
# 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

深圳理工大学
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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**

Department of Computer Science and Technology, Xidian University, China

**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 in the Department of Computer Science and Technology, Xidian University. 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 24, 2024(Sun)

**Jianqiang Li, Professor, PhD**

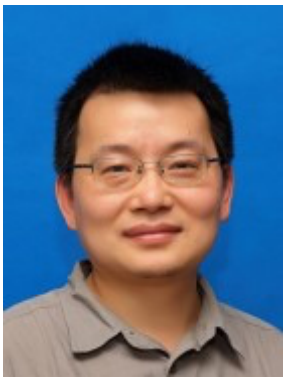
Shenzhen University, China

**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.

# 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.

# 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), 贵宾厅3(2F Conference Room III),* ***Organizers: Mario Cannataro, Giuseppe Agapito, Wes 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**<br>Prof. Guangjun Yu, Chinese University of Hongkong (Shenzhen) |
| 2:30-2:55 PM | **"DaYi" Medical Model for New Quality Productive Forces**<br>Prof. Shaoting Zhang, SenseTime Group Ltd |
| 2:55-3:20 PM | **Towards Developing AI Foundation Models for Medical Imaging**<br>Prof. Shanshan Wang, Shenzhen Institute of Advanced Technoloy, CAS |
| 3:20-3:45 PM | **Tea Break** |
| 3:45-4:10 PM | **Towards Multi-modality Medical Data Analysis: Explainability, Robustness, Security**<br>Prof. Yixuan Yuan, Chinese University of Hong Kong |
| 4:10-4:35 PM | **Causality-inspired Semi-supervised Medical Image Analysis**<br>Prof. Ruxin Wang, Shenzhen Institute of Advanced Technoloy, CAS |

**Organizers: Fen Miao (UESTC) & Dan Wu (SIAT)**

- *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**<br>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**<br>Jovial Niyogisubizo, Shenzhen Institute of Advanced Technology, CAS |
| 2:10 - 2:30PM | **The mechanism of carcinogenesis and the identification of driving factors based on dynamic network analyses**<br>Bolin Chen, Northwestern Polytechnical University |
| 2:30 - 2:50PM | **Predicting cancer recurrence and biomarker based on interpretable deep learning**<br>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**<br>Xiujuan Lei, Shaanxi Normal University |

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| 3:10 - 3:30PM | **Tumor heterogeneity analysis based on multi-omics integration**<br>Le Ou-Yang, Shenzhen University |
| 3:30 - 3:50PM | **Substructure-aware explainable prediction for drug-drug interactions**<br>Hui Yu, Northwestern Polytechnical University |

***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**<br>Yanni Sun, City University of Hong Kong |
| 1:55 - 2:20PM | **4CAC: 4-class classifier of metagenome contigs using machine learning and assembly graphs**<br>Lianrong Pu, Shandong University |
| 2:20 - 2:45PM | **MetaBinner and COMEBin: Recent Advances in MetaGenomic Contig Binning Algorithms**<br>Shanfeng Zhu, Fudan University |
| 2:45 - 3:10PM | **Can we use different features for metagenomic function prediction?**<br>Mingyu Wang, Shandong University |
| 3:10 - 3:35PM | **Med-PRSIMD: Enhanced Complex Disease Risk Prediction through Integrative Analysis of Multi-Type Data and Medical History Records**<br>Lu Zhang, Hong Kong Baptist University |
| 3:35 - 4:00pm | **Missense Mutation Effect Prediction using Categorical Boosting Optimized with Sparrow Search Algorithm**<br>Huiling Zhang, South China Agricultural University |

