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医学博士，研究员，博士生导师
中国科学院自动化所，研究员\PI
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个人简介

长期致力于脑影像与脑图谱的研究，建立了新一代脑图谱构建的理论和方法框架，成功绘制出脑网络组图谱并建立了其验证体系与应用示范。目前在该研究方向上，完成了一系列高质量的研究工作，在包括 *Molecular Psychiatry*、*Cell Reports*、*The Innovation*、*Journal of Neuroscience* 等高水平期刊发表论文 90 余篇，其中以通讯及第一作者(含共同)发表论文 30 余篇，作为负责人承担包括科技创新 2030“脑科学与类脑研究”重大项目课题、国家自然科学基金以及中国科学院先导专项课题等项目。作为核心完成的人类脑网络组图谱得到了国内外同行的广泛认可和高度评价，研究成果被 Science、Nature Reviews Neuroscience 等国际一流杂志正面引用和评述，入选了两院院士评选的中国十大科技进展新闻、中国十大医学进展、中科院改革开放四十年 40 项标志性科技成果，以及北京市自然科学奖一等奖，个人荣获了 “中国青年解剖科学家奖”， “李继硕教授青年优秀论文一等奖” 等荣誉，并入选中科院青促会培养计划以及中科院脑智卓越创新中心年轻骨干。

工作经历

- 2018/10- 至今， 中国科学院自动化研究所，研究员 PI/国科大岗位教授
- 2014/10- 2018/10，中国科学院自动化研究所，副研究员/国科大岗位副教授
- 2013/05- 2014/10，中国科学院自动化研究所，助理研究员
- 2011/01- 2013/05，中国科学院自动化研究所，博士后

教育经历

- 2005/09-2010/12，博士（硕博连读），山东大学医学院
- 2008/09-2009/09，联合培养博士，加拿大 McGill 大学蒙特利尔神经病学研究所
- 2000/09-2005/07，学士，滨州医学院临床医学专业

社会兼职

- 2018-12-01-今，中国解剖学会脑网络组分会委员，副主任委员
- 2017-12-31-今，中国解剖学会断层影像解剖学分会委员，常务委员
- 2023-07-26-今，中国计算机学会数字医学分会，执行委员
- 2019-11-01-今，中国医师协会青年委员会，副主任委员
- 2018-12-01-今，中国解剖学会青年委员会，常务委员
- 2018-11-10-今，中国研究型医院学会脑功能研究与转化分会委员，委员
- 2022-12-01-今, Youth Editor, The Innovation/ The Innovation Medicine
- 2024-01-01-今, Editor, Journal of Aging and Rehabilitation

- 杂志邀请评审: *Nature Communications, Biological Psychiatry, Journal of Neuroscience, The Innovation, PLoS Biology, Cerebral Cortex, Neuroimage, Human Brain Mapping, Neuroscience, PLoS ONE, Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, Scientific Data, Brain Structure & Function, Neuroscience, Neuroscience Bulletin, Frontier in Human Neuroscience, Frontiers In Neuroinformatics, Frontiers In Neuroanatomy, Brain Research, Scientific Reports.*

奖励&荣誉

- 2021 年荣获北京市自然科学奖一等奖（排名第 3）
- 2020 年荣获中国人工智能学会年度优秀成果奖（排名第 2）
- 2018 年荣获山东省科技进步二等奖 (排名第 6)
- 2018 荣获中国图象图形学会科学技术二等奖(排名第 2)
- 2018 年荣获“李继硕教授青年优秀论文“一等奖
- 2017 年荣获中国解剖学会第三届"中国青年解剖科学家奖"
- 2017 年入选中国科学院“青年创新促进会会员”培养计划

科研项目

在研项目：

- 脑图谱大数据分析与建模(项目)-跨物种脑图谱比较研究(课题)，**主持**，**科技创新 2030—“脑科学与类脑研究”重大项目课题**，2021-12—2026-12, **800 万元**
- 融合自编码与图神经网络的多模态个体化脑图谱构建与临床适用性评估，**主持**, **国家自然基金面上项目**, 2025-01--2028-12，**60 万**
- 基于磁共振影像高等灵长类大脑联络皮层的跨物种比较研究，**主持**, **国家自然基金面上项目**, 2021-01--2024-12，**54 万**

