ACM-BCB 2024

The 15th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics

Dayhello International Hotel Shenzhen

Shenzhen, China
November 22–25, 2024

Association for Computing Machinery

中国科学院深圳先进技术研究院
SHENZHEN INSTITUTE OF ADVANCED TECHNOLOGY
CHINESE ACADEMY OF SCIENCES

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Keynote Speakers

Keynote Speakers | November 23, 2024(Sat)

Aidong Zhang, Professor, Ph.D

Thomas M. Linville Endowed Professor, University of Virginia, USA

Title: Large Language Models for Scientific Hypothesis Generation

Abstract: Machine learning foundation models, particularly large language models (LLMs), have revolutionized traditional applications in computer vision and natural language processing, marking a significant shift in recent years. Building on these advancements, recent efforts have explored the potential of foundation models in hypothesis generation, highlighting their possibility in aiding human researchers in scientific discovery. We are envisioning a future where academia increasingly integrates foundation models to accelerate and enhance the process of scientific discovery. Two key challenges that need to be addressed include: (1) how to effectively harness the parametric knowledge embedded in foundation models to propel scientific discovery? and (2) how to develop rigorous yet scalable methods to evaluate the effectiveness of foundation models in supporting scientific research? In this talk, I will discuss the current state-of-the art research work on this topic and present our most recent approaches to answer these questions.

Biosketch: Dr. Aidong Zhang is the Thomas M. Linville Endowed Professor of Computer Science with joint appointment at Data Science, and Biomedical Engineering at University of Virginia (UVA). Prof. Zhang's research interests include machine learning, data science, bioinformatics and computational biology, and health informatics. Prof. Zhang was the Editor-in-Chief of the IEEE Transactions on Computational Biology and Bioinformatics (TCBB) from 2017 to 2021. She served as the founding Chair of ACM Special Interest Group on Bioinformatics and Computational Biology (SIGBio) from 2011 to 2015 and also served as the Chair of its advisory board from 2015 to 2018. She was also the founding and steering chair of ACM international conference on Bioinformatics, Computational Biology and Health Informatics (ACM-BCB) from 2010 to 2019. Prof. Zhang is a fellow of ACM and IEEE. She is also a fellow of the American Institute for Medical and Biological Engineering (AIMBE). Dr. Zhang is also a member of the Virginia Academy of Science, Engineering and Medicine.

Keynote Speakers | November 23, 2024(Sat)

Xingming Zhao, Professor, PhD

Vice dean of the Institute of Science and Technology for Brain Inspired Intelligence
Fudan University, China

Title: AI driven exploration of human microbiome

Abstract: The human body is composed of various types of microbiome. However, our knowledge about human microbiome is far from comprehensive. In this talk, I'll present our recent work on the exploration of human gut microbiome with long-read sequencing, and some algorithms and tools we have developed for analysis of human microbiome. I'll also show some new findings on the enterotypes of gut mycobiome and the association between gut microbiome and diseases.

Biosketch: Xing-Ming Zhao received his PhD degree from the University of Science and Technology of China. Currently, he is a distinguished professor and vice dean of the Institute of Science and Technology for Brain Inspired Intelligence, Fudan University, China. He is also the chair of Shanghai Society for Bioinformatics. He focuses on the interdisciplinary research between biomedicine and artificial intelligence. He has published more than 150 papers in peer-reviewed journals, e.g. Nature and Cell. He is the senior member of IEEE, Co-Chair of IEEE SMC Technical Committee on Systems Biology and Vice-Chair of ACM SIGBIO China. He is also the lead guest editor and the editorial member of several journals, e.g. IEEE/ACM TCBB, Neurocomputing, Journal of Theoretical Biology, IET Systems Biology, and so on.

Keynote Speakers | November 24, 2024(Sun)

Lin Gao, Professor, PhD

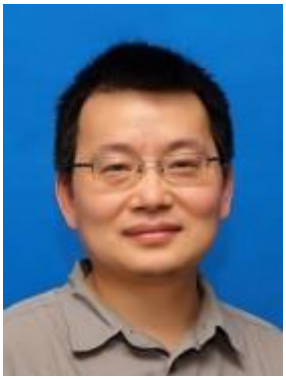
Director of CCF Technical Committee of Bioinformatics

Title: Models and Algorithms for Single-cell Multi-omics Data Analysis

Abstract: The rapid development of single-cell multi-omics sequencing technology has made it possible to explore cells in multiple dimensions (genomics, transcriptomics, epigenomics, and spatial transcriptomics), which has been highly valued by life science and has posed new challenges to computational methods in computer science. How to deeply understand the cellular function described by single-cell data and how to model the related biological problems by feature complementarity of multi-omics data poses a computational challenge. In this talk, I will introduce our work in the integration of multiple batches, cell type decomposition, cell-cell interaction and the discovery of tissue cellular neighborhoods.

Biosketch: Dr. Lin Gao is a professor and director of CCF Technical Committee of Bioinformatics. Her research interests include bioinformatics, data mining and machine learning, graph theory and optimization. She focused on computational model and algorithm in omics-data analysis, especially its application in cancer. Her research has been funded by the National Natural Science Foundation of China, National Key Research and Development Program of China, the Foundation of the Ministry of Education of China and other project. She has over 170 publications in professional journals, such as Nature Methods, Science Advances, Nature Communications, Advanced Science, Nucleic Acids Research, PLoS Computational Biology, Bioinformatics, et al. She also serves on various academic communities, member of China Computer Federation, Director of CCF Bioinformatics Committee, member of Chinese Association for Artificial Intelligence.

