Macau*
The Guangdong-Hong Kong-Macao Greater Bay Area Taihu Scholarship

2021 – 2025 **UM Ph.D. Assistantship**, *University of Macau*

2019 **Outstanding Bachelor's Thesis Award**, *Wuhan University*
Top 5%, School of Urban Design

Working papers

(α-β): Alphabetical order ✉: Corresponding author

[W6] **Subsidised Proportionality in Fair Allocation**
(α-β) Xiaowei Wu, Cong Zhang, Shengwei Zhou✉.
R&R at Operations Research

[W5] **Degree-bounded Online Bipartite Matching Revisited: OCS vs. Ranking**
(α-β) Yilong Feng, Haolong Li, Xiaowei Wu, Shengwei Zhou.
Submitted to Mathematics of Operations Research

[W4] **Efficient EFX Allocations for Chores**
(α-β) Zehan Lin, Xiaowei Wu, Shengwei Zhou.
Under review at Artificial Intelligence

[W3] **An FPTAS for 7/9-Approximation to Maximin Share Allocations**
(α-β) Xin Huang, Shengwei Zhou.
Submitted to EC

[W2] **Fair Division by Contribution: A Shapley Value Perspective**
(α-β) Xiaohui Bei, Pinyan Lu, Xiaowei Wu, Shengwei Zhou.
Submitted to EC

[W1] **When Maximum Nash Welfare Becomes Strongly Fair: Bi-valued Goods**
(α-β) Zehan Lin, Xiaowei Wu, Shengwei Zhou.
Submitted to EC

Conference proceedings (α-β): Alphabetical order

[C16] **Allocating Chores with Restricted Additive Costs: Achieving EFX, MMS, and Efficiency Simultaneously**
(α-β) Zehan Lin, Xiaowei Wu, Shengwei Zhou.
In *Proceedings of the ACM on Web Conference (WWW)*, pages 146-156, Apr 2026. doi:10.1145/3774904.3792300

[C15] **All-but-One MMS Allocation for Chores**
(α-β) Jiawei Qiu, Xiaowei Wu, Cong Zhang, Shengwei Zhou.
In *Proceedings of the ACM on Web Conference (WWW)*, pages 157-168, Apr 2026. doi:10.1145/3774904.3792305

[C14] **Degree-bounded Online Bipartite Matching Revisited: OCS vs. Ranking**
(α-β) Yilong Feng, Haolong Li, Xiaowei Wu, Shengwei Zhou.
In *Proceedings of the 21st Conference on Web and Internet Economics (WINE)*, Dec 2025. doi:10.1007/978-3-032-18660-7_39 ★ **Best Student Paper**

[C13] **Incentive Analysis of Collusion in Fair Division**
(α-β) Haoqiang Huang, Biaoshuai Tao, Mingwei Yang, Shengwei Zhou.
In *Proceedings of the 21st Conference on Web and Internet Economics (WINE)*, Dec 2025. doi:10.1007/978-3-032-18660-7_21

[C12] **When is Truthfully Allocating Chores no Harder than Goods?**
(α-β) Bo Li, Biaoshuai Tao, Fangxiao Wang, Xiaowei Wu, Mingwei Yang, Shengwei Zhou.
In *Proceedings of the 18th International Symposium on Algorithmic Game Theory (SAGT)*, pages 247-264, Sep 2025. doi:10.1007/978-3-032-03639-1_14.

[C11] **Approximately EFX and PO Allocations for Bivalued Chores**
(α-β) Zehan Lin, Xiaowei Wu, Shengwei Zhou.
In *Proceedings of the 34th International Joint Conference on Artificial Intelligence (IJCAI)*, pages 3952-3960, Aug 2025. doi:10.24963/ijcai.2025/440.

[C10] **A Little Subsidy Ensures MMS Allocation for Three Agents**
(α-β) Xiaowei Wu, Quan Xue, Shengwei Zhou.
In *Proceedings of the 34th International Joint Conference on Artificial Intelligence (IJCAI)*, pages 4073-4081, Aug 2025. doi:10.24963/ijcai.2025/454.

[C9] **Revisiting Proportional Allocation with Subsidy: Simplification and Improvements**
(α-β) Xiaowei Wu, Quan Xue, Shengwei Zhou.
In *Proceedings of the 34th International Joint Conference on Artificial Intelligence (IJCAI)*, pages 4082-4090, Aug 2025. doi:10.24963/ijcai.2025/455.

[C8] **Pure Nash Equilibrium of Weight Picking Sequence Protocol is WEF1 for Two Agents**
(α-β) Rufan Bai, Huahua Miao, Xiaowei Wu, Cong Zhang, Shengwei Zhou.
In *Proceedings of the 19th International Joint Conference, IJTCS-FAW*, pages 238–251, Jun 2025. doi:10.1007/978-981-96-8312-3_18.

[C7] **Tree Splitting Based Rounding Scheme for Weighted Proportional Allocations with Subsidy**
(α-β) Xiaowei Wu, Shengwei Zhou.
In *Proceedings of the 20th Conference on Web and Internet Economics (WINE)*, Dec 2024. doi:10.1007/978-3-032-08560-3_17.

