Changlin Wan

410 W. 10th St, Suite 5000, 46202, Indianapolis, IN
(+1)317-772-6785, wan82@purdue.edu, www.changlinwan.com

EDUCATION

Purdue University *Aug 2017–Present*
– Ph.D. candidate in *Electrical and Computer Engineering* West Lafayette, IN
– Advisor: *Chi Zhang*

University of Science and Technology of China (USTC) *Aug 2012–Jun 2016*
– B.Sc in *Biology* Hefei, China
– Minor in *Business Management*

PROFESSIONAL EXPERIENCE

Applied Scientist Intern *Jun 2020–Sep 2020*
Amazon Product Graph, Mentor: Tong Zhao Seattle, WA
– Proposed an $O(n)$ complexity data-driven decision making framework of substituable product identification for similar product recommendation.
– Represented the pair-wise product similarities by graphical rank statistics and assign its confidence level by hypothesis testing with theoretical proof.
– Developed a bespoke python package in adaptive to billions of Amazon catalog products.

Research Assistant *Aug 2017–Present*
Indiana University School of Medicine Indianapolis, IN
– Proposed fast and efficient algorithm for binary relational data representation.
– Theoretically inferred noise and bias from binary data for fairer pattern identification.
– Developed novel statistical models in deciphering multi-omics data.

Research Assistant *Apr 2016–Jul 2017*
University of Science and Technology of China Hefei, China
– Developed an analyze web server for small RNA sequencing data using Perl/PHP.
– Proposed an integrative algorithm for copy number identification from RNA sequencing data.
– Conducted water-maze behavior experiments on mice with different vision capability.

CONFERENCE PUBLICATION

- **Changlin Wan**, Wennan Chang, Tong Zhao, Sha Cao and Chi Zhang. "Geometric All-Way Boolean Tensor Decomposition." In *Advances in Neural Information Processing Systems (NeurIPS 2020)*.
- **Changlin Wan**, Dongya Jia, Yue Zhao, Wennan Chang, Sha Cao, Xiao Wang and Chi Zhang. "A data denoising approach to optimize functional clustering of single cell RNA-sequencing data." In *IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2020)*.
- **Changlin Wan**, Wennan Chang, Tong Zhao, Sha Cao, and Chi Zhang. "Denoising individual bias for a fairer binary submatrix detection." In *Proceedings of the 29th ACM International Conference on Information & Knowledge Management (CIKM 2020)*.
- **Changlin Wan**, Wennan Chang, Tong Zhao, Mengya Li, Sha Cao and Chi Zhang. "Fast And Efficient Boolean Matrix Factorization By Geometric Segmentation." In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2020)*.

JOURNAL PUBLICATION

- **Changlin Wan**, Wennan Chang, Yu Zhang, Fenil Shah, Xiaoyu Lu, Yong Zang, Anru Zhang et al. "LTMG: a novel statistical modeling of transcriptional expression states in single-cell RNA-Seq data." ***Nucleic acids research*** (IF=11.501).