Keynote Speakers | November 25, 2024(Mon)



Gang Pan, Professor, PhD

Director of the State Key Laboratory of Brain-Machine Intelligence
Zhejiang University, China

Title: Cyborg Intelligence: Towards Convergence of the Brain and Machines

Abstract: Recent advances in artificial intelligence, computational neuroscience, microelectronics, and neurophysiology indicate that the integration between machines and living organisms is not only possible but increasingly evident. Breakthroughs in neurotechnologies, such as brain-machine interfaces, are enabling closer connections between the brain and machines, making convergence of biological and machine intelligence a key trend in the evolution of AI. This talk will explore cyborg intelligence, a new form of AI stemming from brain-machine interfaces. Cyborg intelligence is promising for enhancing, repairing, or extending the intelligent capacity of both biological and computing units. This talk will also discuss its issues, challenges, and recent advances from our group.

Biosketch: Dr. Gang Pan is a distinguished professor in the College of Computer Science and Technology at Zhejiang University, where he also serves as the Director of the State Key Laboratory of Brain-Machine Intelligence. He earned his B.Eng. and Ph.D. degrees from Zhejiang University in 1998 and 2004, respectively. Dr. Pan's research interests include brain-machine interfaces, brain-inspired computing, artificial intelligence, and pervasive computing. He has published more than 200 refereed publications, and has more than 60 patents granted. Dr. Pan has received numerous honors, including the NSFC Distinguished Young Scholars, the IEEE TCSC Award for Excellence (Middle Career Researcher), and the CCF-IEEE CS Young Scientist Award. Additionally, he has been recognized with the National Science and Technology Progress Award, two test-of-time paper awards, and multiple best paper awards. He serves as an associate editor for multiple prestigious journals such as IEEE Transactions on Neural Networks and Learning Systems and Cognitive Neurodynamics.

Keynote Speakers | November 25, 2024(Mon)

Jianqiang Li, Professor, PhD

Shenzhen University, China

Title: Data-driven intelligent system perception and decision

Abstract: The data-driven intelligent system can effectively improve its perception and execution efficiency. The report introduces research on network collaborative perception, collaborative network construction, and optimized analysis and decision-making of intelligent systems. Finally, the relevant research results are applied to special monitoring robots and medical health intelligent monitoring systems.

Biosketch: Prof.Jianqiang Li currently is a full professor at the National Engineering Laboratory for Big Data System Computing Technology, Shenzhen University. He was the recipient of the National Outstanding Youth Fund, the recipient of National level young talents, Guangdong Outstanding Youth Funds. He is Chief Scientist of the National Key R&D Program of China. His major research interests include Artificial Intelligence, robotic. Prof. Jianqiang Li has published more than 200 refereed papers in international leading journals and primer conferences, such as IEEE TEVC, IEEE TCYB, IEEE ToN, IEEE TMC, AAAI, IEEE INFOCOM, etc. His google scholar citation is over 9800. He is the inventor of 53 Chinese pending patents (29 patent authorizations) and 10 PCT international invention patents. He won the first prize of Wu Wenjun's Artificial Intelligence Science & Technology Award, which is initiated and sponsored by the Chinese Artificial Intelligence Society He won the first prize of the China Automation Association Science & Technology Award.

ACM-BCB 2024
Conference Program Agenda

- **5 Keynote Speakers**

  45 (40+5) minutes presentation

- **36 Regular Paper:**

  25 (20+5) minutes oral presentation

- **36 Rapid-fire Paper:**

  20 (18+2) minutes oral presentation

- **2 Highlights:**

  20 (18+2) minutes oral presentation

- **35 Posters:**

  Poster presentation - on Nov. 23, 2024 (18:30-20:30 PM, 2nd Floor)

- **Registration:**

  16pm-20pm, Nov 21; 8am-20pm, Nov 22; 8am-16pm, Nov 23 and Nov 24
  Lobby (1st floor), Dayhello International Hotel Shenzhen

Joint Workshops | Schedule at a glance

November 22, 2024 (Friday)

Full-day workshop | (9:00 AM -6:00PM)

- *Deep learning in Multimodal Bioinformatics Analysis (DimBio), 贵宾厅2(2F Conference Room II),* ***Organizers: Huaming Chen, Lichun Ma, Jiahua Shi, Haoran Li, Jun Shen***

Half-day workshop | Morning (9:00 AM - 12:00 PM)

- **13th Workshop on Parallel and AI-based Bioinformatics and Biomedicine (ParBio)**

Time	Workshop (贵宾厅3 (2F Conference Room III))
9:00 -9:30AM	**A High Performance Parametric Model for 3D Gingiva-Tooth Boundary via Generalized Cylinders** Yuanhao Gong
9:30-10:00 AM	**Building Personality-Adaptive Conversational AI for Mental Health Therapy** Sugam Jaiswal, Joyce Lee, Joe Berria, Raviteia Tanikella, Annuska Zolyomi, Muhammad Aurangzeb Ahmad, and Dong Si
10:00-10:30AM	**Normalized Compression Distance for DNA Classification** Gavin Hearne, Mohammad Refahi, Haozhe Duan, James Brown, and Gail Rosen
10:30-11:00AM	**A Comparison of Representation Learning Methods for Medical Concepts in EHR Databases** Zhangdaihong Liu, Xuan Wu, Yang Yang, and David Clifton
11:00-11:15AM	**Closing Remarks** Giuseppe Agapito, Mario Cannataro, Wes J. Lloyd, and Chiara Zucco

