Jian Chen

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EDUCATION

The University of Hong Kong, Electrical and Electronic Engineering **09.2025-08.2029**
Doctor of Philosophy (PhD) **Supervisor: Prof. C.H.E. Ngai**

- *Field of study:* Artificial Intelligence, Multi-modal Learning

Sun Yat-Sen University, School of Intelligent Systems Engineering **09.2022–06.2025**
Master of Engineering **Supervisor: Prof. Wei Wang**
Major: Communication and Transportation Engineering, Weighted GPA rank 1/18

- *Relevant courses*: Pattern Recognition and Machine Learning

Sun Yat-Sen University, School of Intelligent Systems Engineering **09.2018–06.2022**
BS in Engineering, Traffic Engineering GPA 3.7/5.0

- *Relevant courses*: C/C++, Data Structure, Machine Learning, Probability and Mathematical Statistics.

RESEARCH AREA

Multimodal Learning ,AI for Medicine /Healthcare, Affective Computing, Spatio-temporal Data Analysis and Prediction, Intelligent Transportation System,

AWARDS

- National Scholarships for Postgraduate Students (2023-2024)
- Student Scholarship of Undergraduate and Transportation Fund Scholarship (2020-2021).
- The First Prize Student Scholarship of Postgraduate (2022-2023).
- The First Prize Student Scholarship of Postgraduate (2023-2024).

PUBLICATION & MANUSCRIPT

My research focuses on AI for Medicine /Healthcare, Multimodal Learning and Spatio-temporal Data Analysis and Prediction. I am committed developing breakthroughs in multimodal learning for AI for healthcare and affective computing, which includes image, text, video, audio, ECG signal, and even other physiological signal data. I am exploring using the medical IoT especially the wearable devices to obtain data for smart healthcare. I also conduct research on spatio-temporal data analysis and prediction with graph neural networks.

- **Jian Chen**,Yuxuan Hu, Haifeng Lu, Wei Wang, Min Yang, Chengming Li, Xiping Hu. " MGHFT: Multi-Granularity Hierarchical Fusion Transformer for Cross-Modal Sticker Emotion Recognition". ACM MM 2025. ***(CCF A)***
- **Jian Chen**, Xiaoru Dong, Wei Wang, Shaorui Zhou, Lequan Yu, Xiping Hu. " DERI: Cross-Modal ECG Representation Learning with Deep ECG-Report Interaction". IJCAI 2025. ***(CCF A)***
- **Jian Chen,** Shaorui Zhou, Wei Wang, Yuzhu Hu, Jianqing Li, Ben-Guo He, Junxin Chen, Marwan Omar, Ali Kashif Bashir, Xiping Hu. "Vehicle Dynamics and Interaction for Trajectory Prediction and Traffic Control", ACM Trans. Auton. Adapt. Syst. 20, 2, Article 11 (June 2025), 19 pages. (CCF-B)
- **Jian Chen,** Wei Wang, Yuzhu Hu, Junxin Chen, Han Liu, and Xiping Hu. 2024. TGCA-PVT: Topic-Guided Context-Aware Pyramid Vision Transformer for Sticker Emotion Recognition. ACM MM 2024. ***(CCF-A)***
- **Jian Chen**, Yuzhu Hu, Qifeng Lai, Wei Wang, Junxin Chen, Han Liu, Gautam Srivastava, Ali Kashif Bashir, Xiping Hu. "IIFDD: Intra and inter-modal fusion for depression detection with multi-modal information from Internet of Medical Things". Information Fusion, 2024, 102: 102017. ***(IF 18.6, JCR***

Q1)

- **Jian Chen,** Li Zheng, Yuzhu Hu, Wei Wang, Hongxing Zhang, Xiping Hu. “Traffic flow matrix-based graph neural network with attention mechanism for traffic flow prediction”. Information Fusion, 2024, 104: 102146 ***(IF 18.6, JCR Q1)***
- **Jian Chen,** Wei Wang, Keping Yu, Xiping Hu, Ming Cai, Mohsen Guizani, "Node Connection Strength Matrix-Based Graph Convolution Network for Traffic Flow Prediction," in IEEE Transactions on Vehicular Technology, vol. 72, no. 9, pp. 12063-12074, Sept. 2023, doi: 10.1109/TVT.2023.3265300. ***(IF 6.8, JCR Q1)***
- **Jian Chen,** Wei Wang, Junxin Chen, Ming Cai, "Dynamic Vehicle Graph Interaction for Trajectory Prediction Based on Video Signals," ICASSP 2023 - 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Rhodes Island, Greece, 2023, pp. 1-5, doi: 10.1109/ICASSP49357.2023.10095089.
- **Jian Chen,** Wei Wang, Yuzhu Hu, Weihao Zheng, Thippa Reddy Gadekallu, Xiping Hu, and Gautam Srivastava. “GERECG: Graph Enhanced Representation Learning of ECG for Emotion Recognition”. IEEE Internet of Things Journal, 2024. ***(IF 10.6, JCR Q1)***
- More details about my recent publications can be found in my Google Scholar Page: https://scholar.google.com.hk/citations?user=aiz2feQAAAAJ&hl=zh-CN

RESEARCH EXPERIENCE

Depression detection and emotion recognition with multi-modal data.

