Lingyu **LI**

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CV of Lingyu Li

Bio.   **Postdoctoral Fellow** with wide-ranging expertise in **bioinformatics and machine learning research** and extensive experiences in **biomedical data analysis and statistical evaluation**, able to work independently as well as collaboratively within a team.

🎓 Educations

Aug 2023–	**Postdoc in Bioinformatics**, *The University of Hong Kong*, Hong Kong SAR, China Project : Multimodal AI decoding tumor-immune interaction by fusing spatial omics & histological images *Advisor* : *Dr. Yuanhua Huang*
Dec 2021–Jul 2023	**Joint training Ph.D. in Bioinformatics**, *The University of Hong Kong*, Hong Kong SAR, China Project : Application of Boolean networks and optimization algorithms in bioinformatics *Advisor* : *Prof. Wai-Ki Ching*
Sep 2019–Jun 2023	**Ph.D. in Biomedical Engineering**, *Shandong University*, Jinan, China Dissertation : Biomarker discovery methods based on connected network regularized feature selection *Advisor* : *Prof. Zhi-Ping Liu* **GPA** : 94.80/100 | **Rank** : 1/46
Sep 2016–Jun 2019	**M.Sc. of Computational Mathematics**, *Shandong Normal University*, Jinan, China Dissertation : Numerical methods and theoretical analysis of a class of groundwater pollution problems *Advisor* : *Prof. Ziwen Jiang* **GPA** : 3.98/5.0 | **Rank** : 1/8
Sep 2012–Jun 2016	**B.Sc. of Mathematics and Applied Mathematics**, *Shandong Normal University*, Jinan, China Dissertation : Uniform convergence of function term series and its application Advisor *: Prof. Jinjun Fan* **GPA** : 3.51/5.0 | **Rank** : 26/204

☰ Researches

Bioinformatics :	Spatial transcriptomics, Single-cell data science, Machine learning, Biomarker discovery, Boolean network
Math & Statistics :	Sparse statistical learning, Network-constrained regularization, Inverse problem, Numerical solution of PDEs

📖 Publications

[1] denotes equal contribution, * denotes corresponding author.
First Author :

1. **Lingyu Li**, Tianjie Wang, Zhuo Liang, Lequan Yu, Yuanhua Huang*. Scalable discovery of nucleus-resolved ligand-receptor interaction by fusing spatial RNA-seq and histology images. Nature Cell Biology (SCI, JCR : Q1, Rank : 9/205, IF : 17.3), Under Review, Mar 2025. (`https://github.com/StatBiomed/FineST`).

2. **Lingyu Li**, Zhi-Ping Liu*. Prognostic biomarker discovery based on connected network-regularized Cox proportional hazards model. Communications Biology (SCI, JCR : Q1, Rank : 17/221, IF : 5.2), Submitted, Mar 2025.

3. **Lingyu Li**, Liangjie Sun, Guangyi Chen, Chi-Wing Wong, Wai-Ki Ching*, Zhi-Ping Liu*. LogBTF : Gene regulatory network inference using Boolean threshold network model from single-cell gene expression data, Bioinformatics (SCI, JCR : Q1, Rank : 26/198, IF : 6.937), vol.39, no.5, btad256, Apr 2023.

4. **Lingyu Li**, Zhi-Ping Liu*, Biomarker discovery from gene expression data by connected network-constrained support vector machine, Expert Systems with Applications (SCI, JCR : Q1, Rank : 6/85, IF : 8.665), vol.226, 120179, Sep 2023.

5. **Lingyu Li**, Zhi-Ping Liu*, A connected network-regularized logistic regression model for feature selection, Applied Intelligence (SCI, JCR : Q2, Rank : 87/198, IF : 5.086), vol.52, no.10, pp.11672-11702, Jan 2022.

6. **Lingyu Li**, Zhi-Ping Liu*, Detecting prognostic biomarkers of breast cancer by regularized Cox proportional hazards models, Journal of Translational Medicine (SCI, JCR : Q1, Rank : 21/189, IF : 8.459), vol.19, pp.1-20, Dec 2021.

7. **Lingyu Li**, Zhi-Ping Liu*, Biomarker discovery for predicting spontaneous preterm birth from gene expression data by regularized logistic regression, Computational and Structural Biotechnology Journal (SCI, JCR : Q1, Rank : 75/313, IF : 7.271), vol.18, pp.3434-3446, Nov 2020.

8. **Lingyu Li**, Wai-Ki Ching, Zhi-Ping Liu*, Robust biomarker screening from gene expression data by stable machine learning-recursive feature elimination methods, Computational Biology and Chemistry (SCI, JCR : Q2, Rank : 76/169, IF : 3.737), vol.100, 107747, Jul 2022.