- Yuanzhang Fang†, Lifei Wang†, **Changlin Wan**†, Yifan Sun, Kevin Van der Jeught, Zhuolong Zhou, Tianhan Dong, Ka Man So, Tao Yu, Yujing Li, et al. "MAL2 drives immune evasion by reducing tumor cell antigen presentation." In press ***Journal of Clinical Investigation*** (IF=11.864, co-first author, cover letter).
- Yuqian Ma, Jin Bao, Yuanwei Zhang, Zhanjun Li, Xiangyu Zhou, **Changlin Wan**, Ling Huang, Yang Zhao, Gang Han, and Tian Xue. "Mammalian near-infrared image vision through injectable and self-powered retinal nanoantennae." ***Cell*** (IF=38.637).
- Yu Zhang†, **Changlin Wan**†, Pengcheng Wang, Wennan Chang, Yan Huo, Jian Chen, Qin Ma, Sha Cao, and Chi Zhang. "M3S: A comprehensive model selection for multi-modal single-cell RNA sequencing data." ***BMC Bioinformatics*** (IF=3.242, co-first author)
- Wennan Chang, **Changlin Wan**, Yong Zang, Chi Zhang, Sha Cao. Supervised clustering of high dimensional data using regularized mixture modeling. In press ***Briefing in Bioinformatics*** (IF=8.990)
- Xiaoyu Lu, Szu-Wei Tu, Wennan Chang, **Changlin Wan**, Jiashi Wang, Yong Zang, Baskar Ramdas, Reuben Kapur, Xiongbin Lu, Sha Cao and Chi Zhang. "SSMD: A semisupervised approach for a robust cell type identification and deconvolution of mouse transcriptomics data." In press ***Briefing in Bioinformatics***
- Ruchi Pandey, Baskar Ramdas, **Changlin Wan**, George Sandusky, Morvarid Mohseni, Chi Zhang, and Reuben Kapur. "SHP2 inhibition reduces leukemogenesis in models of combined genetic and epigenetic mutations." ***Journal of Clinical Investigation*** (IF=11.864).
- Jianing Gao†,, **Changlin Wan**†,, Huan Zhang, Ao Li, Qiguang Zang, Rongjun Ban, Asim Ali et al. "Anaconda: AN automated pipeline for somatic COpy Number variation Detection and Annotation from tumor exome sequencing data." ***BMC bioinformatics*** (IF=3.242, co-first author).
- **Changlin Wan**†, Jianing Gao†, Huan Zhang†, Xiaohua Jiang†, Qiguang Zang, Rongjun Ban, Yuanwei Zhang, and Qinghua Shi. "CPSS 2.0: a computational platform update for the analysis of small RNA sequencing data." ***Bioinformatics*** (IF=5.610, co-first author).
- Norah Alghamdi, Wennan Chang, Pengtao Dang, Xiaoyu Lu, **Changlin Wan**, Zhi Huang, Jiashi Wang, Melissa Fishel, Sha Cao and Chi Zhang "scFEA: A graph neural network model to estimate cell-wise metabolic flux using single cell RNA-seq data". ***Under review***
- Wennan Chang, **Changlin Wan**, Xiaoyu Lu, Szu-wei Tu, Yifan Sun, Xinna Zhang, Yong Zang, Anru Zhang, Kun Huang, Yunlong Liu, Xiongbin Lu, Sha Cao and Chi Zhang. "ICTD: A semi-supervised cell type identification and deconvolution method for multi-omics data." ***Under review***
- Wennan Chang, **Changlin Wan**, Chun Yu, Weixin Yao, Chi Zhang and Sha Cao. "RobMixReg: an R package for robust, flexible and high dimensional mixture regression. ***Under review***

AWARDS AND HONORS

Travel Scholarship NeurIPS 2020 *Oct 2020*
Travel Scholarship CIKM 2020 *Sep 2020*
Young Scientist Excellence Award MCBIOS 2020 *Jul 2020*
Travel Scholarship AAAI 2020 *Dec 2019*
Travel Award Indiana University *Apr 2019*
First Prize in Anhui Province Dragon Boat Race Athlete in USTC Dragon Boat Team *Aug 2016*
Excellent Student Scholarship USTC *Oct 2015*
First Prize in National Biology Olympiad Ministry of Education, China *Jul 2011*

INVITED TALK

School of Life Sciences, USTC *Jan 2020*
Multi-modality in single cell transcriptomics data. Hefei, China
State Key Laboratory of Medicinal Chemical Biology, Nankai University *Jan 2020*
Multi-modality in single cell transcriptomics data. Tianjin, China

SKILLS

General computation Python(Efficient)/R(Efficient)/Perl/C/Linux/Illustrator

Language English(Efficient)/Mandarin(Native)/Korean(Beginner)

SERVICES

Conference Reviewer UAI 2021, IJCAI 2021, KDD 2020, IJCAI 2020, ICIBM 2019, IEEE BIBM 2018, ISBRA 2017
Journal Reviewer Genome Biology, Nucleic Acid Research

ACTIVITIES

Member, University Dragon-Boat Team, USTC, Hefei, China *Sep 2015–Aug 2016*
Vice Chair, School Student Union, USTC, Hefei, China *Sep 2014–Sep 2015*
Secretary, School Student Union, USTC, Hefei, China *Sep 2013–Sep 2014*