Organizers: Giuseppe Agapito, Mario Cannataro, Wes J. Lloyd, Chiara Zucco

Half-day workshops | Afternoon (1:30PM-6:00PM)

- **Invited Special Workshop: *Large Language Models (LLMs) for Healthcare***

Time	Workshop (董事会议室(2F Boardroom room))
2:00-2:05 PM	**Workshop Opening**
2:05-2:30 PM	**The Application of LLM in Medical Triage** Prof. Guangjun Yu
2:30-2:55 PM	**"DaYi" Medical Model for New Quality Productive Forces** Prof. Shaoting Zhang
2:55-3:20 PM	**Towards Developing AI Foundation Models for Medical Imaging** Prof. Shanshan Wang
3:20-3:45 PM	**Tea Break**
3:45-4:10 PM	**Towards Multi-modality Medical Data Analysis: Explainability, Robustness, Security**

	Prof. Yixuan Yuan
4:10-4:35 PM	**Causality-inspired Semi-supervised Medical Image Analysis** Prof. Ruxin Wang

Organizers: Fen Miao & Dan Wu

- *Workshop on Computational Approaches to Protein and RNA Structure and Function (CAPRSF) Workshop, 贵宾厅3(2F Conference Room III),* ***Organizer: Zhen Li***

Joint Workshops | Schedule at a glance

November 23, 2024 (Saturday)

Afternoon Sessions | Afternoon (1:30PM-4:00PM)

CAAI-Joint Workshop: AI for Biological Networks Analysis and Molecule Design

Time	Workshop (贵宾厅3 (2F Conference Room III))
1:30 -1:50PM	**Protein-Ligand Binding Site Prediction and De Novo Ligand Generation from Cryo-EM Maps** Dong Si
1:50 -2:10PM	**A Hybrid Deep Learning Method Integrating ResNet50-SE-U-Net and Test Time Augmentation Techniques for Efficient Cell Segmentation** Jovial Niyogisubizo
2:10 -2:30PM	**The mechanism of carcinogenesis and the identification of driving factors based on dynamic network analyses** Bolin Chen
2:30 -2:50PM	**Predicting cancer recurrence and biomarker based on interpretable deep learning** Wei Lan, Guangxi University
2:50 -3:10PM	**A Multi-modal Drug-Target Affinity Prediction Method Based on Graph Features and Pre-trained Sequence Embeddings** Xiujuan Lei
3:10 -3:30PM	**Tumor heterogeneity analysis based on multi-omics integration** Le Ou-Yang
3:30 -3:50PM	**Substructure-aware explainable prediction for drug-drug interactions** Hui Yu

Organizer: **Prof. Hui Yu**

November 24, 2024 (Sunday)

Afternoon Sessions | Afternoon (1:30PM-4:00PM)

CCF-Joint Workshop: Cutting-edge Algorithms in Genomics: From Theory to Practice

Time	Workshop (贵宾厅3 (2F Conference Room III))
1:30 -1:55PM	**Accurate and efficient protein embedding using multi-teacher distillation learning** Yanni Sun
1:55 -2:20PM	**4CAC: 4-class classifier of metagenome contigs using machine learning and assembly graphs** Lianrong Pu
2:20 -2:45PM	**MetaBinner and COMEBin: Recent Advances in MetaGenomic Contig Binning Algorithms** Shanfeng Zhu
2:45 -3:10PM	**Can we use different features for metagenomic function prediction?** Mingyu Wang
3:10 -3:35PM	**Med-PRSIMD: Enhanced Complex Disease Risk Prediction through Integrative Analysis of Multi-Type Data and Medical History Records** Lu Zhang
3:35 -4:00PM	**Missense Mutation Effect Prediction using Categorical Boosting Optimized with Sparrow Search Algorithm** Huiling Zhang

Organizer: Xuefeng Cui

Tutorials | Schedule at a glance

November 22, 2024 (Friday)

Half-day Tutorial | Morning (9:00 AM - 12:00 PM)

- *Statistical and computational methods for spatial transcriptomics data analysis,* ***贵宾厅1(2F Conference Room I), Organizers: Can Yang and Yuheng Chen：Hong Kong University of Science and Technology***

Half-day Tutorial | Afternoon (1:30 PM-6:00 PM)

- *Fundamentals of Analyzing Electronic Health Record Data,* ***贵宾厅1(2F Conference Room I), Organizer: Sheng Yu：Tsinghua University***

[Note] The coffee break time is at 10:15-10:35AM and 3:35 – 3:55 PM in the afternoon

ACM-BCB 2024 Main Conference Schedule at a glance

November 23, 2024(Saturday)

