

DONGDONG CHEN (陈东东)



Ph.D. | Male | 28

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EDUCATION

Shanghai Jiao Tong University (SJTU)

Shanghai, China

Ph.D. in Biomedical Engineering; Supervisor: [Lichi Zhang](#), [Qian Wang](#)

Sep. 2021 - Jun. 2025

Thesis: Multi-view Brain Network Fusion and Intelligent Diagnosis of Brain Diseases.

Xiamen University (XMU)

Xiamen, China

M.S. in School of Informatics; Supervisor: [Zhihong Zhang](#), [Edwin R. Hancock](#)

Sep. 2018– Jun. 2021

Thesis: Dynamic Directed Network Representation Learning Based on Motif

B.S. in School of Informatics; Supervisor: [Zhihong Zhang](#)

Sep. 2014– Jun. 2018

Thesis: Quantum-based Subgraph Convolutional Neural Networks

RESEARCH EXPERIENCE

Graph Convolutional Neural Network Learning

2017 – 2019

- Proposed a novel graph convolutional neural network architecture based on depth-based representation of graph structure deriving from quantum walks.
- Proposed a novel graph convolutional auto-encoder architecture that integrates the global topological structure and local connectivity information within a graph.
- Two papers accepted by *Pattern Recognition (PR)*.

Motif-based Graph Representation Learning

2019 – 2021

- Proposed a theoretical basis for motif-based graph representation learning, which derived novel measurement quantities by mapping the graph motifs into clusters in the thermodynamic system.
- Extended motif-based representations into directed graph field, and validated in anomaly detection for the stock market.
- One paper accepted by *PR*; One paper accepted by *Transactions on Neural Networks and Learning Systems (TNNLS)*.

Graph Representation Learning in Computer Vision

2021 – 2023

- Proposed a position-aware embedding network based on subgraphs for graph matching, which combined relative position information at the node level and high-order structural arrangement information at subgraph level.
- Proposed a centerline graph network for aneurysm global localization, which promoted the downstream local aneurysm segmentation.
- One paper accepted by *PR*; One paper submitted to *IEEE Transactions on Medical Imaging (TMI)* and currently in minor revision.

Graph Learning in Brain Network Analysis

2021 – 2024

- Dynamic Representation Learning
 - Proposed a dynamic graph modeling method for brain functional and effective connectivity.
 - Proposed a spatio-temporal graph neural network with brain functional and effective connectivity fusion for MCI diagnosis.
 - One paper accepted by *Medical Image Computing and Computer Assisted Interventions (MICCAI)*; One paper submitted to *Knowledge-Based Systems (KBS)* and currently in minor revision.
- Directed Representation Learning
 - Proposed a learnable subdivision method to encode brain networks into multiple latent feature subspaces, which extracted representations of brain networks in discrete subspaces.
 - Proposed a heterogeneous brain network modeling and representation method for brain cognitive disorder diagnosis.
 - One paper accepted by *MICCAI*; One paper submitted to *TNNLS* and currently in minor revision.
- Graph Structure Learning
 - Proposed a graph structure learner that adaptively characterizes general brain connectivity networks for various brain disorders.
 - Proposed a fundamental brain network analysis framework based on graph contrastive learning for multi-dataset brain disorder diagnosis.
 - One paper accepted by *MICCAI*; One paper submitted to *TMI* and currently under review.

ACTIVITIES

- **Journal Reviewer**
Pattern Recognition
Neural Networks
Engineering Applications of Artificial Intelligence
Journal of Complex Networks
Medical & Biological Engineering & Computing
- **Conference Reviewer**
Medical Image Computing and Computer Assisted Interventions (MICCAI)
Asian Conference on Computer Vision (ACCV)
IEEE International Symposium on Biomedical Imaging (ISBI)