**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 | |
|---|---|---|
| 8:30AM - 8:45AM | Opening Remarks | 国际厅 (2F International Hall) |
| 8:45AM - 9:30AM | Keynote 1: Prof. Aidong Zhang, University of Virginia | |
| 9:30 AM - 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)) | 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 | |
|---|---|---|
| 8:45AM - 9:30AM | Keynote 3: Prof. Lin Gao, Xidian University | 国际厅 (2F International Hall) |
| 9:30 AM - 10:15AM | Keynote 4: Prof. Jianqiang Li, Shenzhen University | |
| 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)) **(4:20PM-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 | |
|---|---|---|
| 8:45AM - 9:30 AM | Keynote 5: Prof. Gang Pan, Zhejiang University | 国际厅 (2F International Hall) |
| 9:30 AM - 10:15 AM | Travel Award Presentation Session 1 | |
| 10:15 - 10:35 AM | Break | |
| 10:35 AM - 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**<br><br>Chair: Prof. Yi Pan<br>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 |
|---|---|
| 8:45AM - 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 AM - 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**<br>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**<br>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**<br>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 - 12:35 PM | **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**<br>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**<br>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**<br>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**<br>Qi Gao, Jialin Li, Guosheng Han, Li Zeng |
| 3:10 - 3:35PM | **Detecting and Subtyping Anomalous Single Cells with M2ASDA**<br>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**<br>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**<br>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**<br>Kaniz Madhobi, Eric Lofgren, Ananth Kalyanaraman |
| 2:45 - 3:10PM | **TimelyGPT: Extrapolatable Transformer Pre-training for Long-term Time-Series Forecasting in Healthcare**<br>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**<br>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**<br>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**<br>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**<br>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**<br>Yutian Xiao, Xiaomao Fan, Chongguang Yang, Yang Zhao |
| 5:15 - 5:35PM | **MFMF: Multiple Foundation Model Fusion Networks for Whole Slide Image Classification**<br>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**<br>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**<br>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**<br>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**<br>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**<br>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**<br>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**<br>Bolin Chen, Zhengyu Wang, ZiyuanLi |
| 5:35 - 5:55PM | **Towards Instructing Disease-Drug Link Prediction with Social Determinants of Health**<br>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**<br>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**<br>Ling Yue, Sixue Xing, Jintai Chen, Tianfan Fu |
| 4:20 - 4:45PM | **One-shot Biomedical Named Entity Recognition via Knowledge-Inspired Large Language Model**<br>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**<br>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**<br>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**<br>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, Xidian University |
|---|---|
| 8:45AM - 9:30AM | **Models and Algorithms for Single-cell Multi-omics Data Analysis** |

**Session Chair: Prof. Min Li**

| Time | Keynote 4 \| Jianqiang Li, Professor, PhD, Shenzhen University |
|---|---|
| 9:30 AM - 10:15AM | **Data-driven intelligent system perception and decision** |

**Session Chair: Prof. Yanjie Wei**

## 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**<br>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**<br>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**<br>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**<br>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**<br>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**<br>Mees Frensel, Zaid Al-Ars, H Peter Hofstee |

