

# SHAOKUI WEI

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## EDUCATION BACKGROUND

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**Ph.D. Candidate in Data Science** Sept. 2020 - Present  
[The Chinese University of Hong Kong, Shenzhen](#)

**Bachelor of Engineering in Electronic Information Engineering** Sept. 2015 - May. 2020  
[The Chinese University of Hong Kong, Shenzhen](#)

CGPA: 3.71/4.00, Major GPA: 3.86/4.00, Major Rank: 1<sup>st</sup>/47

## RESEARCH INTEREST

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My research interests mainly lie in trustworthy AI, encompassing Security and Fairness, but also include Optimization, Kernel Methods, Reinforcement Learning, and the application of Machine Learning in economics/marketing.

## PUBLICATION

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- **Wei, Shaokui**, Hongyuan Zha, and Baoyuan Wu. "Mitigating Backdoor Attack by Injecting Proactive Defensive Backdoor." 2024 Conference on Neural Information Processing Systems, NeurIPS 2024.
- Lin, Weilin, Li Liu, **Shaokui Wei**, Jianze Li, Hui Xiong. "Unveiling and Mitigating Backdoor Vulnerabilities based on Unlearning Weight Changes and Backdoor Activeness." 2024 Conference on Neural Information Processing Systems, NeurIPS 2024.
- Zihao Zhu, Mingda Zhang, **Shaokui Wei**, Bingzhe Wu, Baoyuan Wu. "VDC: Versatile Data Cleanser for Detecting Dirty Samples via Visual-Linguistic Inconsistency." The Twelfth International Conference on Learning Representations. ICLR 2024.
- **Wei, Shaokui**, Mingda Zhang, Hongyuan Zha, and Baoyuan Wu. "Shared Adversarial Unlearning: Backdoor Mitigation by Unlearning Shared Adversarial Examples." 2023 Conference on Neural Information Processing Systems, NeurIPS 2023.
- Zhu, Mingli\*, **Shaokui Wei**\*, Hongyuan Zha, and Baoyuan Wu. "Neural Polarizer: A Lightweight and Effective Backdoor Defense via Purifying Poisoned Features." 2023 Conference on Neural Information Processing Systems, NeurIPS 2023.
- Zhu, Mingli, **Shaokui Wei**, Li Shen, Yanbo Fan, and Baoyuan Wu. "Enhancing Fine-Tuning Based Backdoor Defense with Sharpness-Aware Minimization." 2023 International Conference on Computer Vision, ICCV 2023.
- **Wei, Shaokui**, Jiayin Liu, Bing Li, and Hongyuan Zha. "Mean Parity Fair Regression in RKHS." In International Conference on Artificial Intelligence and Statistics, pp. 4602-4628. PMLR, AISTATS 2023.
- Wu, Baoyuan, Hongrui Chen, Mingda Zhang, Zihao Zhu, **Shaokui Wei**, Danni Yuan, and Chao Shen. "Backdoor-bench: A comprehensive benchmark of backdoor learning." Advances in Neural Information Processing Systems : 10546-10559. NeurIPS 2022.

## PRE-PRINT / UNDER REVIEW

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- Song, Zhengyao, Yongqiang Li, Danni Yuan, Li Liu, **Shaokui Wei**, and Baoyuan Wu. "WPDA: Frequency-based Backdoor Attack with Wavelet Packet Decomposition." arXiv preprint arXiv:2401.13578 (2024).
- Wu, Baoyuan, Hongrui Chen, Mingda Zhang, Zihao Zhu, **Shaokui Wei**, Danni Yuan, Mingli Zhu, Ruotong Wang, Li Liu, and Chao Shen. "BackdoorBench: A Comprehensive Benchmark and Analysis of Backdoor Learning." arXiv preprint arXiv:2401.15002 (2024).

- Wu, Baoyuan, **Shaokui Wei**, Mingli Zhu, Meixi Zheng, Zihao Zhu, Mingda Zhang, Hongrui Chen, Danni Yuan, Li Liu, and Qingshan Liu. "Defenses in adversarial machine learning: A survey." arXiv preprint arXiv:2312.08890 (2023).
- Zhu, Zihao, Mingda Zhang, **Shaokui Wei**, Li Shen, Yanbo Fan, and Baoyuan Wu. "Boosting backdoor attack with a learnable poisoning sample selection strategy." arXiv preprint arXiv:2307.07328 (2023).
- Yuan, Danni, **Shaokui Wei**, Mingda Zhang, Li Liu, and Baoyuan Wu. "Activation Gradient based Poisoned Sample Detection Against Backdoor Attacks." arXiv preprint arXiv:2312.06230 (2023).

