



李明东

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About Me

我拥有 机械工程 和 计算神经科学 求学背景; 我的研究兴趣在于 **Brain-machine Interface, NeuroAI, Robotics**; 我的博士课题是基于点过程滤波 (point process filtering) 分析神经群体编码和脑机接口系统; 我当前工作主要关注于触觉传感器和融合触觉模态的灵巧操作; 我享受探索新领域和产品规划。

教育经历

- 2021.09 – 2025.10 香港科技大学
Ph.D in Robotics and Autonomous Systems (IIP Program)
Thesis: Modeling Functional Neural Connectivity in Point Process Filtering for Brain-machine Interface
导师: 王怡雯、陈启峰 (co-supervisor)
- 2018.09 – 2021.04 浙江大学, 学硕 (机械设计及理论)
导师: 冯毅雄 (长江学者, 谭建荣院士团队)
- 2013.09 – 2018.07 同济大学, 本科 (机械设计制造及其自动化, 试验班 5 年制)

工作经历

1. 安克创新 (灵巧手实验室, 触觉传感器算法实习生) 2025.04 – 至今
- 负责 UMI 夹爪触觉集成设计, 开发触觉传感表征算法和灵巧操作算法
 - 触觉传感器洞察、测试与研发规划
 - LLM 具身智能文献和学者信息总结工具开发

项目经历

1. 针对侵入式脑机接口的点过程滤波及神经群体编码研究 (博士课题) 2021-2025
2. 基于 CoppeliaSim 的 ROS-SLAM 仿真 (SLAM, 目标检测识别, 视觉伺服) 2022
3. 产品方案智能设计 (硕士课题, 设计文档分析, 机器学习方案求解和 EEG 分析) 2018-2021
4. 智能手机 IMU + Matlab Mobile 步数测量与运动轨迹重建 2019
5. 上海市大学生创新创业计划项目 (糖果包装机产品设计与样机搭建) 2015-2016

获奖情况

1. HKUST ECE Future Leader 2025
2. German Academic Exchange Service (DAAD) Alnet fellowship (AI4Science) 2024
3. NextGen Scholar Award (IEEE Annual International Conference of EMBS) 2024
4. 浙江大学研究生毕业奖学金 (毕业学年 Top 1%) 2021
5. 之江杯全球人工智能竞赛 (行人多目标跟踪算法开发, 优胜奖 10/233) 2019
6. 第七届全国大学生机械产品创新设计竞赛, 一等奖 2016
7. 同济大学学业奖学金, 二等、三等奖 2013-2018

个人技能

- Coding:** Python / Matlab / Pytorch toolbox
- 产品设计:** AutoCAD / Inventor / Solidworks / Ansys
- 语言:** 中文、英文、德语
- 兴趣爱好:** 足球、羽毛球、徒步、二胡

Publications

[Working Papers]:

1. **Mingdong Li**, Zhiwei Song, Shuhang Chen, Xiang Zhang, Yiwen Wang*. Dynamic Functional Neural Connectivity Inference for Multi-Task Neuroprosthetic Control in a Point Process Filter, **IEEE Transactions on Biomedical Engineering (TBME)**. (under revision)

[Journals]:

1. Shenghui Wu, Zhiwei Song, Xiang Zhang, Yifan Huang, Shuhang Chen, Xiang Shen, Jieyuan Tan, **Mingdong Li**, Ziyi Wang, Yujun Chen, Kai Liu, Dario Farina, Jose Principe, Yiwen Wang*. A generative spike prediction model using behavioral reinforcement for re-establishing neural functional connectivity, **Nature Computational Science**, 2025.
2. Zhiwei Song, Xiang Zhang, **Mingdong Li**, Jieyuan Tan, Yiwen Wang*. An Online Knowledge Transfer Framework for Task Learning in Brain-Machine Interfaces, **IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE)**, 2025.
3. **Mingdong Li**, Shuhang Chen†, Xiang Zhang, Yiwen Wang*. Neural Correlation Integrated Adaptive Point Process Filtering on Population Spike Trains, **IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE)**, 2025. (†: co-first author)
4. **Mingdong Li**, Shanhe Lou*, Hao Zheng, Yixiong Feng, Yicong Gao, Siyuan Zeng, Jianrong Tan. A Cognitive Analysis-based Key Concepts Derivation Approach for Product Design, **Expert Systems With Applications (ESWA)**, 2024.
5. **Mingdong Li**, Shanhe Lou*, Yicong Gao, Hao Zheng, Bingtao Hu, Jianrong Tan. A Cerebellar Operant Conditioning-inspired Constraint Satisfaction Approach for Product Design Concept Generation, **International Journal of Production Research (IJPR)**, 2023.
6. Xuanyu Wu, Zhaoxi Hong*, Yixiong Feng, **Mingdong Li**, Shanhe Lou, Jianrong Tan. A Semantic Analysis-driven Customer Requirements Mining Method for Product Conceptual Design, **Scientific Reports (Sci. Rep.)**, 2022.
7. Yixiong Feng, **Mingdong Li**, Shanhe Lou*, Yicong Gao, Jianrong Tan. A Digital Twin-Driven Method for Product Performance Evaluation Based on Intelligent Psycho-Physiological Analysis, **ASME Journal of Computing and Information Science in Engineering (JCISE)**, 2021.

[Conferences & Patents]:

1. **Mingdong Li**, Tianyi Hu, Zhiwei Song, Mingyi Wang, Shenghui Wu, Jieyuan Tan, Zixu Wang, Yiwen Wang*. Estimating Neural Representations Underlying Behaviors via Point Process Filtering in Brain-machine Interface Task Learning, **IEEE EMBS 12th Annual International Conference on Neural Engineering (NER)**
2. **Mingdong Li**, Mingyi Wang, Yiwen Wang*. An Adaptive Superposition Point Process Model with Neuronal Encoding Engagement Identification, **2024 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)**. (Oral)
3. **Mingdong Li**, Shuhang Chen, Zhijia Zhao, Yiwen Wang*. Tracking the Dynamic Functional Neural Connectivity via Conjugate Gradient Optimization, **2023 45th EMBC**. (Oral)
4. **Mingdong Li**, Shuhang Chen, Xi Liu, Zhiwei Song, Yiwen Wang*. Modeling Neural Connectivity in a Point-Process Analogue of Kalman Filter, **2022 44th EMBC**.
5. Y. Feng, **Mingdong Li**, Y. Gao. CN110090818B, 发明专利授权, 2020
6. M. Li, Y. Zhang, N. Xu, **Mingdong Li**, S. Liu. CN106127958B, 发明专利授权, 2018

Service

- 审稿人:
 - Journal of Neural Engineering (JNE), IEEE Transaction on Intelligent Vehicles (TIV)
 - Conference: EMBC, ISBI, NER
- 课程助理:
 - EMIA4110 Practical Machine Learning 2024 Spring
 - ELEC4130 Machine Learning on Images 2023 Spring
- 会议/论坛组委会:
 - 3rd and 4th International Workshop on Neural Engineering & Rehabilitation