Wei-Ning Chen

Curriculum Vitae

PERSONAL DETAILS

Contact Address
BL-524, No. 1, Sec. 4, Roosevelt Road, Taipei City
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Personal Homepage
`https://weiningchen.github.io/`

EDUCATION

National Taiwan University Taipei, Taiwan

M.S. in Graduate Institute of Communication Engineering *Sep.2016 - Present*

- Overall GPA: 4.23/4.3
- Master Thesis : *Fundamental Limits of Anonymous Statistical Inference : Privacy-Preserving Crowdsourcing and Heterogeneous Sensor Networks*

B.S. in Electric Engineering and Mathematics *(dual degree)* *Sep.2012 - Jun.2016*

- Overall GPA: 3.96/4.3 *(EE: 4.05/4.3, Math: 3.96/4.3)*
- Macronix Science Awards Scholarship $200,000 (about US $7000)

RESEARCH INTERESTS

I am interested in information-theoretic and algorithmic aspects of data science, and currently focus on studying the impact of privacy and anonymity on information retrieval problem. My research adopts tools mainly from *information theory*, *machine learning* and *statistical inference*.

PUBLICATIONS

[1] Wei-Ning Chen and I-Hsiang Wang, "Anonymous Heterogeneous Distributed Detection: Optimal Decision Rules, Error Exponents, and the Price of Anonymity", *arXiv:1805.03554* (in submission), Feb 2018

[2] Wei-Ning Chen, Ho-Chun Chen, and I-Hsiang Wang, "On the Fundamental Limits of Heterogeneous Distributed Detection: Price of Anonymity", *IEEE International Symposium on Information Theory* (ISIT), Vail, June 2018

[3] Wei-Ning Chen and I-Hsiang Wang, "Partial Data Extraction via Noisy Histogram Queries: Information Theoretic Bounds", *IEEE International Symposium on Information Theory* (ISIT), Aachen, June 2017

RESEARCH EXPERIENCE

Fundamental Limits of Privacy Preserving Crowdsourcing : An Information Theoretic Approach Jul. 2017 - Present

Advisor: I-Hsiang Wang, Networked Information and Communication Lab

- Master thesis, online version available at `https://weiningchen.github.io/paper/thesis_v4.pdf`
- Study the optimal error probability of private crowdsourcing

Anonymously Test Heterogeneous Hypothesis Jul. 2017 - Jun. 2018
Advisor: I-Hsiang Wang, Networked Information and Communication Lab

· Presented in ISIT 2018, Vail, with ISIT student travel grant
· Develop tight bounds on anonymously testing heterogeneous hypothesis
· Submitted to *IEEE Transactions on Information Theory*

Information Extraction via Noisy Pooling Sep. 2016 - Jun. 2017
Advisor: I-Hsiang Wang, Networked Information and Communication Lab

· Presented in ISIT 2017, Aachen, with MOST travel grant
· Characterize phase transitions between noise scales and recovery distortions for the pooled data problem

Direct Anonymous Attestation Sep.2014 - Jan.2015
Advisor: Chen-Mou Cheng, Fast Crypto Lab

· Undergraduate research project on the anonymous attestation protocol (referring to *"Direct Anonymous Attestation"*, Brickwell *et al.*, in *ACM conference on Computer and communications security*)
· A C++ implementation available at `https://github.com/WeiningChen/DAA`

Distributed Differential Privacy Sep.2015 - Jun.2016
Advisor: I-Hsiang Wang, Networked Information and Communication Lab

· Study the differential privacy for distributed point estimator
· Technical report available at "Differentially Private Point Estimators for Distributed Syste"

Estimating the Optimal Grid-Partition via Buffon's Needle Jun. 2011 - Dec. 2011

· High School Research Project, won the *Macronix Science Awards Silver Medal* (with scholarship $200,000) and *International Science Exhibition* (excellent work award)

TEACHING & WORKING EXPERIENCE

Information Theory (EE5028) Fall 2016, Fall 2017
Teaching Assistant *National Taiwan University*

· Taught basic concept of information theory and statistics
· Led recitation sessions (in English)

Calculus (MATH1202) Spring 2016
Teaching Assistant *National Taiwan University*

· Taught fundamental calculus

Mathematical Principle of Machine Learning (CommE5051) Spring 2017
Teaching Assistant *National Taiwan University*

· Led recitation sessions

STANDARDIZED TEST

GRE: 334/340 *(Verbal:* 164 *(94%), Quantitative:* 170 *(96%), AW* 3.5*)*

SKILLS

Programming Languages: C++, python, Matlab