## PATENT

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- **Shaokui Wei**, Baoyuan Wu, Mingda Zhang, Hongyuan Zha. Method and system for eliminating shared adversarial samples in backdoor defense. China. Patent No. CN117390622A. Jan. 12, 2024.
- Mingli Zhu, **Shaokui Wei**, Baoyuan Wu. Method and system for backdoor defense by purifying toxic features through neural polarizers. China. Patent No. CN116629319A. Aug. 22, 2023.
- Baoyuan Wu, Mingli Zhu, **Shaokui Wei**, Li Shen, Yanbo Fan. Backdoor defense method, terminal device, and computer-readable storage medium. China. Patent No. CN116578974A. Aug. 11, 2023.

## FUNDING AND PROJECT

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- Daoyuan Youth Fund Project - Class I (道远 I 类青年基金项目)

## ACADEMIC ACTIVITY

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- **Guest speaker** for the tutorial Backdoor Learning: Recent Advances and Future Trends in ICCV 2023.
- **Reviewer** for top-tier journal such as TIP, and conferences such as ICML, NeurIPS, ICLR, CVPR, AAAI and AISTATS.

## TEACHING EXPERIENCE

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### Teaching Assistant

Sep. 2024 - Dec. 2024

*The Chinese University of Hong Kong, Shenzhen*

*Course Title: DDA4340 Computational Methods for Finance*

- This course provides an introduction to the field of computational finance, focusing on the application of computational methods to solve complex financial problems. Topics include: random number generation; the fundamentals of Monte Carlo (MC) simulation; variance-reduction techniques for MC simulation and related issues; numerical solutions to stochastic differential equations by means of MC simulation and their implementation.

### Teaching Assistant

Sep. 2023 - Dec. 2023

*The Chinese University of Hong Kong, Shenzhen*

*Course Title: STA 4010 Causal Inference*

- This course is designed to study causal inference. Topics include discussions of observational studies, propensity score analysis, and double machine learning. Additionally, the course covers topics such as causal graphs, structural causal models, and causal discovery.

### Teaching Assistant

Jan. 2022 - May 2022

*The Chinese University of Hong Kong, Shenzhen*

*Course Title: STA 3006 Design and Analysis of Experiments*

*Score: 5.85/6.00*

- This course is designed to study various statistical aspects of models in the analysis of variance. Topics include randomization, replication and blocking, randomized blocks, Latin squares and related designs, missing values, incomplete block designs, factorial designs, nested designs and nested-factorial designs, and 2k factorial designs. The use of statistical packages are demonstrated.

**Teaching Assistant** Sep. 2021 - Dec. 2021  
*The Chinese University of Hong Kong, Shenzhen*  
*Course Title: STA 4030 Categorical Data Analysis* *Score: 6.00/6.00*  
 · This course deals with major statistical techniques in analysing categorical data. Topics include measures of association, inference for two-way contingency tables, loglinear models, logit models and models for ordinal variables. The use of related statistical packages are demonstrated.

**Teaching Assistant** Jan. 2021 - May 2021  
*The Chinese University of Hong Kong, Shenzhen*  
*Course Title: DDA 4230 Reinforcement Learning* *Score: 5.86/6.00*  
 · This course is a basic introduction to reinforcement learning algorithms and their applications. Topics include multi-armed bandits; finite Markov decision processes; dynamic programming; Monte Carlo methods; temporal-difference learning; actor-critic methods; off-policy learning; and introduction to approximation methods.

**Teaching Assistant** Sep. 2020 - Dec. 2020  
*The Chinese University of Hong Kong, Shenzhen*  
*Course Title: STA3050 Statistical Software* *Score: 5.61/6.00*  
 · This course aims at providing students with basic knowledge of programming in R. A problem-solving approach is employed. Algorithm development and implementation with emphasis on examples and applications in statistics are discussed.

#### HONOR AND SCHOLARSHIP

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<b>Best Poster Award in The 3rd Daoyuan Academic Forum</b>	2024
<b>2023 Guo Tai Jun An Scholarship</b>	2023
<b>2023 Duan Yong Ping Travel Award</b>	2023
<b>AIRS Talent of Ph.D.</b>	2020
<b>Master's List (Top 10%)</b>	2019, 2018
<b>Dean's List (Top 10%)</b>	2016-2019
<b>National Endeavor Scholarship</b>	2018, 2017
<b>Undergraduate Research Award</b>	2018, 2017, 2016
<b>Academic Performance Scholarship</b>	2018, 2017
<b>Meritorious Winner in MCM (Top 10%)</b>	2018
<b>2<sup>nd</sup> Prize in CUMCM (Top 5%)</b>	2017
<b>1<sup>st</sup> Prize in CUMCM, Guangdong Division (Top 5%)</b>	2017