Time	Session	
8:30 - 8:45AM	Opening Remarks	国际厅 (2F International Hall)
8:45- 9:30AM	Keynote 1: Prof. Aidong Zhang, University of Virginia	
9:30 - 10:15AM	Keynote 2: Prof. Xingming Zhao, Fudan University	
10:15 - 10:35 AM	Break & Group Photo	
10:35 - 11:00 AM	Featured Regular Talk 1	国际厅 (2F International Hall)
11:00 - 11:25 AM	Featured Regular Talk 2	
11:25 - 11:50 AM	Featured Regular Talk 3	
11:50 - 12:35 PM	Women in Bioinformatics Panel	
12:00 – 1:30 PM	Lunch	
1:30 – 3:35 PM	Workshop: AI for Biological Networks Analysis and Molecule Design (贵宾厅3(2F Conference Room III)) **(1:30-3:50PM)**	Session 2A) Health Informatics (R) (贵宾厅2(2F Conference Room II))
	Session 1A) ML for Omics Analyses (R) (贵宾厅1(2F Conference Room I))	
3:35 – 3:55 PM	Break	
3:55 – 6:15 PM	Session 1B) Biomed Imag Informatics (RF) (贵宾厅1(2F Conference Room I))	Session 2B) Health Informatics (RF) (贵宾厅2(2F Conference Room II))
	Session 2C) LLMs & Biomed Imag Informatics (R) (贵宾厅3(2F Conference Room III))	
6:30 – 8:30 PM	Poster Session (2nd Floor)	

November 24, 2024(Sunday)

Time	Session	
8:45 - 9:30AM	Keynote 3: Prof. Lin Gao, Director of CCF Technical Committee of Bioinformatics	国际厅 (2F International Hall)
9:30 - 10:15AM	Travel Award Presentation Session 1	
10:15 - 10:35 AM	Break	
10:35 - 11:00 AM	Featured Regular Talk 4	国际厅 (2F International Hall)
11:00 - 11:25 AM	Featured Regular Talk 5	
11:25 - 11:50 AM	Featured Regular Talk 6	
12:00 – 1:30 PM	Lunch	
1:30 – 3:35 PM	Workshop: Cutting-Edge Algorithms in Genomics: From Theory to Practice (贵宾厅3 (2F Conference Room III)) **(1:30-4:00PM)**	Session 4A) Drug Discovery & Monitoring (R) (深圳厅1 (2F Shenzhen Hall I))
	Session 3A) ML for Omics Analyses (R) (贵宾厅2(2F Conference Room II))	Session 5A) Comput System Biology (R) (深圳厅2 (2F Shenzhen Hall II))
3:35 – 3:55 PM	Break	
3:55 – 6:15 PM	Session 3B) ML in Comput Biol (RF) (贵宾厅2(2F Conference Room II))	Session 4B) RF (ML for Omics Analyses) ((深圳厅1 (2F Shenzhen Hall I))
	Session 5C) Drug Discovery (RF) (贵宾厅3(2F Conference Room III)) **(4:20-6:00PM)**	Session 5B) LLMs & Monitoring (RF) (深圳厅2 (2F Shenzhen Hall II))
6:30 – 8:00 PM	Conference Banquet (国际厅 (2F International Hall))	

November 25, 2024(Monday)

Time	Session	
8:45 - 9:30 AM	Keynote 4: Prof. Gang Pan, Zhejiang University	国际厅 (2F International Hall)
9:30 - 10:15 AM	Keynote 5: Prof. Jianqiang Li, Shenzhen University	
10:15 - 10:35 AM	Break	
10:35 - 12:00 AM	Travel Award Presentation Session 2	
12:00 - 12:15 PM	Closing Remarks	

RF: Rapid-Fire, R: Regular

ACM-BCB 2024| November 23, 2024(Sat)

Opening Remarks (国际厅 2F International Hall)

Time	
8:30 - 8:45 AM	**Opening Remarks** Chair: Prof. Yi Pan Prof Dijian Zhu, Prof. May D Wang, Prof. Ye Li and Prof. Yanjie Wei

Keynote (国际厅 2F International Hall)

Time	Keynote 1 | Aidong Zhang, Professor, PhD, University of Virginia
8:45 - 9:30AM	**Large Language Models for Scientific Hypothesis Generation**

Session Chair: Prof. Yi Pan

Time	Keynote 2 | Xingming Zhao, Professor, PhD, Fudan University
9:30 - 10:15AM	**AI driven exploration of human microbiome**

Session Chair: Prof. May D Wang

Session Featured Regular Talks (ML for Omics Analyses)

Time	Session Featured Regular Talks (1,2,3) (国际厅 (2F International Hall)
10:35 - 11:00 AM	**Spatiotemporal attention boosts calling of complicated variations from long reads' alignment data** Ying Shi, Shifu Luo, Yi Pan, Hao Wu, Wenjian Wang, Jinyan Li
11:00 - 11:25 AM	**GCLNSTDA: Predicting tsRNA-Disease Association Based on Contrastive Learning and Negative Sampling** Wei Lan, Wenyi Chen, Chunling Li, Qingfeng Chen, Yi-Ping Phoebe Chen, Yi Pan
11:25 - 11:50 AM	**L2 Normalization and Geodesic Distance for Enhanced Information Preservation in Visualizing High-dimensional Single-cell Sequencing Data** Ziqi Rong, Jinpu Cai, Jiahao Qiu, Pengcheng Xu, Lana Garmire, Qiuyu Lian, Hongyi Xin

Session Chair: Prof.Xiujuan Lei

Women in Bioinformatics Panel

Time	Women in Bioinformatics Panel (国际厅 (2F International Hall)
11:50 - 12:35PM	**Women in Bioinformatics**

Session Chair: Prof. Min Li and Prof. Jane Zheng

Session 1A) ML for Omics Analyses (Regular)