| | |
|---|---|
| 2:45 - 3:10PM | **Rethinking Radiology Report Generation via Causal Inspired Counterfactual Augmentation**<br>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**<br>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**<br>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**<br>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**<br>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**<br>Manas Das, Praveen Rao, Lisong Xu |
| 3:10 - 3:35PM | **RBVS: Database of the Receptor-Based Virtual Screening**<br>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**<br>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**<br>Kang Hu, Minghua Xu, Xin Gao, Jianxin Wang |
| 2:20 - 2:45PM | **mm2-gb: GPU Accelerated Minimap2 for Long Read DNA Mapping**<br>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**<br>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**<br>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 | **AttCON-Homo: Attention and PLMs-enhanced Neural Networks for Predicting Inter-chain Contacts and Distances in Homo-oligomeric Protein Complexes**<br>Che Zhao, Shunfang Wang |
| 4:15 - 4:35PM | **gPSRM: A generative propensity score-based replay memory for deep reinforcement learnings**<br>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**<br>Zhendong Liu, Jun S. Liu, Dongqing Wei, Yanjie Wei, Rongjun Man |
| 4:55 - 5:15PM | **Peptide Sequencing Via Protein Language Models**<br>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 |
| 5:15 - 5:35PM | **Fast-scBatch: Batch Effect Correction Using Neural Network-Driven Distance Matrix Adjustment**<br>Fu Chen, Leqi Tian, Teng Fei, Tianwei Yu |
| 5:35 - 5:55PM | **DANTE: Determining Adaptation trajectories in biological Networks Through Evolutionary mapping**<br>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**<br>LiZongXuan, WengKui Huang, Hongdong Li |
| 4:15 - 4:35PM | **AlphaEpi: Enhancing B Cell Epitope Prediction with AlphaFold 3**<br>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**<br>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**<br>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**<br>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**<br>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**<br>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**<br>Lei Chu, Hongyan Wu, Yi Pan |
| 4:55 - 5:15PM | **iDNA-EBT: An ensemble model based on multi scale secondary fine-tuned BERT**<br>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**<br>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**<br>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**<br>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**<br>Baihui Xu, Sourav S Bhowmick, Jiancheng Hu |
| 4:40 - 5:00PM | **Drug–gene associations with graph learning**<br>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**<br>Muhit Islam Emon, Badhan Das, Ashrith Reddy Thukkaraju, Liqing Zhang |
| 5:20 - 5:40PM | **(Highlights) Histopathology Slide Indexing and Search—Are We There Yet?**<br>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**<br>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 \| Gang Pan, Professor, PhD, Zhejiang University |
|---|---|
| 8:45AM - 9:30AM | **Cyborg Intelligence: Towards Convergence of the Brain and Machines** |

**Session Chair: Prof. Ye Li**

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

**Session Chair: Prof. May D. Wang**

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

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

**The Institute of Advanced Computing and Digital Engineering (IACDE) at the Shenzhen Institute of Advanced Technology (SIAT),** Chinese Academy of Sciences, was established in 2008. It is one of the core research units of the SIAT, and dedicated to scientific research and talent cultivation in fields related to computer science and artificial intelligence technology. The IACDW comprises 8 research centers and 19 national and provincial-level experimental platforms. It has gathered a high-level, international faculty team, focusing on big data and cloud computing, AI technology, and high-performance computing. The team consists of over 500 members, including nearly 100 PhD faculties. Among them, there are 10 nationally recognized leading talents, 11 researchers listed in the top 2% of global scientists, 8 IEEE/SIAM/AIMBE/IET/RSPH Fellows, and 3 academicians from the European Academy of Sciences/Eurasian Academy of Sciences.

IACDE has published over 3100 papers in total, including more than 1700 SCI papers, over 250 CCF A-class papers, and published more than 20 academic monographs. It has applied for over 1800 patents, with over 700 granted and 300 PCT patents. Many research achievements have been transformed into leading enterprises in the industry, such as Huawei, Tencent, and Sense Time. The cumulative industrial cooperation has exceeded 310 million yuan, and more than 10 high-tech enterprises have been incubated, each valued at over 100 million yuan. The institute has undertaken a number of national key projects, including the Ministry of Science and Technology's key research and development projects, 973, 863, the Chinese Academy of Sciences' pioneering projects, and the National Natural Science Foundation's key projects. It has secured over 1.5 billion yuan in research funding and completed over 250 national-level projects. The research achievements have won numerous provincial and municipal science and technology awards, including the first prize of the Guangdong Province Technical Invention Award and so on.

**The research centre for biomedical information technology (BIT) at the Shenzhen Institute of Advanced Technology (SIAT) CAS** focuses on basic researches of wearable devices and medical IoT (Internet of Things), health informatics, and biomedical big data. Facing the demands of preventive medicine, special medicine, precision medicine, regional and public healthcare services, the team aims to resolve key technologies of low-load physiological signal monitoring, remote health monitoring, massive health data mining, disease target discovering, and disease risk modeling etc., and thereby to establish a multi-level of 'individual-family-community-hospital' personalized health care system. We believe that all these key technologies will significantly facilitate the informationization of health industry and contribute to the public health in China.