ACHIEVEMENTS

- **Scholarships**
National Scholarship; Academic Excellence Scholarship; ‘Yi Xin’ Scholarship; ‘Yi Liu Wang An’ Scholarship;
- **Honors**
Merit Student Award (Yangzhou City); Outstanding Graduate Award (XMU); Merit Student Award (SJTU);
- **Awards**
Excellent Award (1st China Electronic Information Industry Innovation and Entrepreneurship Competition);
Silver Award (6th China International College Students ‘Internet+’ Innovation and Entrepreneurship Competition);
- **Patents**
A method for associating brain imaging with brain tissue genes; CN 118314966 A
Real-time positioning and control software for intelligent vehicles based on depth sensors; 2017SR307098

JOURNAL PUBLICATIONS

1. **Exploring Multi-Connectivity and Subdivision Functions of Brain Network via Heterogeneous Graph Network for Cognitive Disorder Identification**
Dongdong Chen, Mengjun Liu, Zhenrong Shen, Linlin Yao, Xiangyu Zhao, Zhiyun Song, Haolei Yuan, Qian Wang, Lichi Zhang.
IEEE Transactions on Neural Networks and Learning Systems, SCI Q1, (Minor Revision).
2. **Guiding Fusion of Dynamic Functional and Effective Connectivity in Spatio-Temporal Graph Neural Network for Brain Disorder Classification**
Dongdong Chen, Mengjun Liu, Sheng Wang, Zheren Li, Lu Bai, Qian Wang, Dinggang Shen, Lichi Zhang.
Knowledge-Based Systems, SCI Q1, (Minor Revision).
3. **Alterations in Brain Microstructure Among Children with Primary Monosymptomatic Nocturnal Enuresis: An Investigation Using Diffusion Kurtosis Imaging**
Xindi Lin[#], Yusong Sun[#], Dongdong Chen[#], Jiayao Shen, Di Wu, Yi Mao, Yuhan Wu, Jiayi Lu, Wei Zhong, Mengxing Wang, Lichi Zhang, Jun Ma.
American Journal of Psychiatry, SCI Q1, (Under Review).
4. **AASeq: Artery-aware Global-to-Local Framework for Aneurysm Segmentation in Head and Neck CTA Images**
Linlin Yao, Dongdong Chen, Xiangyu Zhao, Manman Fei, Zhiyun Song, Zhong Xue, Yiqiang Zhan, Bin Song, Feng Shi, Qian Wang, Dinggang Shen.
IEEE Transactions on Medical Imaging, SCI Q1, (Minor Revision).
5. **Whole Slide Cervical Cancer Classification via Graph Attention Networks and Contrastive Learning**
Manman Fei, Xin Zhang, Dongdong Chen, Zhiyun Song, Qian Wang, Lichi Zhang.
Neural Networks, SCI Q1, (Minor Revision).
6. **Enhancing Generative Models for Modality Imputation of 3D MRIs via Consistency-aware Refinement and Super-resolution Guidance**
Zhiyun Song, Xin Wang, Honglin Xiong, Mengjun Liu, Manman Fei, Xiangyu Zhao, Zhenrong Shen, Sheng Wang, Dongdong Chen, Linlin Yao, Qian Wang, Lichi Zhang.
IEEE Transactions on Neural Networks and Learning Systems, SCI Q1, (Under Review).
7. **Randomizing Human Brain Function Representation for Brain Disease Diagnosis**
Mengjun Liu[#], Huifeng Zhang[#], Mianxin Liu, Dongdong Chen, Zixu Zhuang, Xin Wang, Lichi Zhang, Daihui Peng, Qian Wang.
IEEE Transactions on Medical Imaging, SCI Q1, 2024.
8. **Hierarchical Encoding and Fusion of Brain Functions for Depression Subtype Classification**
Mengjun Liu[#], Huifeng Zhang[#], Mianxin Liu, Dongdong Chen, Rubai Zhou, Wenxian Lu, Lichi Zhang, Dinggang Shen, Qian Wang, Daihui Peng.