已结题项目：

- 脑科学研究新技术：个体化脑图谱构建及应用，**主持**, **科学院先导 B 项目子课题**, 2020-01--2023-12，**126 万**
- 脑认知检测与调控(情绪功能脑网络组图谱)，**主持**, **JKW 基础加强项目课题**, 2019-12--2023-12，**500 万**
- 个体化注意功能脑网络组图谱绘制及脑功能检测与调控设备研发，**主持**，**HY 行动项目**，2021.12-2023.12, **130 万**
- 精细亚区尺度难治性抑郁症异常神经环路的多模态 MRI 解析，**主持**, **国家自然基金青年项目**, 2016-01--2018-12，**22.6 万**
- 高级认知功能跨物种比较研究，**主持**, 北京市高精尖, 2020-01--2021-12，**20 万**
- 中国科学院青年促进会，**主持**, 科学院人才项目, 2017-01--2020-12，**80 万**
- 语言功能的脑网络组图谱研究，**主持**, **973 项目子课题**, 2014-08--2016-12,**164 万**
- 人脑重要功能重塑精细动态图谱的构建，**主持**, **北京市科委脑医学项目**, 2017-01--2019-12，**150 万**

研究生指导

在读学生

- 李德莹，博士研究生，模式识别与智能系统

  研究方向：**脑结构连接的时空组织规律解析及其功能行为关联研究**
- 吴　霞，博士研究生，模式识别与智能系统

  研究方向：**基于弥散 MRI 的脑白质损伤定量评估及其临床转归的个体化预测**
- 赵前德，博士研究生，电子信息

  研究方向：**应用神经成像与深度神经网络探索物体表征和语义表征的整合机制**
- Camilla T Erichsen，博士研究生，神经生物学 （Aarhus University 联培）

  研究方向：**Brodmann Area layer III in schizophrenia and depression**
- 高超宏，博士研究生，认知神经科学

  研究方向：**个体化人类丘脑图谱绘制及其应用**
- 王玓璠，博士研究生，模式识别与智能系统

  研究方向：**跨物种脑网络组图谱绘制及进化比较**
- Bianka Rumi，博士研究生，认知神经科学（Technical University of Denmark 联培）

  研究方向：**Investigating TMS treatment approaches in Major Depressive Disorder across coil types and settings**
- 刘一男，博士研究生，模式识别与智能系统
- 王凯凯，博士研究生，模式识别与智能系统
- 张正捷，博士研究生，智能医学工程（康复大学与北航联培）
- 韦亚辉，博士研究生，模式识别与智能系统
- 徐一翀，博士研究生，模式识别与智能系统
- 梁皓烙，硕士研究生，认知神经科学

  研究方向：**基于复杂度下降事件的发育期青少年大脑局部神经活动动态性研究**
- 郑丽婷，硕士研究生，认知神经科学

  研究方向：**小脑经颅磁刺激的线圈刺激效应评估与位姿优化的研究**
- Mihaela Gruia，硕士研究生，认知神经科学（Aarhus University 联培）

  研究方向：**Beta bursts in the sensory-motor cortex for the control of steady state contraction**
- 高　妍，硕士研究生，医学影像技术

已指导学生

- 王亚平，博士研究生，神经生物学，毕业去向：荷兰 Donders 脑认知行为研究所

  研究方向：**人类小脑功能组织模式的遗传基础及精神分裂症大-小脑环路失连接研究**
- 李　刚，硕士研究生，计算机技术，毕业去向：维沃（Vivo）移动通信有限公司

  研究方向：**多模态个体化人类丘脑图谱绘制**
- 唐　洁，硕士研究生，神经生物学，毕业去向：北京联影医疗科技有限公司

  研究方向：**基于岛叶亚区形态学测量的跨精神疾病研究**
- 柴　霖，硕士研究生，模式识别与智能系统，毕业去向：微软（中国）有限公司

  研究方向：**精神分裂症小脑结构与功能异常的多模态 MRI 解析**
- 张　朕，硕士研究生，天津大学（联培），毕业去向：中铁十二局集团有限公司
- 陈　成，硕士研究生，天津大学（联培），毕业去向：小米科技有限公司

课程讲授情况

脑网络组学基础与应用
国科大人工智能学院，**研究生课程**，15 学时/年，2018 年-至今
Basic Neuroscience: Neuroanatomy
国科大中丹学院，**研究生课程**，12 学时/年，2019 年-至今
认知神经科学
国科大人工智能学院，**本科生课程**，36 学时/年，2023 年-至今

论文发表情况

已发表论文（通讯与第一作者(含共同)）*Peer Reviewed Articles*

1. Wang Y, Cheng L, Li D, Lu Y, Wang C, Wang Y, Gao C, Wang H, Vanduffel W and Hopkins WD, Sherwood CC, Jiang T, Chu C*, **Fan L***. The Chimpanzee Brainnetome Atlas reveals distinct connectivity and gene expression profiles relative to humans. **The Innovation**. 2025, DOI: https://doi.org/10.1016/j.xinn.2024.100755. (***Corresponding author**)

