# 王韬

## 基本信息


**脑机交互与人机共融海河实验室，青年PI，天津大学硕士生导师**

**中国科协青年人才托举工程博士生专项计划入选人**

**联系方式:** (+86) 150-9330-2113

**邮箱:** taowang2021@tju.edu.cn

**主页:** https://taowang-academic.me/


## 教育背景

**天津大学** – 中国 — 2021.09 – 2025.06
智能医学工程 (在读博士) — 导师：刘爽

**南洋理工大学** – 新加坡 — 2024.01 – 2025.01
计算机科学 (联合培养博士) — 导师：Erik Cambria

**兰州大学** – 中国 — 2018.09 - 2021.07
电子与通信工程 (硕士) — 导师：彭宏

**郑州大学** – 中国 — 2014.09 - 2018.07
测控技术与仪器 (本科) — 导师：田增国

## 研究内容

- **情感脑机接口：**情感脑机接口的神经解耦与跨模态自适应建模方法，重点研究其在精神疾病诊疗、闭环神经康复以及人机交互中的理论与应用落地。
- **多模态融合：**结合多模态生理信号，利用深度学习和多模态融合算法，提升人机交互系统的情绪感知与决策能力，并研究其在健康评估与诊疗领域的应用。
- **可解释深度学习：**构建可解释的深度学习模型，提升神经网络在脑机接口、疾病诊断中的透明度与可靠性，增强模型的可解释性与临床应用价值。

## 期刊论文

- **以第一作者/共同一作发表 SCI 论文 7 篇（4 篇一区 TOP，2 篇二区 TOP），发表 EI 论文 2 篇（1 篇认知计算领域顶会）**

1. **T. Wang,** H. Lu, J. Duan, T. Meng, R. Mao, S. Liu*, and D. Ming*, Explainable Affective Body Expression Recognition with Multi-Scale Spatiotemporal Encoding and LLM-Based Reasoning [J]. IEEE Transactions on Affective Computing, 2026. (SCI 一区 TOP, impact factor = 10.2)

2. **T. Wang**, R. Mao*, S. Liu*, E. Cambria and D. Ming, Explainable multi-frequency and multi-region fusion model for affective brain-computer interfaces [J]. Information Fusion, 2025, 118: 102971. (SCI 一区 TOP, impact factor =14.7)
3. **T. Wang**, S. Liu*, F. He, W. Dai, M. Du, Y. Ke, and D. Ming*, Emotion Recognition From Full-body Motions Using Multiscale Spatio-Temporal Network [J]. IEEE Transactions on Affective Computing, 2024, 15(3): 898 - 912. (SCI 一区 TOP, impact factor = 10.2)
4. **T. Wang,** S. Liu*, F. He, M. Du, W. Dai, Y. Ke, and D. Ming, Affective body expression recognition framework based on temporal and spatial fusion features[J]. Knowledge-Based Systems, 2025, 308: 112744. (SCI 一区 TOP, impact factor = 7.2)
5. **T. Wang**, C. Li, C. Wu, C. Zhao, J. Sun, H. Peng*, X. Hu* and B. Hu*, A Gait Assessment Framework for Depression Detection Using Kinect Sensors [J]. IEEE Sensors Journal, 2021, 21(3): 3260-3270. (SCI 二区 TOP，impact factor =4.3)
6. X. Wang[#], R. Hu[#], **T. Wang[#]**, Y. Chang, X. Liu, M. Li, Y. Gao, S. Liu*, and D. Ming, Resting-State Electroencephalographic Signatures Predict Treatment Efficacy of tACS for Refractory Auditory Hallucinations in Schizophrenic Patients[J]. IEEE Journal of Biomedical and Health Informatics, 2025, 29(3): 1886 - 1896. (共同一作，SCI 二区 TOP, impact factor = 6.7)
7. R. Mao, **T. Wang***, X. Zhang, X. Li, E. Cambria. Cognitive Mechanisms in Loan Marketing: Insights from Concept Mappings[C]. 2025 Proceedings of the Annual Meeting of the Cognitive Science Society (CogSci). 2025, 47. (通讯作者，认知计算顶会，CCF-B)
8. **T. Wang**, J. Sun, J. Chao, S. Zheng, C. Zhao, C. Wu, H. Peng*, A Novel Gait Analysis Method Based on The Pseudo-velocity Model for Depression Detection [C]. 2020 IEEE International Conference on E-health Networking, Application & Services (HEALTHCOM), Shenzhen, China, 2021, pp. 1-6.
9. J. Fang[#], **T. Wang[#]**, C. Li, X. Hu*, E. Ngai, B. Seet, J. Chen, Y. Guo and X. Jiang*, Depression prevalence in postgraduate student and its association with gait abnormality [J]. IEEE Access, 2019, 7: 174425–174437. (共同一作，SCI 二区. impact factor =3.476)
10. R. Mao, **T. Wang**, E. Cambria, Decoding metaphors and brain signals in naturalistic contexts: An empirical study based on EEG and MetaPro [C]. Proceedings of the Annual Meeting of the Cognitive Science Society (CogSci). 2025, 47. (认知计算顶会，Oral, CCF-B)
11. W. Dai, **T. Wang**, F, Yan, X. Liu, S. Liu*, Fusion Network Modeling for Cross-Time Emotion Recognition from EEG[C]. Proceedings of the 2023 10th International Conference on Biomedical and Bioinformatics Engineering (ICBBE). 2023: 162-167.
12. M. Du[#], S. Liu[#], **T. Wang**, W. Zhang, Y. Ke, L. Chen, and D. Ming*, Depression Recognition Using A Proposed Speech Chain Model Fusing Speech Production And Perception Features [J]. Journal of Affective Disorders, 2023, 323: 299-308. (SCI 二区, impact factor =6.533)
13. M. Du, W. Zhang, **T. Wang**, S. Liu*, D. Ming*, An Automatic Depression Recognition Method from Spontaneous Pronunciation Using Machine Learning[C]. Proceedings of the 9th International Conference on Biomedical and Bioinformatics Engineering (ICBBE), Vienna, Austria, 2022, pp.133-139.
14. C. Zhao, C. Li, J. Chao, **T. Wang**, C. Lei, J. Liu, H. Peng*, F-score Based EEG Channel Selection Methods for Emotion Recognition[C]. IEEE International Conference on E-health Networking, Application & Services (HEALTHCOM), Shenzhen, China, 2021, pp. 1-6.
15. H. Peng, C. Li, J. Chao, **T. Wang**, C. Zhao, X. Huo and B. Hu*, A Novel Automatic Classification Detection for Epileptic Seizure based on Dictionary Learning and Sparse Representation [J]. Neurocomputing, 2021, 424: 179-192. (SCI 二区，impact factor =5.779)
16. C. Wu, J. Sun, **T. Wang**, C. Zhao, S. Zheng, C. Lei, H. Peng*, An Application of Affective Computing on Mental Disorders: A Resting State fNIRS Study [J]. IFAC-PapersOnLine, 2020, 53(5): 464-469.
17. S. Zheng, C. Lei, **T. Wang**, C. Wu, J. Sun, H. Peng*, Feature-level Fusion for Depression Recognition