[C6] **On the Existence of EFX (and Pareto-Optimal) Allocations for Binary Chores**
(α-β) Biaoshuai Tao, Xiaowei Wu, Ziqi Yu, Shengwei Zhou.
In *Proceedings of the 18th International Joint Conference, IJTCS-FAW*, pages 33-52, Aug 2024. doi:10.1007/978-981-97-7752-5_3.

[C5] **One Quarter Each (on Average) Ensures Proportionality**
(α-β) Xiaowei Wu, Cong Zhang, Shengwei Zhou.
In *Proceedings of the 20th Conference on Web and Internet Economics (WINE)*, pages 582-599, Dec 2023. doi:10.1007/978-3-031-48974-7_33.

[C4] **Improved Competitive Ratio for Edge-Weighted Online Stochastic Matching**
Guoliang Qiu, Yilong Feng, Shengwei Zhou, Xiaowei Wu.
In *Proceedings of the 20th Conference on Web and Internet Economics (WINE)*, pages 527-544, Dec 2023. doi:10.1007/978-3-031-48974-7_30.

[C3] **Multi-agent Online Scheduling: MMS Allocations for Indivisible Items**
Shengwei Zhou, Rufan Bai, Xiaowei Wu.
In *Proceedings of the 40th International Conference on Machine Learning (ICML)*, pages 42506-42516, Jul 2023. doi:10.5555/3618408.3620197.

[C2] **Weighted EF1 Allocations for Indivisible Chores**
(α-β) Xiaowei Wu, Cong Zhang, Shengwei Zhou.
In *Proceedings of the 24th ACM Conference on Economics and Computation (EC)*, pages 1155, Jul 2023. doi:10.1145/3580507.3597763.

[C1] **Approximately EFX Allocations for Indivisible Chores**
Shengwei Zhou, Xiaowei Wu.
In *Proceedings of the 31st International Joint Conference on Artificial Intelligence (IJCAI)*, pages 783-789, Aug 2022. doi:10.24963/ijcai.2022/110.

Journal publications

(α-β): Alphabetical order

[J3] **Weighted EF1 Allocations for Indivisible Chores**
(α-β) Xiaowei Wu, Cong Zhang, Shengwei Zhou.
Artificial Intelligence (AIJ), 347:104386, Oct 2025. doi:10.1016/j.artint.2025.104386.
Preliminary version in EC 23 (C2).

[J2] **On the Existence of EFX (and Pareto-Optimal) Allocations for Binary Chores**
(α-β) Biaoshuai Tao, Xiaowei Wu, Ziqi Yu, Shengwei Zhou✉.
Theoretical Computer Science (TCS), 1042:115248, Jul 2025.
doi:10.1016/j.tcs.2025.115248. Preliminary version in IJTCS-FAW 24 (C6).

[J1] **Approximately EFX Allocations for Indivisible Chores**
Shengwei Zhou, Xiaowei Wu.
Artificial Intelligence (AIJ), 326:104037, Jan 2024. doi:10.1016/j.artint.2023.104037.
Preliminary version in IJCAI 22 (C1).

Teaching experience

Fall 2022 – 2024 **Teaching assistant**, *University of Macau*
CISC7007 Design and Analysis of Algorithm (Postgraduate)

Spring 2022 – 2025 **Teaching assistant**, *University of Macau*
CISC2006 Algorithm Design and Analysis (Undergraduate)

Fall 2021 **Teaching assistant**, *University of Macau*
CISC3027 Special Topics in Computer and Information Science (Undergraduate)

Talks and tutorials

Aug 2025 Revisiting Proportional Allocation with Subsidy: Simplification and Improvements
IJCAI, Guangzhou

Apr 2025 Revisiting Proportional Allocation with Subsidy: Simplification and Improvements
IOTSC Postgraduate Forum, University of Macau

Oct 2024 Fair Allocations of Chores with Subsidy
Invited Talk, Kyushu University

Aug 2024 On the Existence of EFX (and Pareto-Optimal) Allocations for Binary Chores
IJTCS-FAW, Hong Kong

Mar 2024 PROP Allocation for Indivisible Chores with Subsidy
Invited Talk, Shanghai Jiao Tong University

Dec 2023 Weighted PROP Allocations with Subsidy
Workshop on Theoretical Computer Science, University of Macau

Dec 2023	Recent Development of Weighted Fair Allocation *Invited Talk, Wuhan University*
Aug 2023	Weighted EF1 Allocations for Indivisible Chores *Young PhD Forum, IJTCS-FAW, Macao*
Jul 2023	Weighted EF1 Allocations for Indivisible Chores *ACM EC, London*
Nov 2022	Approximately EFX Allocations for Indivisible Chores *IJCAI-China, Shenzhen*

Service and outreach

PC Member	EC (2026), WINE (2026), IJCAI (2026), AAMAS (2026), WINE (2025)
Conference (Sub)reviewer	NeurIPS (2026), WWW (2025), ISAAC (2024), SODA (2023)
Journal Reviewer	Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS), SIAM Journal on Discrete Mathematics (SIDMA)
Organizing Committee	IJTCS-FAW (2023)