2. Li D, Wang Y, Ma L, Wang Y, Cheng L, Liu Y, Shi W, Lu Y, Wang H and Gao C, Chu C*., and **Fan L***. Topographic Axes of Wiring Space Converge to Genetic Topography in Shaping Human Cortical Layout. **Journal of Neuroscience**. 2025, e1510242024; DOI: 10.1523/JNEUROSCI.1510-24.2024. (***Corresponding author**)

3. Wang Y, Wang Y, Wang H, Ma L, Eickhoff SB, Madsen KH, Chu C*, **Fan L***. Spatio-Molecular Profiles Shape the Human Cerebellar Hierarchy Along the Sensorimotor Association Axis. **Cell Reports**. 2024, 43(2), 113770. **(*Corresponding author)**

4. Wang Y, Wang K, Madsen KH, Chu C*, **Fan L***. Protocol to detect spatio-molecular profiles underlying neuroimaging features in the human cerebellum. **STAR Protocols**.2024, 5 (4), 103311. **(*Corresponding author)**

5. Lu Y, Cui Y, Cao L, Dong Z, Cheng L, Wu W, Wang C, Liu X, Liu Y, Zhang B, Li D, Zhao B, Wang H, Li K, Ma L, Shi W, Li W, Ma Y, Du Z, Zhang J, Xiong H, Luo N, Liu Y, Hou X, Han J, Sun H, Cai T, Peng Q, Feng L, Wang J, Paxinos G, Yang Z*, **Fan L***, Jiang T*. Macaque brainnetome atlas: A multifaceted brain map with parcellation, connection, and histology. **Science Bulletin**. 2024, 69(14):2241-2259. **(*Corresponding authors)**

6. Gao C, Wu X, Wang Y, Li G, Ma L, Wang C, Xie S, Chu C, Madsen K.H, Hou Z*, **Fan L***. Prior-guided Individualized Thalamic Parcellation based on Local Diffusion Characteristics. **Human Brain Mapping.** 2024, 45(4):e26646. (***Corresponding author**)

7. Gao C, Wu X, Madsen KH, Chu C, Chu C, Yang Z, **Fan L***. Individualized Brain Mapping for Navigated Neuromodulation. **Chinese Medical Journal**, 2024, 137(5):508-523. (***Corresponding authors**)

8. C.T Erichsen, Li D, **Fan L***. Decoding human brain functions: Multi-modal, multi-scale insights. **The Innovation**, 2024, 5(1), 100554. (***Corresponding author**)

9. Chu C., Li W., Shi W., Wang H., Wang J., Liu Y., Liu B., Elmenhorst D., Eickhoff SB., **Fan L*,** Jiang T*. Co-representation of functional brain networks is shaped by cortical myeloarchitecture and reveals individual behavioral ability. **Journal of Neuroscience**, 2024, 44 (13). **(*Corresponding author)**

10. Wang Y, Chai L, Chu C*, Li D, Gao C, Wu X, Yang Z, Zhang Y, Xu J, Nyengaard JR, Eickhoff SB, Liu B, Madsen KH, Jiang T, **Fan L***. Uncovering the genetic profiles underlying the intrinsic organization of the human cerebellum. **Molecular Psychiatry**. 2022, 27:2619-2634. **(*Corresponding author)**

11. Ma L, Zhang Y, Zhang H, Cheng L, Zhuo J, Shi W, Lu Y, Li W, Yang Z, Wang J, **Fan L***, Jiang T*. BAI-Net: Individualized Anatomical Cerebral Cartography using Graph Neural Network. **IEEE Transactions on Neural Networks and Learning Systems**. 2022, 35(6), 7446-7457, doi: 10.1109/TNNLS.2022.3213581. **(*Corresponding author)**

12. Wang T, Xu Y, Li D, Tu W, Li Y, Miao S, Li J, Wang P, Zhao F, **Fan L***, Yu S*. Network localization of transient global amnesia beyond the hippocampus. **Neurological Sciences**.2022, 44 (2), 649-657. **(*Corresponding author)**

13. Chai L., Wang Y., Shi W., Zhang Y., Liu B., Jiang T., **Fan L***. Linked psychopathology-specific factors and individual structural brain abnormalities in schizophrenia. **Proc. SPIE 12033, Medical Imaging** 2022: Computer-Aided Diagnosis, 1203323 (4 April 2022); https://doi.org/10.1117/12.2612266 (***Corresponding author**)