IEEE Transactions on Affective Computing, SCI Q2, 2024

9. **Position-aware and Structure Embedding Networks for Deep Graph Matching**
Dongdong Chen, Yuxing Dai, Lichi Zhang, Zhihong Zhang, Edwin R Hancock.
Pattern recognition, SCI Q1, 2023.
10. **基于时空分布映射的大规模电池健康状态研究**
王波, 陈东东, 张锦霞, 张之琛, 马星星, 张志宏.
智慧电力, 中文核心, 2022.
11. **Thermodynamic Motif Analysis for Directed Stock Market Networks**
Dongdong Chen, Xingchen Guo, Jianjia Wang, Jiatong Liu, Zhihong Zhang, Edwin R Hancock.
Pattern recognition, SCI Q1, 2021.
12. **Cluster Expansion Analysis for Dynamic Networks**
Jianjia Wang, Zhihong Zhang, Dongdong Chen, Edwin R Hancock.
New Ideas Concerning Science and Technology, 2021.
13. **Graph Motif Entropy for Understanding Time-evolving Networks**
Zhihong Zhang, Dongdong Chen (first student author), Lu Bai, Jianjia Wang, Edwin R Hancock.
IEEE Transactions on Neural Networks and Learning Systems, SCI Q1, 2020.
14. **Depth-based Subgraph Convolutional Auto-encoder for Network Representation Learning**
Zhihong Zhang, Dongdong Chen (first student author), Zeli Wang, Heng Li, Lu Bai, Edwin R Hancock.
Pattern Recognition, SCI Q1, 2019.
15. **Quantum-based Subgraph Convolutional Neural Networks**
Zhihong Zhang, Dongdong Chen (first student author), Jianjia Wang, Lu Bai, Edwin R Hancock.
Pattern Recognition, SCI Q1, 2019.

CONFERENCE PUBLICATIONS

1. **Self-supervised Learning with Adaptive Graph Structure and Function Representation For Cross-Dataset Brain Disorder Diagnosis**
Dongdong Chen, Linlin Yao, Mengjun Liu, Zhenrong Shen, Yuqi Hu, Zhiyun Song, Qian Wang, Lichi Zhang.
International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2024.
2. **Affinity Learning Based Brain Function Representation for Disease Diagnosis**
Mengjun Liu, Zhiyun Song, Dongdong Chen, Xin Wang, Zixu Zhuang, Manmn Fei, Lichi Zhang, Qian Wang.
International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2024.
3. **Consistent 3D Medical Image Inpainting via Implicit Representation and Multi-View Sampling**
Yuqi Hu, Zhenrong Shen, Zhiyun Song, Dongdong Chen, Qian Wang, Lichi Zhang.
International Conference on Information Communication and Signal Processing, ICICSP 2024.
4. **Learnable Subdivision Graph Neural Network for Functional Brain Network Analysis and Interpretable Cognitive Disorder Diagnosis**
Dongdong Chen, Mengjun Liu, Zhenrong Shen, Xiangyu Zhao, Qian Wang, Lichi Zhang.
International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2023.
5. **Learnable Subdivision Graph Neural Network for Functional Brain Network Analysis and Interpretable Cognitive Disorder Diagnosis**
Dongdong Chen, Lichi Zhang.
International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2023.
6. **One-shot Traumatic Brain Segmentation with Adversarial Training and Uncertainty Rectification**
Xiangyu Zhao, Zhenrong Shen, Dongdong Chen, Sheng Wang, Zixu Zhuang, Qian Wang, Lichi Zhang.
International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2023.
7. **FES-RF: A Feature Ensemble Selection Based Random Forest Method for Accurate Cancer Screening**
Jiatong Liu, Changbin Pan, Dongdong Chen, WeiPing Lin, Shangyuan Feng, Sufang Qiu, Beizhan Wang, KunHong Liu.
IEEE International Conference on Bioinformatics and Biomedicine, BIBM 2021.
8. **Automatic Terrain Generation System Based on Path Search Optimization**
Jiatong Liu, Dongdong Chen, Chengyou Zhang, Duyang Li, Xiaoyan Zhang.
International Conference on Computing and Data Science, CONF-CDS 2021.