Wei-Ning Chen | Curriculum Vitae

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Education

National Taiwan University **Taipei, Taiwan**
Master of Science in Graduate Institute of Communication Engineering (GICE) *2016–present*

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

National Taiwan University **Taipei, Taiwan**
Bachelor of Science in Electric Engineering and Mathematics (dual degree) *2012–2016*

- Overall GPA: 3.96/4.3 (EE: 4.05/4.3, Math: 3.96/4.3)
- Macronix Science Awards Scholarship $200,000 (about US $6500)

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* (submitted to *IEEE Transaction on Information Theory*), 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
Networked Information and Communication Lab, Advisor: I-Hsiang Wang *Feb. 2018 – Present*

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

Anonymous Hypothesis Testing
Networked Information and Communication Lab, Advisor: I-Hsiang Wang *Sep. 2017 – Jul. 2018*

- Developed optimal decision rules and tight bounds on detection errors
- Presented in ISIT 2018, Vail, with ISIT student travel grant
- Submitted to *IEEE Transactions on Information Theory* (under revision), preprint available at arXiv

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

- Characterized phase transitions between noise scales and recovery distortions for the pooled data problem
- Presented in ISIT 2017, Aachen, with MOST travel grant
- Online version available at `https://weiningchen.github.io/paper/isit17_NHQ.pdf`

Differential Private Distributed Estimation
Networked Information and Communication Lab, Advisor: I-Hsiang Wang *Sep. 2015 – Jun. 2016*

- Undergraduate research project
- Proposed an efficient differential private point estimator for distributed system
- Technical report available at `https://weiningchen.github.io/paper/project_DPE.pdf`

Direct Anonymous Attestation
Fast Cryptography Lab, Advisor: Chen-Mou Cheng *Sep. 2014 – Jun. 2015*

- Undergraduate research project
- Implemented "Direct Anonymous Attestation" protocol in C++
- Source code available at `https://github.com/WeiningChen/DAA`

Optimal Grid Construction via Buffon's Needle
High School Research Project, Advisor: Lee-Fu Mou *Sep. 2010 – Feb. 2012*

- Determined best grid-partition strategy, maximizing detection rate
- Won silver medal in *Macronix Science Awards* with scholarship $200,000 (about US $6500) and excellent work award in *International Science Exhibition*

Teaching & Working Experience

Mathematical Principle of Machine Learning (CommE5051) **GICE , NTU**
Teaching Assistant *Spring 2018*

- Instructed concentration inequalities lecture
- Graded homeworks and exams

Information Theory (EE5028) **GICE , NTU**
Teaching Assistant *Fall 2016, Fall 2017*

- Led recitation sessions (in English)
- Graded homeworks and exams

Calculus (MATH1202) **EE , NTU**
Teaching Assistant *Spring 2016*

- Led recitation sessions
- Graded homeworks and quiz

Technical Skills

- **Programming Skills:** C, C++, Python, Matlab, LaTeX
- **Languages:** Mandarin (native), English (fluent)

Standardized Test

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