Based on different fNIRS Data [C]. 2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Seoul, Korea (South), 2020, pp. 2906-2913.

## 工作论文

1. P. Wang[#], **T. Wang[#]**, L. Shen, Y. Xing, H. Chen and D. Tao, Explainable Anomaly Detection and Lesion Localization for ADHD in MRI Using Topological Features [J]. Pattern Recognition, 2025. (SCI 一区 TOP, impact factor = 7.6，Under Review)
2. **T. Wang**, S. Liu*, D. Ming*, Adaptive Cross-View EEG Fusion of External Scalp and Internal Neural Representations for Affective Brain-Computer Interfaces. Information Fusion. (SCI 一区 TOP, impact factor = 14.7，Under Review)

## 发明专利

1. **王韬**，何峰，明东，刘爽，戴维娜，柯余峰，基于人体运动姿态非线性空间特征的情绪识别方法及装置（发明专利，ZL202210298674.9，授权日：2024.05.31）
2. 刘爽; **王韬**; 刘潇雅; 何峰，基于多尺度脑网络解码模型的情绪识别方法、系统及终端（发明专利，ZL202510799985.7, 授权日：2024.06.21）
3. 刘爽，**王韬**，明东，何峰，柯余峰，一种基于运动姿态伪能量模型的自动情绪识别方法及装置（发明专利，ZL202210282815.8，授权日：2024.06.21）

## 项目成果

2025.10-2027.10 面向情感脑机接口的可解释性深度迁移学习解码模型研究（天津市科技计划项目，NO. 25HHNJSS00004，**主持**）

2022.11-2023.11 基于运动姿态的情绪识别及抑郁症评估研究（天津市研究生科研创新项目，NO. 2022BKY053，**主持**/结项获评优秀）

2023.05-2025.08 基于身体姿态运动的情绪识别及抑郁症评估研究（天津大学顶尖博士学位论文国际化培育项目，**主持**）

2023.11-2026.10 超微生机交互系统高通量读译控关键技术及应用（科技部国家重点研发计划，NO. 2023YFF1203700，参与）

2020.01-2024.12 神经工程（国家杰出青年科学基金，NO. 81925020，参与）

2022.11-2023.11 基于 gamma 频段听觉稳态诱发响应的抑郁症动态脑网络研究（天津市研究生科研创新项目，NO. 2022BKY062，参与）

2023.05-2024.05 基于多模态参数进行****评估（武警特色医学中心创新项目，NO. KY******-005，参与）

2019.01-2021.01 精神 **** 系统(国防科技创新特区项目，NO. 19-163-******-001，参与)

2019.01-2022.01 基于心理生理多模态信息的抑郁障碍早期识别与干预方法（国家重点研发计划“变革性技术关键科学问题”重点专项，2019YFA0706200，参与）