Time	Session 1A(贵宾厅1(2F Conference Room I))
1:30 -1:55PM	**MIXER: Identifying Co-expressed Genes in Multimodal Transcriptomic Sequencing Data** Tao Deng, Mengqian Huang, Kaichen Xu, Yan Lu, Yucheng Xu, Siyu Chen, Nina Xie, Hao Wu, Xiaobo Sun
1:55 -2:20PM	**ICDFGF: Identification of potential circRNA-disease associations based on feature graph factorization** Yuchen Zhang, Xiujuan Lei, Zhengfeng Wang, Yi Pan
2:20 -2:45PM	**Leveraging Mutual Information for Functional Annotation Analysis of Microglia in Alzheimer's Disease** Chenyu Zhang, Qingli Hu, Honglin Wang, Seung-Hyun Hong, Riqiang Yan, Dong-Guk Shin
2:45 -3:10PM	**GMF-MGCN-LDA: Prediction of lncRNA-disease association based on novel generalized matrix factorization and graph neural networks** Qi Gao, Jialin Li, Guosheng Han, Li Zeng
3:10 -3:35PM	**Detecting and Subtyping Anomalous Single Cells with M2ASDA** Kaichen Xu, Kainan Liu, Linjie Wang, Yueyang Ding, Yan Lu, Hao Wu, Xiaobo Sun

Session Chair: Prof. Sun Kim

Session 2A) Health Informatics (Regular)

Time	Session 2A (贵宾厅2(2F Conference Room II))
1:30 -1:55PM	**CellCom: A web server for prediction, visualization, and evaluation of cell-cell communication mediated by ligand-receptor pairs** Jianing Wang, Jin A, Hanjun Pan, Ruiqing Zheng, Chaojin Wu, Min Li
1:55 -2:20PM	**Heterogeneous Treatment Effects of Spinal Fusion Surgery for Adolescent Idiopathic Scoliosis Patients** J. Ben Tamo, Micky C. Nnamdi, Andrew Hornback, Matthew Chen, Wenqi Shi, Yuanda Zhu, Henry J. Iwinski, May Dongmei Wang
2:20 -2:45PM	**A Multi-task Learning Approach for Predicting Spatio-temporal Patient Variables** Kaniz Madhobi, Eric Lofgren, Ananth Kalyanaraman
2:45 -3:10PM	**TimelyGPT: Extrapolatable Transformer Pre-training for Long-term Time-Series Forecasting in Healthcare** Ziyang Song, Qincheng Lu, Hao Xu, He Zhu, David L. Buckeridge, Yue Li
3:10 -3:35PM	**SVMPT: A Hybrid Approach to Sparse and Irregular Clinical Data Learning with Selective Variable-wise Message Passing and Transformer** Rongqin Chen, Dan Wu, Leong Hou U, Ye Li

Session Chair: Prof.Jianyu Shi

Session 1B) Biomed Imag Informatics (Rapid Fire)

Time	Session 1B (贵宾厅1(2F Conference Room I))
3:55 -4:15PM	**PathoEye: a novel deep learning framework for histopathological image analysis of skin tissue** Yusen Lin, Feiyan lin, Yongjun Zhang, Xinquan Zeng, Hang Sun, Hang Jiang, Teng Yan, Bin Yang, Jiajian Zhou
4:15 -4:35PM	**EpiUNet: Stain-Style Transfer Model for Histology Image Based on Generative Adversarial Network** Zhengze Gong, Wenhui Wang, Xiaocong Tan, Mengkun Gan, Weijie Xie
4:35 -4:55PM	**CAPTURE: A Clustered Adaptive Patchwork Technique for Unified Registration Enhancement in Biological Imaging** Sahand Hamzehei, Gianna Raimondi, Mostafa Karami, Linnaea Ostroff, Sheida Nabavi
4:55 -5:15PM	**MPDF-UNET: Modality Priors and Dynamic Features Fusion U-Net for Incomplete Multimodal Brain Tumor Segmentation** Yutian Xiao, Xiaomao Fan, Chongguang Yang, Yang Zhao
5:15 -5:35PM	**MFMF: Multiple Foundation Model Fusion Networks for Whole Slide Image Classification** Thao M. Dang, Yuzhi Guo, Hehuan Ma, Qifeng Zhou, Saiyang Na, Jean Gao, Junzhou Huang
5:35 -5:55PM	**Graph learning of disentangled representation for accurately aligning multiple spatial slices** Jianing Chen, Yuansong Zeng, Ningyuan Shangguan, Wenhao Zhou, Wenbing Li, Yuedong Yang
5:55 -6:15PM	**PMSA-Net: A parallel multi-scale attention network for MI-BCI classification** Mingzhe Cui, Tao Chen, Yang Jiao, qianzheng, Yi Pan, Lei Xie

Session Chair: Prof. Hao Wu

Session 2B) Health Informatics (Rapid Fire)