Leader **02.2023-05.2024**

Supervisor: Prof. Wei Wang Affiliation: Institute of Artificial Intelligence, Shenzhen MSU-BIT Univ.

- Extracted hidden semantics and sentiments in multi-model data including text, audio, video of depression detection based on pre-trained language models.
- Designed the fusion method to fuse high-dimension features and low-dimension features for intra-modal fusion and a novel fusion attention to conduct inter-modal fusion.
- Exploring the relationship between emotion and image-text modal data stickers. Focuses on using topic information to prompt the model to mine the context features of stickers with the same topic.
- **Outcomes:**
- **Chen, Jian,** et al. "IIFDD: Intra and inter-modal fusion for depression detection with multi-modal information from Internet of Medical Things." ***Information Fusion 102 (2024): 102017. First author.***
- **Chen, Jian,** et al. “TGCA-PVT: Topic-Guided Context-Aware Pyramid Vision Transformer for Sticker Emotion Recognition.’’ ***ACM MM 2024 (CCF-A). First author.***
- **Chen, Jian,** et al. “MGHFT: Multi-Granularity Hierarchical Fusion Transformer for Cross-Modal Sticker Emotion Recognition.” ***ACM MM 2025 (CCF-A). Co-first author.***

ECG-based CVD detection and emotion recognition.

Leader **03.2023-present**

Supervisor: Prof. Wei Wang *Affiliation*: *Institute of Artificial Intelligence, Shenzhen MSU-BIT Univ.*

- Design methods to extracted the effective feature from the transformed signal and introduce additional loss to limited the information loss of the model.
- Learning Coarse-grained classification models (signal quality assessment) from Fine-grained classification Models (CVD classification) using knowledge distillation and transfer learning.
- 12-lead ECG signal restoration based on 1-lead ECG signal via diffusion model for CVD detection.
- **Outcomes:**

- **Chen, Jian,** et al. “GERECG: Graph Enhanced Representation Learning of ECG for Emotion Recognition”**,** ***Accepted by IEEE IoTJ with minor revision. (IF 10.6, JCR Q1) First author.***
- **Chen, Jian,** et al. “DERI: Cross-Modal ECG Representation Learning with Deep ECG-Report Interaction”. ***Accepted by IJCAI 2025 (CCF-A). First author.***
- **Chen, Jian,** et al. “From Fine to Coarse: Knowledge Distillation and Transfer Learning for 12-Lead ECG Classification with Cross-Domain Neural Network.” ***Submitted to IEEE JBHI (IF 7.7, JCR Q1). First author.***

Spatio-temporal data prediction of urban traffic based on graph neural network.

Leader **09.2021-02.2024**

Supervisor: Prof. Wei Wang *Affiliation*: *Institute of Artificial Intelligence, Shenzhen MSU-BIT Univ.*

- Based on network representation learning and traffic flow theory, design a deep learning method for predicting traffic network node flow, which performs well on PEMSD8 data set.
- Used GNN to capture the interaction between vehicles and designed a differential encoder to capture the kinematic attributes of the vehicle for trajectory prediction.
- **Outcomes:**
- **Chen, Jian, et al.** "Node Connection Strength Matrix-Based Graph Convolution Network for Traffic Flow Prediction." ***IEEE Transactions on Vehicular Technology (2023) First author.***
- **Chen, Jian, et al.** "Dynamic Vehicle Graph Interaction for Trajectory Prediction Based on Video Signals." ***ICASSP IEEE, 2023. CCF-B, First author.***
- **Chen, Jian,** et al. “Traffic flow matrix-based graph neural network with attention mechanism for traffic flow prediction.” ***Information Fusion 104 (2024): 102146. First author.***
- **Chen, Jian,** et al. “Vehicle Dynamics and Interaction for Trajectory Prediction and Traffic Control.” ***ACM TAAS, CCF-B, (IF 2.7, JCR Q2) First author***

SKILLS & PRIZES

- Skilled at coding in Python and applying the PyTorch framework.
- Ability to leverage knowledge and algorithms of deep learning.