Chunhui Chen

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Education Experience

Undergraduate - Bachelor of Engineering, Tsinghua University *Beijing*

Major - Engineering Mechanics (Tsien Excellence in Engineering Program) GPA: 3.82/4.00 *2017.9 –2021.7*

- Main courses: Advanced Calculus (I) (II) (95+), Advanced Algebra and Geometry (I) (II) (95+), Probability Theory and Mathematical Statistics (100), Methods of Mathematical Physics (100), Fundamentals of Science and Engineering Calculation (95+), Thermodynamics and Statistical Physics (95+), Fundamentals of Solid State Mechanics (95+), Fluid Mechanics (90+), Quantum Mechanics (95+)

Minor - Statistics GPA: 3.98/4.00 *2019.9–2021.7*

- Main Courses: Elementary Probability Theory (95+), Statistical Inference (95+), Multivariate Statistics (95+), Linear Regression Analysis (95+), Statistical Computing (95+), Financial Statistics (95+)

Winter Session - Cambridge University，Homerton College *Cambridge*

- Main courses: English Module and Global Leadership Module （A+ marks） *2019.1 - 2019.2*

Ph.D. candidate - Department of Mathematical Sciences, Tsinghua University *Beijing*

Research direction - Computational Mathematics *2021.9 - now*

Awards: Tsinghua University Comprehensive Scholarship, Tsinghua University Academic Excellence Scholarship, Tsinghua Friendship -Toyota Scholarship, Tsinghua Friendship – Chang Li and Lanrui Feng Scholarship, Tsinghua University Qingshan Fan Material Mechanics Scholarship, Tsinghua University Xuetang Scholarship, Second Prize of the National College Student Mathematical Modeling Competition in Beijing, Tsinghua University Excellent Graduate Award.

Research & Working Experience

Neural Network Image Recognition Based on Tensor Decomposition

Center for Nano and Micro Mechanics, Tsinghua University *2018.3 - 2019.1*

- Using the mathematically rigorous high-order tensor irreducible decomposition or eigen decomposition to reduce the dimensionality of high-dimensional data, while preserving and extracting the high-dimensional structure and information of the data for data compression；
- Join Tsinghua University Student Research Training (SRT) & Tsinghua University Undergraduate Academic Advancement Program.；

Technical Research Engineer (Intern)

Theory Lab, 2012 Labs, Huawei Technologies Co., Ltd., *2019.2 - 2021.2*

- Using neural network technology, combined with scientific ideas from Statistics, Optimization Theory, Time Series Analysis, etc., to model MIMO communication architecture through neural networks, greatly improving the transmission efficiency of signals；
- Jointly supervised by the Department of Mathematical Sciences at Tsinghua University and the Huawei Theoretical Research Department；
- First author publication in a conference proceeding in the field of Communication --- **IEEE VTC2021-spring**：

  C. Chen, Z. Wang, Y. Mao, H. Wu, B. Bai and G. Zhang, "TC-MIMONet: A Learning-based Transceiver for MIMO Systems with Temporal Correlations," 2021 IEEE 93rd Vehicular Technology Conference (VTC2021-Spring), 2021, pp. 1-6, doi: 10.1109/VTC2021-Spring51267.2021.9448981.

Technical Research Engineer (Intern)

Theory Lab, 2012 Labs, Huawei Technologies Co., Ltd., *2022.12 - now*

- Starting from the perspective of mathematical modeling, using the Wasserstein Barycenter problem in Optimal Transport, the rate-distortion-perception function that has recently emerged is solved and its properties are analyzed, breaking through the limitations of only being able to simulate this function through data-driven methods in the past；
- Jointly supervised by the Department of Mathematical Sciences at Tsinghua University and the Huawei Theoretical Research Department；
- First author accepted at a top conference in Information Theory --- **IEEE International Symposium on Information Theory (ISIT) 2023**：

  C. Chen, X. Niu, W. Ye, S. Wu, B. Bai, W. Chen and S. Lin "*Computation of Rate-Distortion-Perception Functions with Wasserstein Barycenter* "

Personal Information

- English Level: IBT(99)、CET-6(631)
- Research Interests: Optimization, Financial Statistics, Machine Learning
- Research Skills:
  1. Proficient in Matlab, Python and R;
  2. Basic ability to build deep neural networks;
  3. Ability to independently conduct literature research in both Chinese and English;
  4. Solid and strong foundation in mathematics and physics;
  5. Completed several independent research projects and collaborated with industry on multiple occasions.