JUNREN CHEN

chenjr58@connect.hku.hk | junrenchen58.github.io | Google scholar

Profile

Junren Chen is currently a final-year PhD candidate at Department of Mathematics, The University of Hong Kong. He is expected to graduate in June 2025. His research interests include high-dimensional statistics, non-convex optimization, statistical signal processing, and so on.

Education

School of Mathematics, Sun Yat-sen University *Guangzhou, China*
B.Sc. in Mathematics and Applied Mathematics *Sep 2017 - June 2021*
- With the highest distinction

Department of Mathematics, University of Hong Kong *Hong Kong*
Ph.D. in Applied and Computational Mathematics *Sep 2021 - June 2025 (expected)*
- Advisor: Prof. Michael K. Ng

Visiting Experience

Department of Computer Science, National University of Singapore *Singapore*
Visiting Graduate Student *June 2023 - Sep 2023*
- Host: Prof. Jonathan Scarlett. Topic: Group testing.

Department of Statistics, Columbia University *New York, USA*
Visiting Graduate Student *Jan 2024 - July 2024*
- Host: Prof. Ming Yuan. Topic: Phase retrieval, tensors.

Publication List

(⋆): Representative Paper

1. High Dimensional Statistical Estimation under Uniformly Dithered One-bit Quantization. (⋆)
   J. Chen, C.-L. Wang, M. K. Ng, D. Wang.
   IEEE Transactions on Information Theory, 2023.
2. Quantizing Heavy-tailed Data in Statistical Estimation: (Near) Minimax Rates, Covariate Quantization, Uniform Recovery.
   J. Chen, M. K. Ng, D. Wang.
   IEEE Transactions on Information Theory, 2024.
3. **J. Chen**, M. K. Ng. Phase Retrieval of Quaternion Signal via Wirtinger Flow.
   IEEE Transactions on Signal Processing, 2023.
4. **J. Chen**, M. K. Ng. Signal Reconstruction from Phase-only Measurements: Uniqueness Condition, Minimal Measurement Number and Beyond.
   SIAM Journal on Applied Mathematics, 2023.
5. **J. Chen**, M. K. Ng. Uniform Exact Reconstruction of Sparse Signals and Low-rank Matrices from Phase-Only Measurements.
   IEEE Transactions on Information Theory, 2023.
6. A Unified Framework for Uniform Signal Recovery in Nonlinear Generative Compressed Sensing. (⋆)
   J. Chen, J. Scarlett, M. K. Ng, Z. Liu.
   Neural Information Processing Systems (NeurIPS 2023).
7. Uniform Recovery Guarantees for Quantized Corrupted Sensing Using Structured or Generative Priors.
   J. Chen, Z. Liu, M. Ding, M. K. Ng.
   SIAM Journal on Imaging Sciences, 2024.
8. **J. Chen**, Y. Wang, M. K. Ng. Quantized Low-Rank Multivariate Regression with Random Dithering.
   IEEE Transactions on Signal Processing, 2023.
9. **J. Chen**, M. K. Ng. Color Image Inpainting via Robust Pure Quaternion Matrix Completion: Error Bound and Weighted Loss.
   SIAM Journal on Imaging Sciences, 2022.
10. **J. Chen**, J. Scarlett. Exact Thresholds for Noisy Non-Adaptive Group Testing. (⋆)
    ACM-SIAM Symposium on Discrete Algorithms (SODA25).

11. Z. Liu, W. Li, **J. Chen**. Generalized Eigenvalue Problems with Generative Priors.
Neural Information Processing Systems (NeurIPS 2024).
12. **J. Chen**, Z. Liu. Efficient Algorithms for Non-gaussian Single Index Models with Generative Priors.
AAAI Conference on Artificial Intelligence (AAAI), 2024.
13. **J. Chen**, M. K. Ng. A Parameter-Free Two-Bit Covariance Estimator with Improved Operator Norm Error Rate. (⋆)
In Revision at *Applied and Computational Harmonic Analysis*
14. **J. Chen**, M. K. Ng, Z. Liu. Solving Quadratic Systems with Full-Rank Matrices Using Sparse or Generative Priors.
In Minor Revision at *IEEE Transactions on Signal Processing*
15. **J. Chen**, M. Yuan. One-Bit Phase Retrieval: Optimal Rates and Efficient Algorithms. (⋆)
Submitted
16. **J. Chen**, M. Yuan. Optimal Quantized Compressed Sensing via Projected Gradient Descent. (⋆)
Submitted
17. **J. Chen**, Z. Liu, M. K. Ng, J. Scarlett. Robust Instance Optimal Phase-Only Compressed Sensing.
Submitted

Honors & Awards

- Hong Kong PhD Fellowship (2021-2025)
- China National Scholarship (2019, 2020)
- Undergraduate first class Scholarship (2018, 2019, 2020)

Teaching Experience

Teaching Assistant:

- MATH1009 - Basic Mathematics (Fall of 2022, 2023)
- MATH2014 - Multivariable Calculus and Linear Algebra (Spring of 2022, 2023, 2024)
- MATH3904 - Introduction to Optimization (Fall of 2024)

Selected Talks

- Estimation from quantized heavy-tailed measurements. (Jan, 2023, at Dept. of Mathematics, HKU)
- Uniform Exact Reconstruction of Structured Signals from Phases. (Mar, 2023, at Dept. of Mathematics, HKU)

Academic References

Prof. Michael K. Ng
(*Ph.D. Advisor*)
Chair Professor
Department of Mathematics
Hong Kong Baptist University
michael-ng@hkbu.edu.hk

Prof. Ming Yuan
(*Mentor of my visit at Columbia*)
Professor of Statistics
Department of statistics
Columbia University
ming.yuan@columbia.edu

Prof. Jonathan Scarlett
(*Mentor of my visit at NUS*)
Associate Professor
Department of Computer Science
National University of Singapore
scarlett@comp.nus.edu.sg

Prof. Wenan Zang
(*Concerning Teaching*)
Chair Professor
Department of Mathematics
The University of Hong Kong
wzang@maths.hku.hk

Prof. Arian Maleki
(*Mentor of my ongoing project*)
Associate Professor
Department of Statistics
Columbia University
mm4338@columbia.edu