Time	Session 2B (贵宾厅2(2F Conference Room II))
3:55 -4:15PM	**Evaluation of multi-feature machine-learning models for analyzing electrochemical signals for drug monitoring** Sangam Buddhacharya, Noël Lefevre, Elain Fu, Stephen Ramsey
4:15 -4:35PM	**MixEHR-Nest: Identifying Subphenotypes within Electronic Health Records through Hierarchical Guided-Topic Modeling** Ruohan Wang, Zilong Wang, Ziyang Song, David L. Buckeridge, Yue Li
4:35 -4:55PM	**Efficient Federated Learning with Multi-Teacher Knowledge Distillation for COVID-19 Detection** Richard Annan, Hong Qin, Xiaohong Yuan, Kaushik Roy, Robert Newman, Letu Qingge
4:55 -5:15PM	**Uncovering Key Features of Individuals Who Benefit from Polygenic Risk Scores in Prostate Cancer Prediction** Andrew Hornback, Monica Isgut, Anirudh Jaishankar, Harinishree Sathu, Pavithra Avula, May Dongmei Wang
5:15 -5:35PM	**MCWCM: Multi-Criteria Ranking and Weighted Control Model for Identifying Key Drivers in cancer** Bolin Chen, Zhengyu Wang, ZiyuanLi
5:35 -5:55PM	**Towards Instructing Disease-Drug Link Prediction with Social Determinants of Health** Yashaswi Galhotra, Ying Ding, Li Shen, Huanmei Wu, Tianlong Chen, Kaixiong Zhou
5:55 -6:15PM	**FHIRViz: Multi-Agent Platform for FHIR Visualization to Advance Healthcare Analytics** Mariam ALMutairi, Lulwah AlKulaib, Shengkun Wang, Zhiqian Chen, Youssif ALMutiari, Thamer M. Alenazi, Kurt Luther, Chang-Tien Lu

Session Chair: Prof. Yushan Qiu

Session 2C) LLMs & Biomed Imag Informatics (Regular)

Time	Session 2C (贵宾厅3(2F Conference Room III))
3:55 -4:20PM	**ClinicalAgent: Clinical Trial Multi-Agent with Large Language Model-based Reasoning** Ling Yue, Sixue Xing, Jintai Chen, Tianfan Fu
4:20 -4:45PM	**One-shot Biomedical Named Entity Recognition via Knowledge-Inspired Large Language Model** Jnuyi Bian, Jiaxuan Zheng, Yuyi Zhang, Hong Zhou, Shanfeng Zhu
4:45 -5:10PM	**STAPFormer: A New 3D Human Pose Estimation Framework in Sports and Health** Zhongteng Zhang, Weihong Huang, Qing Peng, Liu Zhang, Zihao Zhang
5:10 -5:35PM	**New Spatial Phenotypes from Imaging Uncover Survival Differences for Breast Cancer Patients** Mahmudul Hasan, Ariadna Kim Silva, Shahira Abousamra, Shao-Jun Tang, Prateek Prasanna, Joel Saltz, Kevin L. Gardner, Chao Chen, Alisa Yurovsky
5:35 - 6:00 PM	**Asymmetric Mutual Learning for Decentralized Federated Medical Imaging** Jiaqi Wang, Houping Xiao, Fenglong Ma

Session Chair: Prof. Wei Lan

Poster Session

Time	Poster session (2nd floor)
6:30 – 8:00 PM	**Poster Session**

Session Chair: Profs. Wenhui Xi, Tianwei Yu, Yushan Qiu, Yijie Wang

ACM-BCB 2024| November 24, 2024(Sun)

Keynote (国际厅 2F International Hall)

Time	Keynote 3 | Lin Gao, Professor, PhD, Director of CCF Technical Committee of Bioinformatics
8:45 - 9:30AM	**Models and Algorithms for Single-cell Multi-omics Data Analysis**

Session Chair: Prof. Min Li

Time	Travel Award Presentation Session 1
9:30 - 10:15AM	**TBD**

Session Chair: Prof. May D. Wang

Session Featured Regular Talks (LLMs, Health Informatics & Drug Discovery)

Time	Session Featured Regular Talks (4,5,6) (国际厅 (2F International Hall)
10:35 - 11:00 AM	**Large Language Models for Cuffless Blood Pressure Measurement From Wearable Biosignals** Zengding Liu, Chen Chen, Jiannong Cao, Pan Ming Lei, Jikui Liu, Nan Li, Fen Miao, Ye Li
11:00 - 11:25 AM	**Heterogeneous Treatment Effects of Spinal Fusion Surgery for Adolescent Idiopathic Scoliosis Patients** J. Ben Tamo, Micky C. Nnamdi, Andrew Hornback, Matthew Chen, Wenqi Shi, Yuanda Zhu, Henry J. Iwinski, May Dongmei Wang
11:25 - 11:50 AM	**ISGDRP: a multi-modal learning method for drug response prediction** Haochen Zhao, Xiaoyu Zhang, Qichang Zhao, Guihua Duan

Session Chair: Prof. Fa Zhang

Session 3A) ML for Omics Analyses (Regular)

Time	Session 3A (贵宾厅2(2F Conference Room II))
1:30 -1:55PM	**PepGPL: A Multi-Task Framework for Identifying Peptide-Protein Interactions and Corresponding Binding Residues** Ruikang Zhou, Haochen Zhao, Jian Zhong, Guihua Duan
1:55 -2:20PM	**Deciphering Bladder Cancer-Related circRNA Biomarkers: An Ensemble Model Integrating Deep Learning and Statistics for circRNA Analysis** Yulian Ding, Yi Pan, Clarence Ronald Geyer, Franco J. Vizeacoumar, Frederick S. Vizeacoumar, Fang-Xiang Wu
2:20 -2:45PM	**Learning Structured Sparsity for Efficient Nanopore DNA Basecalling Using Delayed Masking** Mees Frensel, Zaid Al-Ars, H Peter Hofstee
2:45 -3:10PM	**Rethinking Radiology Report Generation via Causal Inspired Counterfactual Augmentation** Xiao Song, Jiafan LIU, Liyun, Yan Liu, Lei wenbin, Ruxin Wang
3:10 -3:35PM	**FiSSC: Finding smallest sequence covers to sets of degenerate reads with applications to RNA editing** Ido Tziony, Jonathan Mandl, Kobi Shapira, Eli Eisenberg, Ely Porat, Yaron Orenstein

