Wei-Ning Chen

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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
- Thesis: Fundamental Limits of Anonymous Statistical Inference: Privacy-Preserving Crowdsourcing

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

- Overall GPA: 3.96/4.3 (EE: 4.05/4.3, Math: 3.96/4.3)

Research Interests

Information Theory, Theoretical 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

Honors and Awards

The First Prize of CIEE Best Master Thesis Award
Chinese Institute of Electrical Engineering *Oct. 2018*

TIEEE Best Master Thesis Award
Taiwan Institute of Electrical and Electronic Engineering *Oct. 2018*

ISIT Student Travel Grant
IEEE Symposium on Information Theory (ISIT) *Jun. 2018*

Outstanding Students Conference Travel Grant
Foundation for The Advancement of Outstanding Scholarship *Jun. 2018*

Funding for Participation at International Conferences by Domestic Graduate Students
Ministry of Science and Technology(MOST) *Jun. 2017*

Silver Medal in Macronix Science Awards (with scholarship about US $6500)
Macronix Science Foundation *Sep. 2011*

Academic Activities

IEEE International Conference on Communications (ICC)
Reviewer *Oct. 2018*

IEEE East Asian School of Information Theory and Communication (EASITC)
Student Volunteer *Aug. 2018*

2017 Summer school on Information Theory, Communication Theory and Technologies
Attendee *Aug. 2017*

IEEE Taiwan/Hong Kong Joint Workshop on Info. Theory and Communications
Attendee *Aug. 2016, Aug. 2017*

Selected Research Experiences

Fundamental Limits of Privacy Preserving Crowdsourcing
Networked Information and Communication Lab, Advisor: I-Hsiang Wang *Feb. 2018 – Present*

- Proposed optimal label recovery algorithm when crowds' relaibilities are anonymous
- Evaluated asymptotic probability of errors under Neyman-Pearson regime and Chernoff regime
- 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 specified rates of detection errors for anonymous composite hypothesis testing
- Presented in ISIT 2018, Vail. Full version available at `https://weiningchen.github.io/paper/isit18_AHD.pdf`
- 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 data recovery ratio and noise magnitude for the pooled data problem
- Presented in ISIT 2017, Aachen. Full version available at `https://weiningchen.github.io/paper/isit17_NHQ.pdf`

Direct Anonymous Attestation
Undergraduate Research Project, Advisor: Chen-Mou Cheng *Sep. 2014 – Jun. 2015*

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

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

- Extended Buffon's approach to determine optimal geological grid partition which maximizes spatial resolving power
- Won silver medal in *Macronix Science Awards* with scholarship $200,000 (about US $6500) and excellent work award in *International Science Exhibition*

Teaching Experiences

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

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

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

Related Courses

Probability and Analysis Statistical Foundation of Data Science/ Stochastic Calculus/ Information Theory/ Advanced Calculus/ Complex Analysis/ Differential Equation/ Nonlinear Programing

Computer Science Discrete Mathematics/ Operating System/ Cryptography/ Artificial Intelligence/ Advanced Algorithms/ Computation Theory

Reading Group: (Organized by Prof. I-Hsiang Wang)

- Studied "Prediction, Learning, and Games" by N. Cesa-Bianchi and G. Lugosi *Fall 2017*
- Studied "High-Dimensional Probability" by R. Vershynin *Spring 2017*
- Studied "Understanding Machine Learning" by S. Shalev-Shwartz and S. Ben-David *Fall 2016*

Technical Strengths

Programming Skills C/C++, Python, Javascript, Matlab, LaTeX

GRE subject Math 910 (97%)

TOEFL iBT 106/120 (R29, L30, S21, W26)

GRE 334/340 (V164, Q170, AW 3.5)