9. **Lingyu Li**, Yousif A. Algabri, Zhi-Ping Liu*. Identifying diagnostic biomarkers of breast cancer based on gene expression data and ensemble feature selection, **Current Bioinformatics** (SCI, JCR : Q1, Rank : 22/85, IF : 4.850), vol.18, no.3, pp.232-246, Mar 2023.

10. **Lingyu Li**, Ziwen Jiang*, Zhe Yin*, Compact finite-difference method for 2D time-fractional convection–diffusion equation of groundwater pollution problems, **Computational and Applied Mathematics** (SCI, JCR : Q2, Rank : 29/331, IF : 2.239), vol.39, no.3, 142, May 2020.

11. **Lingyu Li**, Ziwen Jiang*, Zhe Yin, Fourth-order compact finite difference method for solving two-dimensional convection–diffusion equation, **Advances in Difference Equations** (SCI, JCR : Q1, Rank : 7/489, IF : 2.803), vol.2018, no.1, pp.1-24, Jul 2018.

12. **Lingyu Li**, Zhe Yin*, Numerical simulation of groundwater pollution problems based on convection diffusion equation, **American Journal of Computational Mathematics**, vol.7, no.3, pp.350–370, Sep 2017.

13. **Lingyu Li**, Zhi-Ping Liu*, "Discovery of spontaneous preterm birth biomarkers based on machine learning", *Journal of Nanjing University (Natural Sciences Edition)* (**In Chinese**), vol.57, no.5, pp.767-774, Sep 2021.

14. **Lingyu Li**, Jinjun Fan*, "Uniform convergence of function term series and its application", *Journal of Shandong Normal University (Natural Science Edition)* (**In Chinese**), vol.31, no.4, pp.12–19, Dec 2016.

Contributing Author :

1. Yaohua Chang, **Lingyu Li**, Zhi-Ping Liu*. Uncovering differential functions in cancer : A network ontology analysis of gene regulation rewiring, **Briefings in Bioinformatics**, (SCI, JCR : Q1, Rank : 4/85, F : 13.994), Completed, Oct 2024. (`https://github.com/LingyuLi-math/GO4Cancer`).

2. Fatemeh Keikha, **Lingyu Li**, Wai-Ki Ching, Zhi-Ping Liu*. NetWalkRank : Cancer driver gene prioritization in multiplex gene regulatory networks by a random walk approach, **IEEE/ACM Transactions on Computational Biology and Bioinformatics** (SCI, JCR : Q1, Rank : 23/170, IF : 4.500), vol.22, 2025.

3. Yousif A. Algabri, **Lingyu Li**, Zhi-Ping Liu*, scGENA : A single-cell gene co-expression network analysis framework for clustering cell types and revealing biological mechanisms, **Bioengineering** (SCI, JCR : Q2, Rank : 45/122, IF : 5.046), vol.9, Jun 2022.

4. El Bairi K, Haynes H R, Blackley E, et al. (Rank : 132), The tale of TILs in breast cancer : A report from the international immuno-oncology biomarker working group, **NPJ Breast Cancer** (SCI, JCR : Q1, Rank : 49/322, IF : 7.519), vol.7, Jun 2021.

Patents :

1. Zhi-Ping Liu*, **Lingyu Li**, Jiaxin Yang, Chuanyan Wu, Rui Gao. A prognostic biomarker identification system, Page bookmark : CN117352048A, Jan 2024.

Presentations

1. **Lingyu Li**, Yuanhua Huang*, Nucleus-resolved ligand-receptor interaction discovery by fusing spatial RNA-seq and histology images. in Human Cell Atlas (HCA) Asia 2024 Meeting, **Poster Presentation**, Hong Kong Science Park, Hong Kong, Dec 2024.

2. **Lingyu Li**, Yuanhua Huang*, Super resolved ligand-receptor interaction discovery by fusing spatial RNA-seq and histology images. in The 32nd Conference on Intelligent Systems for Molecular Biology (ISMB), **Top Conferences in Bioinformatics**, **Oral Presentation** 20 mins, Montreal, Canada, Jul 2024.

3. **Lingyu Li**, Yuanhua Huang*, Fine ligand-receptor interaction discovery by fusing spatial transcriptomics and histology stains. in The 1st HKU-CUHK Joint Postdoctoral Biomedical Sciences Symposium, **Oral Presentation**, Hong Kong, Mar 2024.

4. **Lingyu Li**, Zhi-Ping Liu*, Identifying diagnostic biomarkers of high-grade serous ovarian cancer based on geneexpression data and machine learning methods. in *The Sixth CCF Bioinformatics Conference*, **Oral Presentation**, Qingdao, Shanong, Aug 2021.

5. **Lingyu Li**, Zhi-Ping Liu*, Discovery of spontaneous preterm birth biomarkers based on machine learning. in *CCF Conference on Artificial Intelligence*, **Poster Presentation**, Yantai, Shandong, Jul 2021.