14. Cheng L., Zhang Y., Li G., Wang J., Sherwood C., Gong G., **Fan L***., Jiang T*. Connectional asymmetry of the inferior parietal lobule shapes hemispheric specialization in humans, chimpanzees, and rhesus macaques. **eLife**, 2021, 10. doi: 10.7554/eLife.67600. **(*Corresponding authors)**

15. Zhang Z., Xu J., Cheng L., Cheng C., **Fan L***. Inter and Intra individual Variations of Cortical Fine-grained Functional Boundaries Depend on the Brain States, 2020, **ICONIP**, 98-109, LNCS (**Corresponding author)**

16. He B., Cao L., Xia X., Zhang B., Zhang D., You B., **Fan L***., Jiang T*. Fine-grained Topography and Modularity of the Macaque Frontal Pole Cortex Revealed by Anatomical Connectivity Profiles. **Neuroscience Bulletin**, 2020, 36, 1454-1473. **(Corresponding author)**

17. **Fan L***. Mapping the Human Brain: What is the Next Frontier? **The Innovation**, 2021,100073. **(*Corresponding author)**

18. Li K[#]., **Fan L**[#]., Cui Y., Wei X., He Y., Yang J., Lu Y., Li W., Shi W., Cao L., Cheng L., Li A., Yu B., Jiang T. The human mediodorsal thalamus: Organization, connectivity, and function. **NeuroImage**, 2022, 118876. **([#]Co-first Author)**

19. Wu D[#]., **Fan L**[#]., Song, M., Wang, H., Chu, C., Yu, S., & Jiang, T. Hierarchy of connectivity-function relationship of the human cortex revealed through predicting activity across functional domains. **Cerebral Cortex**, 2020, 30(8):4607-4616 **([#]Co-first Author)**

20. Cheng C[#]., **Fan L**[#]., Xia X., Eickhoff S.B., Li H., Li H., & Jiang T. Rostro-caudal organization of the human posterior superior temporal sulcus revealed by connectivity profiles **Human Brain Mapping**, 2018, DOI: https://doi.org/10.1002/hbm.24349. **([#]Co-first Author)**

21. Xia X[#]., **Fan L**[#]., Cheng C., Eickhoff S.B., Cheng J. Li H. & Jiang T. Multimodal connectivity-based parcellation reveals a shell-core dichotomy of the human nucleus accumbens. **Human Brain Mapping**, 2017, 38 (8), 3878-3898. **([#] Co-first Author)**

22. **Fan L**., Jiang T. Mapping Underlying Maturational Changes in Human Brain, **Neuroscience bulletin**, 2017, 33, 478-480.

23. **Fan L**., Li H., Zhuo J., Zhang Y., Wang J., Chen L., Yang Z., Chu C., Xie S., Laird A.R., Fox P.T., Eickhoff S.B., Yu C. & Jiang T. The Human Brainnetome Atlas: A New Brain Atlas Based on Connectional Architecture. **Cerebral Cortex**, 2016, 26 (8): 3508- 3526.

24. **Fan L**., Li H., Yu S. & Jiang T. Human Brainnetome Atlas and Its Potential Applications in Brain-Inspired Computing. **Lecture Notes in Computer Science**, 2016, DOI: 10.1007/978-3-319-50862-7_1.

25. Zhuo J[#]., **Fan L**[#]., Liu Y., Zhang Y., Yu C. & Jiang T. Connectivity Profiles Reveal a Transition Subarea in the Parahippocampal Region That Integrates the Anterior Temporal–Posterior Medial Systems. **Journal of Neuroscience**, 2016, 36, 2782- 2795. **([#]Co-first Author)**

26. Yang Y[#]., **Fan L**[#]., Chu C., Zhuo J., Wang J., Fox P.T., Eickhoff S.B. & Jiang T. Identifying functional subdivisions in the human brain using meta-analytic activation modeling-based parcellation. **NeuroImage**, 2016, 124, 300-309. **([#]Co-first Author)**

27. Chu C[#]., **Fan L**[#]., Eickhoff C.R., Liu Y., Yang Y., Eickhoff S.B. & Jiang T. Co- activation Probability Estimation (CoPE): An approach for modeling functional co- activation architecture based on neuroimaging coordinates. **NeuroImage**, 2015, 117, 397- 407. **([#]Co-first Author)**

28. Wang J[#]., **Fan L**[#]., Wang Y., Xu W., Jiang T., Fox P.T., Eickhoff S.B., Yu C. & Jiang T. Determination of the posterior boundary of Wernicke's area based on multimodal connectivity profiles. **Human Brain Mapping**, 2015, 36, 1908-1924. **([#] Co-first Author)**

29. **Fan L**., