

# Wenwu GONG

Research Keywords	<input type="checkbox"/> <b>Interpretable Neural Network</b> <input type="checkbox"/> <b>Spatiotemporal LLM</b>	<input type="checkbox"/> <b>Learning to Optimization</b> <input type="checkbox"/> <b>Inverse Imaging Problems</b>	
Contact Information	<b>✉</b> gongww@sustech.edu.cn	<b>⌂</b> <a href="#">HomePage</a>	
Biography	I am a <b>Postdoctoral</b> at Southern University of Science and Technology (SUSTech), where my research focuses on <b>Mathematical Theory for Data Science</b> and <b>Learning to Optimization</b> . Currently, I am exploring hybrid frameworks that <b>combine physics-based models with data-driven techniques</b> to develop robust, scalable, and interpretable solutions for computational imaging problems.		
Education	<b>▀ Southern University of Science and Technology</b> <b>🎓 Ph.D. in Mathematics</b> <b>Affiliation:</b> <i>Data Science</i> in <i>Department of Statistics and Data Science</i>	Shenzhen Sep. 2020 - June 2024	
	<b>▀ Harbin Institute of Technology</b> <b>🎓 Master of Science in Mathematics</b> <b>Affiliation:</b> <i>Probability and Statistics</i> in <i>School of Mathematics</i>	Shenzhen Sep. 2018 - June. 2020	
	<b>▀ Nanchang University</b> <b>🎓 Bachelor of Science in Mathematics</b> <b>Affiliation:</b> <i>Applied Mathematics</i> in <i>School of Mathematics and Computer Sciences</i>	Nanchang Sep. 2014 - May. 2018	
Honours and Awards	SUSTech Presidential Postdoctoral Fellowship <b>🏆</b> Nomination for Top Ten Graduate Students <b>🏆</b> Outstanding Graduate Student <b>🏆</b> National Scholarships International Training Program of Guangdong Province <b>🏆</b> Innovative Practice Scholarship <b>🏆</b> National Postgraduate Statistical Modeling Competition	校长卓越博士后 7 (13) 1 (24) 国家奖学金 HKUST (P.G.) RMB 10,000 Second Prize	July 2024 May 2024 Dec. 2023 Oct. 2023 June 2023 May 2021 Dec. 2020
Projects	<ul style="list-style-type: none"><li>模型和数据双驱动的低秩张量分解研究 2025.03 - 2026.09 中国博士后科学基金面上项目 省部级项目 主持</li><li>不同管控措施下新型冠状病毒肺炎疫情对第三产业影响的研究 2020.07 - 2021.12 南方科技大学创新创业项目 校级项目, <b>82000</b> 主持</li></ul>		
Publications	<b>Journal Articles</b>		
<b>G Scholar</b>	<ol style="list-style-type: none"><li>5. Wenwu Gong, Zhejun Huang, Lili Yang (2025). <b>TuckerAPP: A Novel Spatiotemporal Tucker Decomposition Approach for Traffic Imputation</b>. <i>Signal Processing</i>. 110383 <b>JCR-Q2 IF: 3.6 中科院 2 区</b> <a href="https://doi.org/10.1016/j.sigpro.2025.110383">https://doi.org/10.1016/j.sigpro.2025.110383</a></li><li>4. Zhenqing Wu, Wenwu Gong, Ziying Yu, Liuxin Zhu and Lili Yang. (2025). <b>Replica exchange enhanced adaptively weighted stochastic gradient Langevin dynamics for Bayesian sampling and optimization</b>. <i>Scientific Reports</i>. 15: 16914. <b>JCR-Q1 IF: 3.9 Co-author</b> <a href="https://doi.org/10.1038/s41598-025-01735-3">https://doi.org/10.1038/s41598-025-01735-3</a></li><li>3. Wenwu Gong, Zhejun Huang, Lili Yang (2023). <b>Accurate regularized Tucker decomposition for image restoration</b>. <i>Applied Mathematical Modeling</i>. 123: 75-86. <b>JCR-Q1 IF: 5 中科院 1 区</b> <a href="https://doi.org/10.1016/j.apm.2023.06.031">https://doi.org/10.1016/j.apm.2023.06.031</a></li></ol>		

2. Wenwu Gong, Jie Jiang, and Lili Yang. (2022). **Dynamic risk assessment of compound hazards based on VFS-IEM-IDM: A case study of Typhoon-Rainstorm hazards in Shenzhen, China.** *Natural Hazards and Earth System Sciences*. 22(10): 3271-3283.  
**JCR-Q1 IF: 4.6 中科院 2 区** <https://doi.org/10.5194/nhess-22-3271-2022>
1. Fanyu Meng, Wenwu Gong, Jun Liang, Xian Li, Yiping Zeng and Lili Yang. (2021). **Impact of different control policies for COVID-19 outbreak on the air transportation industry: A comparison between China, the U.S., and Singapore.** *PLoS One*. 16(3): e0248361.  
**JCR-Q2 IF: 3.7 Co-first author** <https://doi.org/10.1371/journal.pone.0248361>