Session Chair: Prof. Wenhui Xi

Session 4A) Drug Discovery & Monitoring (Regular)

Time	Session 4A (深圳厅1 (2F Shenzhen Hall I))
1:30 -1:55PM	**DVL-CC: A Novel Dual-View Learning Framework for Compound Cocrystal Prediction Boosted by View Consistency and Complementarity** Hao-Yang Yu, Bei Zhu, Bing-Xue Du, Xue-Xin Wei, Hui Yu, Jian-Yu Shi
1:55 -2:20PM	**DeepDrugmiR: a two-stage deep learning method for inferring small molecules' regulatory effects on microRNA expression** Yixian Huang, Huacong Wu, Ying Cai, Danhong Dong, Sicong Yu, Yigang Chen, Zihao Zhu, Yang-Chi-Dung Lin, Hsi-Yuan Huang, Hsien-Da Huang
2:20 -2:45PM	**Causality-based Subject and Task Fingerprints using fMRI Time-series Data** Dachuan Song, Li Shen, Duy Duong-Tran, Xuan Wang
2:45 -3:10PM	**Impact of the Networking Infrastructure on the Performance of Variant Calling on Human Genomes in Commodity Clusters** Manas Das, Praveen Rao, Lisong Xu
3:10 -3:35PM	**RBVS: Database of the Receptor-Based Virtual Screening** Senbiao Fang, Huimin Zhu, Yongfan Ming, Kunying Niu, Baoying Zhao, Min Li

Session Chair: Prof. Jijun Tang

Session 5A) Comput System Biology (Regular)

Time	Session 5A (深圳厅2 (2F Shenzhen Hall II))
1:30 -1:55PM	**Com-DNB: A novel method for identifying critical states of complex biological processes and its parallelization** Letian Wang, Zhu Yanbing, Yiming Zhang, Shuang Feng, Chang Li, Xiaohua Wan, Fa Zhang, Bin Hu
1:55 -2:20PM	**NeuralTE: an accurate approach for Transposable Element superfamily classification with multi-feature fusion** Kang Hu, Minghua Xu, Xin Gao, Jianxin Wang
2:20 -2:45PM	**mm2-gb: GPU Accelerated Minimap2 for Long Read DNA Mapping** Juechu Dong, Xueshen Liu, Harisankar Sadasivan, Sriranjani Sitaraman, Satish Narayanasamy
2:45 -3:10PM	**Optimal protospacer sequences recommended by ensemble deep learning for high-efficiency base editing** Hui Peng, Xiaocai Zhang, Yuansheng Liu, Yi Pan, Wilson Wen Bin Goh, Jinyan Li
3:10 -3:35PM	**Robinson-Foulds distance between phylogenetic networks and gene trees** Natalia Rutecka, Agnieszka Mykowiecka, Jarosław Paszek, Pawel Gorecki

Session Chair: Prof. Bolin Chen

Session 3B) ML in Comput Biol (Rapid Fire)

Time	Session 3B (贵宾厅2(2F Conference Room II))
3:55 -4:15PM	**Peptide Sequencing Via Protein Language Models** Thuong Le Hoai Pham, Jillur Rahman Saurav, Aisosa A Omere, Calvin J Heyl, Mohammad Sadegh Nasr, Cody Tyler Reynolds, Jai Prakash Veerla, Helen Shang, Alison Ravenscraft, Justyn Jaworski, Joseph Anthony Buonomo, Jacob M Luber
4:15 -4:35PM	**gPSRM: A generative propensity score-based replay memory for deep reinforcement learnings** Jiang Liu, Chan Zhou, yuwen chen, Yihao Xie, Kunhua Zhong, Yujie Li, Qilong Sun, Bin Yi
4:35 -4:55PM	**The Algorithms of Predicting DNA Binding Site with Combined Feature Encoding and Optimum Decision** Zhendong Liu, Jun S. Liu, Dongqing Wei, Yanjie Wei, Rongjun Man
4:55 -5:15PM	**AttCON-Homo: Attention and PLMs-enhanced Neural Networks for Predicting Inter-chain Contacts and Distances in Homo-oligomeric Protein Complexes** Che Zhao, Shunfang Wang
5:15 -5:35PM	**Fast-scBatch: Batch Effect Correction Using Neural Network-Driven Distance Matrix Adjustment** Fu Chen, Leqi Tian, Teng Fei, Tianwei Yu
5:35 -5:55PM	**DANTE: Determining Adaptation trajectories in biological Networks Through Evolutionary mapping** Tamim Khatib, Oscar Diaz de la Rua, Kawthar Moria, Tamer Kahveci

Session Chair: Prof. Jinyan Li

Session 4B) ML for Omics Analyses (Rapid Fire)

