

Li, Shumin

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Education

- Ph.D in Computer Science, The University of Hong Kong, Hong Kong** Sep 2018 - Oct 2022
- Thesis: *New methods for studying massive and complex biological data: from ultra-low depth sequence to high resolution structure.*
 - Supervisor: Dr. Ruibang Luo, Prof. Tak-Wah Lam, Prof. Siu Ming Yiu
- M. Eng. in Computer Science, Harbin Institute of Technology, Shenzhen** Sep 2015 - Dec 2017
- Thesis: *Protein remote homology detection based on deep learning.*
 - Supervisor: Prof. Bin Liu
- B. Eng in Network Engineering, Shenyang Aerospace University** Sep 2011 – Jul 2015

Research Interest

- | | |
|---------------------------------|----------------------------|
| 1. Large-scale Genomic Analysis | 2. Spatial Transcriptomics |
| 3. AI for Genomics | 4. Biomedicine NLP |

First-authored (†), Co-first authored (†), Corresponding (*), or co-corresponding (*) publications:

First or co-first author (†), Corresponding (*)

1. **Li, S.†**, Ma, J.†, Zhao, T., Jia, Y., Liu, B., Luo, R.*, & Huang, Y.* (2024). CellContrast: Reconstructing Spatial Relationships in Single-Cell RNA Sequencing Data via Deep Contrastive Learning. **Patterns** (IF 2023: 6.5). 5, 101022.
2. **Li, S.†**, Yan, B.†, Li, T. K.†, Lu, J., Gu, Y., Tan, Y., ... & Luo, R*. (2023). Ultra-low-coverage genome-wide association study—insights into gestational age using 17,844 embryo samples with preimplantation genetic testing. **Genome Medicine** (JCR Q1, IF 2022: 12.3), 15(1), 10. (Citations: 7)
3. **Li, S.†**, Yan, B.†, Wu, B.†, Su, J., Lu, J., Lam, T. W., ... & Luo, R.* (2023). Integrated modeling framework reveals co-regulation of transcription factors, miRNAs and lncRNAs on cardiac developmental dynamics. **Stem Cell Research & Therapy** (JCR Q1, IF 2022: 7.5), 14(1), 247. (Citations: 2)
4. Su, J.†*, **Li, S.†**, Zheng, Z., Lam, T.W., Luo, R.* (2023). ClusterV-Web: A User-Friendly Tool for Profiling HIV Quasispecies and Generating Drug Resistance Reports from Nanopore Long-Read Data. **Bioinformatics Advances** (IF 2023: 2.4). 4(1), vbae006. (Citations: 1)
5. Zheng, Z.†, **Li, S.†**, Su, J.†, Leung, A. W. S., Lam, T. W., & Luo, R.* (2022). Symphonizing pileup and full-alignment for deep learning-based long-read variant calling. **Nature Computational Science** (IF 2023: 12), 2(12), 797-803. (Citations: 119)

6. Li, S.[†], Chen, J., & Liu, B*. (2017). Protein remote homology detection based on bidirectional long short-term memory. **BMC bioinformatics** (JCR Q3, IF 2022: 3), 18(1), 1-8. (Citations: 72)

Co-authored publications:

7. Liu, B.*, & Li, S. (2018). ProtDet-CCH: protein remote homology detection by combining long short-term memory and ranking methods. **IEEE/ACM Transactions on Computational Biology and Bioinformatics** (JCR Q1, IF 2022: 4.5), 16(4), 1203-1210. (Citations: 38)

8. Chen, J., Guo, M., Li, S., & Liu, B*. (2017). ProtDec-LTR2. 0: an improved method for protein remote homology detection by combining pseudo protein and supervised Learning to Rank. **Bioinformatics** (JCR Q1, IF 2022 5.8), 33(21), 3473-3476. (Citations: 41)

9. Liu, B.*, Wang, S., Dong, Q., Li, S., & Liu, X. (2016). Identification of DNA-binding proteins by combining auto-cross covariance transformation and ensemble learning. **IEEE transactions on nanobioscience** (JCR Q2, IF 2022: 3.9), 15(4), 328-334. (Citations: 85)

Working Papers

10. Li, S.^{†*}, Chow, F.W., Chen, L., Su, J., Ahmed, S., Luo, R.* (2023) MirtronStructDB: A Comprehensive Database of Mirtrons with Predicted Secondary Structures, in preparation.

11. Zheng, Y.[†], Ye, S.[†], Li, S.[†], Liu, C., Luo, S., Xia, R., ... & Yang, D*. (2022). A self-blinking DNA probe for 3D superresolution imaging of native chromatin. bioRxiv, 2022-06.

Professional experience

Joint Postdoctoral Fellow of Dr. Yuanhua Huang and Dr. Ruibang Luo, HKU	May 2024 - Present
Research Scientist (AI genomics) , Hong Kong Genome Institute	Jan 2023-Mar 2023
Postdoctoral Fellow , Lab of Dr. Ruibang Luo, HKU	Nov 2022 – Dec 2023
Teaching Assistant , ENGG1340/COMP2113 Computer programming II, HKU	Sep 2018 - Sep 2022
Research Intern , Ping An Technology	Jan 2018 - July 2018

Presentations

Selected Talk: “CellContrast: Reconstructing Spatial Relationships in Single-Cell RNA Sequencing Data via Deep Contrastive Learning”. Joint Bioconductor Asia - Hong Kong Bioinformatics Symposium at The University of Hong Kong. Oct 17, 2023.

Academic Services

Reviewer for ACM-BCB, Future Generation Computer Systems.

Awards

2018-2022	Postgraduate Scholarships, The University of Hong Kong
2018	Outstanding graduate student , Harbin Institute of Technology
2015 – 2017(Twice)	The first level of university scholarship, Harbin Institute of Technology
2013 – 2014	Government Scholarship of Liaoning province
2013 – 2014	First Place , The 7 th ACM-ICPC Liaoning province
2012 – 2013	First Place , National College Students Mathematics Contest , Liaoning province
2012 – 2013	Third Place , the 6 th ACM-ICPC Liaoning province