### Conference Proceedings

7. **ICCBD+AI 2025** Xinyu Shi, Wenwu Gong<sup>†</sup>, Lili Yang (2026). **POI-LLM: Leveraging POI enhanced large language models for spatial-temporal modeling.** *IEEE International Conference on Computer, Big Data and Artificial Intelligence*, Xiamen, China  
**Poster Best Paper** Modeling Spatio-Temporal Data in the AI Era
6. **ICCBD+AI 2025** Yunshan Li, Wenwu Gong<sup>†</sup>, Lili Yang (2026). **Transfer learning-based spatiotemporal urban mobility forecasting under abnormal situations.** *IEEE International Conference on Computer, Big Data and Artificial Intelligence*, Xiamen, China  
**Poster** Modeling Spatio-Temporal Data in the AI Era
5. **ICCBD+AI 2024** Lang Mo, Wenwu Gong, Lili Yang (2025). **Overlapping Tenso-Train completion with TV regularization for image reconstruction.** *IEEE International Conference on Computer, Big Data and Artificial Intelligence*, Jingdezhen, China  
**Oral Best Paper** Representation of Multimedia Big Data
4. **ICASSP 2024**: Wenwu Gong, Zhejun Huang, Lili Yang (2024). **Enhanced low-rank and sparse Tucker decomposition for image completion.** *IEEE International Conference on Acoustics, Speech and Signal Processing*, Seoul, Korea, 2024, 2425-2429.  
**Poster CCF B** Computational Imaging
3. **ICAC 2024** Jiaxin Lu, Wenwu Gong, Lili Yang (2024). **Low-Rank autoregressive Tucker decomposition for traffic data imputation.** *International Conference on Automation and Computing*, Sunderland, UK.  
**Oral** Data-driven Information Technologies for Complex Systems
2. **ICIC 2024**: Rongping Huang, Wenwu Gong, Jiaxin Lu, and Lili Yang. (2024). **BACP: Bayesian augmented CP factorization for traffic data imputation.** *International Conference On Intelligent Computing*, Tianjin, China.  
**Oral CCF C** Knowledge Discovery and Data Mining
1. **ITSC 2023**: Wenwu Gong, Zhejun Huang, Lili Yang (2023). **LSPTD: Low-rank and spatiotemporal priors enhanced Tucker decomposition for internet traffic data imputation.** *IEEE International Conference on Intelligent Transportation System*, Bilbao, Spain, 2023, 460-465.  
**Oral CCF B1** Advances in Urban Traffic Control Theory and Practice

### Preprints & Under Review

3. Qianqian Wang, Ruili Wang, Yunshan Li, Zhenqing Wu, Wenwu Gong<sup>†</sup> and Lili Yang (2025). **CLEAR: Causal Learning for Environment-Aware Recommendation.**  
Under review
2. Wenwu Gong and Lili Yang (2025). **LRTuckerRep: Low-rank Tucker Representation Model for Multi-dimensional Data Completion.**  
arXiv:2508.03755 Under review
1. Yunshan Li, Wenwu Gong, Qianqian Wang, Chao Wang, Lili Yang (2025). **3DeepRep: 3D Deep Low-rank Tensor Representation for Hyperspectral Image Inpainting.**  
arXiv:2506.16735

Talks and Presentations	<ol style="list-style-type: none"> <li>3. <b>Nov. 2025 Low-rank Tucker Representation Model for Multi-dimensional Data Completion.</b> <i>2025 8th International Conference on Digital Medicine and Image Processing, Washington, Tokyo, Japan.</i>  <i>AI-Driven Multimodal Medical Data Analysis and Clinical Decision Support</i></li> <li>2. <b>Jan. 2025 Low-Rank bi-directional neighbor Tucker decomposition for traffic data imputation.</b> <i>TRB Annual Meeting, Washington, D.C. USA.</i>  <b>Top-tier Applications and Innovations in Urban Travel Data</b></li> <li>1. <b>Mar. 2024 Spatiotemporal Tucker decomposition approach for traffic imputation.</b> <i>Graduate Academic Forum in SUSTech.</i></li> </ol>
Teaching Activities TA	<ul style="list-style-type: none"> <li>• Probability Theory and Mathematical Statistics Sep. 2019 - May 2021</li> <li>• Tensor Decomposition and Its Applications Mar. 2023 - June 2023</li> </ul>
Mentorship 协助指导	<ul style="list-style-type: none"> <li>• <b>Sep. 2023 –</b> Xinyu SHI, Master student 硕士论文: Applications of Multimodal Large Models in Spatiotemporal Data Mining</li> <li>• <b>Sep. 2023 –</b> Xiongpeng XIA, Master student 硕士论文: 基于多尺度 Transformer 的长时序预测</li> <li>• <b>Sep. 2022 - June 2024</b> Jiaxin LU, Master student 南方科技大学十佳毕业研究生 硕士论文: Spatio-Temporal Data Mining of Urban Transportation based on Tensor Learning 毕业去向: 北京大学 (深圳研究生院)</li> <li>• <b>Sep. 2021 - June 2023</b> Rongping HUANG, Master student 硕士论文: Bayesian-based Tensor Recovery for Traffic Data Imputation 毕业去向: 滴普科技</li> </ul>