Time	Session 4B ((深圳厅1 (2F Shenzhen Hall I))
3:55 -4:15PM	**MVFormer: Predicting the pathogenicity of missense variants using gated transformers** LiZongXuan, WengKui Huang, Hongdong Li
4:15 -4:35PM	**AlphaEpi: Enhancing B Cell Epitope Prediction with AlphaFold 3** Feng Jiang, Yuzhi Guo, Hehuan Ma, Saiyang Na, Weizhi An, Bing Song, Yi Han, Jean Gao, Tao Wang, Junzhou Huang
4:35 -4:55PM	**Cox-Path: Biological Pathway-Informed Graph Neural Network for Cancer Survival Prediction** Teng Ma, Haochen Zhao, Qichang Zhao, Jianxin Wang
4:55 -5:15PM	**A Co-contrastive Learning Method to Fuse Multi-modal Phenotypes and Identify Genetic Risk Variations** Muheng Shang, Yan Yang, Jin Zhang, Daoqiang Zhang, Lei Du
5:15 -5:35PM	**DCCNV: Enhanced CNV Detection in Single-Cell Sequencing Using Diffusion Process and Contrastive Learning** Mostafa Karami, Bingjun Li, Samson Weiner, Sahand Hamzehei, Sheida Nabavi
5:35 -5:55PM	**scMoE: single-cell mixture of experts for learning hierarchical, cell-type-specific, and interpretable representations from heterogeneous scRNA-seq data** Michael Huang, Yue Li

Session Chair: Prof. Jintao Meng

Session 5B) LLMs & Monitoring (Rapid Fire)

Time	Session 5B (深圳厅2 (2F Shenzhen Hall II))
3:55 -4:15PM	**TrialEnroll: Predicting Clinical Trial Enrollment Success with Deep & Cross Network and Large Language Models** Ling Yue, Sixue Xing, Jintai Chen, Tianfan Fu
4:15 -4:35PM	**MetaphorPrompt - An Analogical Reasoning Approach for Extracting Causal Links from Biological Text** Parth Patel, Yu-Chiao Chiu, Yufei Hunag, Jianqiu Zhang
4:35 -4:55PM	**ChatASD: A Dialogue Framework for LLMs Enhanced by Autism Knowledge Graph Retrieval** Lei Chu, Hongyan Wu, Yi Pan
4:55 -5:15PM	**iDNA-EBT: An ensemble model based on multi scale secondary fine-tuned BERT** Wei Peng, Yueran Hu, Zihan Zhao, Jingwen Yan, Hongwei Xia, Xiaolei Zhu
5:15 -5:35PM	**Enhancing Privacy Protection for Human Genome Synthesis Using Gradient Clipping** Kohei Hashimoto, Kana Shimizu
5:35 -5:55PM	**EEG-DIF: Early Warning of Epileptic Seizures through Generative Diffusion Model-based Multi-channel EEG Signals Forecasting** Zekun Jiang, Wei Dai, Qu Wei, Ziyuan Qin, Kang Li, Le Zhang
5:55 -6:15PM	**SeqBench: A Benchmark Suite for Lossless and Lossy Compression of Sequence Data** Taolue Yang, Youyuan Liu, Chong Li, Xinghua Shi, Sian Jin

Session Chair: Prof. Minghan Chen

Session 5C) Drug Discovery (Rapid Fire) & /Highlights

Time	Session 5C (贵宾厅3(2F Conference Room III))
4:20 -4:40PM	**PANACEA: Towards Influence-driven Profiling of Drug Target Combinations in Cancer Signaling Networks** Baihui Xu, Sourav S Bhowmick, Jiancheng Hu
4:40 -5:00PM	**Drug–gene associations with graph learning** Jiayang Wu, Wensheng Gan, Jinqi Lai, Guoting Chen, Philip S. Yu
5:00 -5:20PM	**DeePSP-GIN: identification and classification of phage structural proteins using predicted protein structure, pretrained protein language model, and graph isomorphism network** Muhit Islam Emon, Badhan Das, Ashrith Reddy Thukkaraju, Liqing Zhang
5:20 -5:40PM	**(Highlights) Histopathology Slide Indexing and Search—Are We There Yet?** Helen Shang, Mohammad Sadegh Nasr, Jai Prakash Veerla, Jillur Rahman Saurav, Amir Hajighasemi, Parisa BoodaghiMalidarreh, Manfred Huber, Chace Moleta, Jitin Makker, Jacob M Luber
5:40 -6:00PM	**(Highlights) A New Paradigm for Applying Deep Learning to Protein-Ligand Interaction Prediction** Liangzhen Zheng

Session Chair: Prof. Le Ouyang

Conference Banquet

Time	
6:30 – 8:30 PM	**Banquet dinner （国际厅 2F International Hall)**

ACM-BCB 2024 | November 25, 2024(Mon)

Keynote（国际厅 2F International Hall)

Time	Keynote 4 | Gang Pan, Professor, PhD, Zhejiang University
8:45- 9:30AM	**Cyborg Intelligence: Towards Convergence of the Brain and Machines**

Session Chair: Prof. Ye Li

Time	Keynote 5 | Jianqiang Li, Professor, PhD, Shenzhen University
9:30 - 10:15AM	**Data-driven intelligent system perception and decision**

Session Chair: Prof. Yanjie Wei

Time	Travel Award Presentation Session 2
10:35 -12:00AM	**TBD**

Session Chair: Prof. Ye. Li

Closing Remarks

Time	
12:00 - 12:15 AM	**Closing Remarks**

Session Chair: Profs. Yi Pan, May D Wang, Jianxin Wang, Ye Li, Yanjie Wei