**The Center for High Performance Computing Technology (HPC) at Shenzhen Institute of Advanced Technology (SIAT),** CAS was established in 2006 by Prof Jianping Fan who is the founding director of SIAT. The HPC center is dedicated to advancing high-performance computing (HPC) and data analytics techniques to enhance the speed and performance of domain-specific applications. These applications span a wide range of fields, including computational biology and bioinformatics, smart cities, weather forecasting, multimedia data processing, and graph computing. The HPC Center actively collaborates with leading international academic institutions, government agencies, and industry partners such as Argonne National Laboratory, Forschungszentrum Jülich, the University of Oklahoma, Shenzhen Meteorological Bureau, Guangdong CDC, Shenzhen CDC, Skyworth, and BGI, among others.

Leveraging its high-performance computing infrastructure, the HPC Center focuses on pioneering research in parallel computing, algorithm development and optimization, and artificial intelligence. It also supports applications in smart cities and biomedical data mining.

The center has attracted a talented team of researchers from both domestic and international backgrounds. Currently, the center is home to 16 faculty members, 15 postdocs/staff members and 60 more students.

**More can be found at https://hpcc.siat.ac.cn/**

**Faculty of Computer Science and Control Engineering, Shenzhen University of Advanced Technology**

Focusing on the forefront of world science and technology and responding to major national strategic needs, the Faculty of Computer Science and Control Engineering serves the construction of the Guangdong-Hong Kong-Macao Greater Bay Area, and the information technology industry in Shenzhen, and practices the concept of "New Engineering". The Faculty practices the new engineering concept featuring "Computing +X", promote the reform of engineering education and cultivate international, innovative and inter-disciplinary talents. It aims to build a domestically first-class and world-renowned computer science and technology major within a decade, serving the strategic needs of the nation, industry, and local development, with dynamic optimization and distinctive features.

The Faculty of Computer Science and Control Engineering is currently dedicated to recruiting high-level overseas talent and has established a high-level, multi-disciplinary and internationally influential teaching team, more than 80% of whom possess overseas teaching and research experience.The core team includes 4 overseas academicians, 8 national high-level talents, 1 national distinguished young scholar, 2 recipients of the National "May Day" Labor Medal, and 2 enjoying special allowances of the State Council.

The current research in the Faculty has produced remarkable outputs. The ongoing research projects feature distinctive interdisciplinary collaboration and have excellent capabilities of output transformation. In the past 3 years, it has undertaken 41 research projects with a total funding of RMB 140 million, including 8 projects from the Ministry of Science and Technology, 1 national major research instrument development project, 4 key projects from the National Natural Science Foundation, 2 high-level talent team projects in Shenzhen, and more. In the past 3 years, the Faculty focuses on basic theories and key technologies such as artificial intelligence, machine learning, data mining, data fusion, biological information, computer system structure, and computing theory. Relevant articles have been published in top academic journals and conferences including Nature Medicine, Nature Machine Intelligence, Nature Communications, Lancet Microbe, VLDB, ICDE, IEEE Transactions on Services Computing, ACM Computing Surveys, ACM SIGMOD, Computer Vision and Pattern Recognition, etc. Furthermore, it has won numerous scientific and technological awards, including the Second Prize of Wu Wenjun Artificial Intelligence, the First Prize of Shanghai Technical Invention, the First Prize of Guangdong Provincial Science and Technology Progress, the Second Prize of Shenzhen Technical Invention, and the Second Prize of Shenzhen Science and Technology Progress.

The Faculty currently has five departments: Department of Computer Science and Engineering, Department of Intelligent Science and Technology, Department of Robotics and Automation, Department of Electronic and Electrical Engineering, and Department of Computational Biology and Medical Big Data.