Projects

Nov 2020 - Oct 2024	Research on Mathematical Models and Algorithms in Breast Cancer Precision Medicine – NSFC, National Key R&D Program, NO. 2020YFA0712402. – Participant.
Jan 2020 - Dec 2023	Research on Bioinformatics Methods for Integrating Multi-level Omics Data to Discover Complex Disease Biomarkers – NSFC, General Projects, NO. 61973190. – Participant (main).
Dec 2016 - Nov 2019	Numerical Simulation Methods of Water Pollution Problem Based on Darcy-Stokes Coupling Model – NSFC, Youth Project, NO. 61501335. – Participant (main).

</> Competitions

Dec 2019	The 16th Huawei Cup China Postgraduate Mathematic Contest in Modeling (GMCM) - Third Prize
	– Submitted paper : Rapid path planning of intelligent aircraft under multiple constraints
Dec 2017	The 14th Huawei Cup GMCM - Third Prize
	– Submitted paper : Flight recovery problem
Dec 2016	The 13th Huawei Cup GMCM - Second Prize
	– Submitted paper : Analysis of genetic locus with inherited diseases and traits

♡ Honors & Awards

July 2024	ISMB 2024 Conference Travel Fellowships from International Society for Computational Biology (**ISCB**)
June 2024	Conference Support for Teaching Staff 2024/25 (July 2024-June 2025, University Research Committee, **HKU**)
Mar 2023	SDU 2023 outstanding graduates
Oct 2022	SDU 2022 *Ji Defa* Postgraduate Scholarship for PhD (**Higher** than first-class academic scholarship)
Sep 2021	The Scholarship under Shandong University's Exchange Program (with **HKU**)
2021 & 2022	SDU 2021 & 2022 Outstanding Postgraduate Cadre Award (**twice**)
Jul 2021	FDU summer school on "Application and Innovation of Data Science", Obtained the graduation certificate
2021 & 2022	SDU advanced individuals in innovation and entrepreneurship (**twice**)
2021	SDU outstanding communist youth league member
2020 & 2022	SDU first-class academic scholarship for PhD (**twice**) ; SDU outstanding graduate student (**three times**)
2020 & 2021	PKU 2nd & 3rd summer school on "Biostatistics", Completed the course and obtained the graduation certificate
Dec 2019	SDU graduate innovation competition award
Jan 2019	SDNU 2019 outstanding graduates
Jul 2018	FDU Graduate summer school on "Modern Biological Mathematics", Obtained the graduation certificate
Oct 2017	Shandong province 2017 excellent bachelor's degree thesis
May 2017	SDNU Post-Graduate Mathematical Contest in Modeling (GMCM) "First prize"
2014 & 2015	Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM) "Second prize" (**twice**)
Nov 2013	The 15th Chinese Mathematics Competitions (CMC, Mathematics) "Third prize"
Oct 2013	National Encouragement Scholarship

👤 Professional service

Society Member	International Society for Computational Biology (ISCB),
	China Society for Industrial and Applied Mathematics (CSIAM),
	Chinese Association for Artificial Intelligence (CAAI),
	Chinese Association of Automation (CAA),
	Chinese Bioinformatics Society (in preparation) - Network Biology Committee.
Peer Reviewer	*Bioinformatics*, *Communications Biology*, *iScience*, *Scientific Reports*, *BMC Cancer*, *Small Methods*, *Neural Networks*, *Computational Biology and Chemistry*, *Briefings in Functional Genomics*, *Computers in Biology and Medicine*, *BMC Medical Informatics and Decision Making*, *Biophysics Reports*.
Conference Reviewer	*ICIC2024 Conference*(**CCF C**), *ICAI2024 Conference*, etc.

✏️ Teaching assistant

Sep 2019–Jan 2020	Teaching Assistant, **Complex Functions and Laplace Transform**, Automation, Shandong University.
Feb 2019–Jun 2019	Teaching Assistant, **Probability Theory and Mathematical Statistics**, Shandong Jiaotong University.
Feb 2019–Jun 2019	Teaching Assistant, **Ordinary Differential Equations**, CS 1701 and 1702, Shandong Normal University.
Feb 2018–Jan 2019	Teaching Assistant, **Advanced Algebra I&II**, Statistics 1801 and 1802, Shandong Normal University.
Sep 2018–Jan 2019	Teaching Assistant, **Advanced Mathematics II**, Economics 1701, Shandong Normal University.
Sep 2017–Jan 2019	Teaching Assistant, **Mathematical Analysis I&II&III**, Mathematics 1703 and 1704, Shandong Normal University.

⚙️ Skills

Programming Skills :	Python (6-year), **R** (7-year), Matlab (12-year), Linux (5-year), LaTeX(9-year), **C**, Spass
Computer Certificates :	Computer 2-level **C language**, Computer 3-level **Network technology**
Other Certificates :	Putonghua Proficiency at **second-level A**, Teacher Qualification Certificate of **Mathematics**

(Last update : 31 May 2025)