Ying Zhao

About Me and My Referees

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Advisor   **Jinjun Chen**: jinjun.chen@gmail.com, Swinburne University of Technology

Mentor   **Leo Yu Zhang**: leoxtu@gmail.com, Deakin University

Advisor   **Yongzhuang Wei**: walker_wyz@guet.edu.cn, Guilin University of Electronic Technology

Research Interests

Differential Privacy (DP)
: DP Theory and DP Adaptations in Scenarios. Objective: to improve the trade-offs between privacy and accuracy, to study the interplay between DP and other ethical characteristics including security and fairness.

Cryptography
: Security Analysis of Block and Stream Ciphers. Objective: to reduce attack complexity of SOTA algorithms such as block cipher including AES (ISO 2002), PRESENT (ISO 2007), as well as latest released standards, and stream cipher including Grain 128a (eSTREAM 2004). Lattice-based Cryptography and its Application in Post-Quantum Cryptography.

Teaching Interests

Basic Courses
: Linear Algebra, Foundations of Cryptography, Foundations of Privacy, Cyber Security, Number Theory

Education

Feb. 2019 - Dec. 2022
: **Doctor of Philosophy in Computer Science and Software Engineering**, *Swinburne University of Technology*, Australia, Advisor: Prof. Jinjun Chen
Thesis Title: Adapting Differential Privacy in Scenarios.

Sep. 2014 - Jun. 2017
: **Master of Engineering in Information and Communication Engineering**, *Guilin University of Electronic Technology*, China, *CGPA – 83 (out of 100)*
Advisor: Prof. Yongzhuang Wei.
Dissertation Title: Security Analysis of Block Ciphers and Stream Ciphers.

Sep. 2010 - Jun. 2014
: **Bachelor of Science in Information Security**, *Xi'an University of Posts and Telecommunications*, China, *CGPA – 83 (out of 100)*

Publications

(Please refer to Google Scholar for the whole list)

Thesis
: **Ying Zhao**, Adapting Differential Privacy in Scenarios, in Swinburne University of Technology, 2022.

Conference
: **Ying Zhao** and Jinjun Chen, Privacy and Fairness Analysis in the Post-Processed Differential Privacy Framework, 2022. submitted to conference.

CSUR
: **Ying Zhao**, Jia Tina Du, Jinjun Chen, Scenario-Based Adaptations of Differential Privacy: A Technical Survey, ACM Computing Surveys (**CSUR**), 2022. under review.

TKDE
: **Ying Zhao**, Dong Yuan, Jia Tina Du, Jinjun Chen, Geo-Ellipse-Indistinguishability: Community-Aware Location Privacy Protection for Directional Distribution, IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 2022. DOI: 10.1109/TKDE.2022.3192360.

TC	**Ying Zhao**, Jinjun Chen, <u>Vector-Indistinguishability: Location Dependency Based Privacy Protection for Successive Location Data</u>, IEEE Transactions on Computers (**TC**), 2023. DOI: 10.1109/TC.2023.3236900.
CSUR	**Ying Zhao**, Jinjun Chen, <u>A Survey on Differential Privacy for Unstructured Data Content</u>, ACM Computing Surveys (**CSUR**), 2022. DOI: 10.1145/3490237.
Journal	**Ying Zhao**, Tao Ye, Yongzhuang Wei, <u>Security Analysis of Several Cryptographically Strong S-boxes</u>, Journal of Computer Applications, vol. 37, no. 9, pp. 2572-2575, 2580, 2017. (Chinese journal)
Journal	**Ying Zhao**, Yongzhuang Wei, Senshan Pan, <u>An Improved Guess and Determine Attack on Grain-v1</u>, Journal of Guilin University of Electronic Technology, vol. 37, no. 3, pp. 217-222, 2017. (Chinese journal)
Patent	Yongzhuang Wei, **Ying Zhao**, Tao Ye, Jiali Shi, Yong Ding, <u>A New Design Criterion of S-box: CN201611265264.5</u>, [P/OL], 2017-05-31.

Research and Working Experience

Jul. 2017 - Aug. 2018	Engineer at Zhengzhou Institute of Advanced Technology Information Engineering University, China
Fall 2015	Teaching Assistant for Prof. Yongzhuang Wei in the Course of *Information Coding and Encryption*

Skills

Tools	Python, C, Manim (an animation engine for explanatory math videos) for teaching Linear Algebra, Latex, IPE (a drawing editor for creating figures in PDF format).
Languages	IETLS overall 6.5 (Listening 7, Reading 6.5, Speaking 6, Writing 6.5) in the year 2018 (will be updated soon), Mandarin

Honors and Awards

2022	HDR Boost Award with $2,000$ funding, Swinburne University of Technology
2013	Special Prize in Mathematics Competition, Xi'an University of Posts and Telecommunications

Hobby

Dancing, Poems	I like dancing, yoga, badminton, and other aerobic exercises. We once won the 3rd Prize in the Campus Dance Competition (with *blue-and-white porcelain* by Jay Chou). I like poems including classical Chinese poetry and modern poetry. Poems are like mathematics, in which few words could convey powerful and infinite meaning. Imaginativeness, fertility, and abstraction & concretization in ideas interest me. I once recited *To the Oak* and *Jane Eyre* (every soul is created equal and differently talented) in Campus Cultural Festivals.

'Hope' is the thing with feathers

'Hope' is the thing with feathers -
That perches in the soul -
And sings the tune without the words -
And never stops - at all -

And sweetest - in the Gale - is heard -
And sore must be the storm -
That could abash the little Bird
That kept so many warm -

I've heard it in the chillest land -
And on the strangest Sea -
Yet - never - in Extremity,
It asked a crumb - of me.

Emily Dickinson (1830–1886)

We must know. We will know. by David Hilbert