ACM SIGBIO is a leading international community dedicated to bioinformatics and computational biology, focusing on the integration of computer science with the life sciences. This community tackles complex computational challenges in biology by developing innovative algorithms, databases, software tools, and computational platforms, thereby supporting significant advancements in life sciences.

With the rapid development of high-throughput sequencing technologies, an increasing volume of sequencing data is being generated, ushering us into the era of biological big data. Recognizing the growing importance of bioinformatics, China and ACM SIGBIO have established ACM SIGBIO China to respond to these evolving trends. The primary objective of this community is to unite experts in bioinformatics and computational biology across China, enhancing China's research capabilities and international presence in this vital field. Furthermore, ACM SIGBIO China aims to facilitate academic exchange and collaboration among bioinformatics professionals, strengthen partnerships between academia and industry, and promote innovative educational models in bioinformatics. The community is committed to nurturing high-level talent with multidisciplinary expertise and creative problem-solving skills.

Through the dedicated efforts of ACM SIGBIO China, we aspire to drive groundbreaking advancements in this dynamic interdisciplinary field, making significant contributions to human health and the advancement of life sciences.

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## CCF Technical Committee of Bioinformatics

Bioinformatics is an interdisciplinary field that integrates information science and biology, dedicated to solving various complex problems in biology through the use of advanced technologies such as computer algorithms, databases, machine learning, and artificial intelligence. By developing high-performance software tools, database systems, and computational platforms, bioinformatics provides powerful technical support for addressing major challenges in life sciences and advancing bioengineering projects.

With the increasing integration of computational science and life sciences, and the advent of the era of big biological data, the Technical Committee of Bioinformatics, under the China Computer Federation (CCF), was established in response to these trends. The goal of this committee is to gather research expertise from the field of bioinformatics both domestically and internationally, to elevate China's research capabilities and international influence in this domain. Additionally, the committee aims to promote academic exchange and collaboration between bioinformatics professionals worldwide, strengthen close ties between academia and industry, explore innovative models of bioinformatics education, and cultivate high-level talent with interdisciplinary backgrounds and innovative abilities.

Through the relentless efforts of the CCF Technical Committee of Bioinformatics, China will achieve more groundbreaking progress in this cutting-edge interdisciplinary field, making greater contributions to human health and the advancement of life sciences.

### Director

Lin Gao
Xidian University

### Deputy Director

Min Li
Central South University

Guohua Wang
Northeast Forestry University

Fa Zhang
Beijing Institute of Technology

Secretary-General
Xuefeng Cui
Shandong University

中国人工智能学会
Chinese Association for Artificial Intelligence

生物信息学与
人工生命专委会

**The Introduction of Professional Committee of Bioinformatics and Artificial Life of the Chinese Association for Artificial Intelligence (CAAI)**

Professional Committee Name: Professional Committee of Bioinformatics and Artificial Life

Establishment Time (Approved by the Ministry of Civil Affairs): 2000

Current Person in Charge: Prof. Xiaowo Wang

Former Person in Charge: Prof. Changshui Zhang (2000-2014), Prof. Xuegong Zhang (2015-2024)

Governing Body: Department of Automation, Tsinghua University

The Professional Committee of Bioinformatics and Artificial Life of CAAI primarily conducts academic activities focused on bioinformatics and artificial life. This field represents an emerging academic direction both domestically and internationally. Many outstanding domestic scholars have made numerous significant contributions and achievements within this domain. The professional committee organizes scholars from this field to participate in important international academic conferences, engaging in academic exchanges with overseas counterparts. Additionally, it promotes communication and cooperation among domestic scholars through organizing national academic conferences. The chairperson Xiaowo Wang (Tsinghua University), vice-chairpersons include Hongbin Shen (Shanghai Jiao Tong University), Gang Pan (Zhejiang University), Xingming Zhao (Fudan University), Min Li (Central South University), Hongmin Cai (South China University of Technology), and Ying Wang (Xiamen University), and the Secretary-General is Hebing Chen (Academy of Military Medical Sciences).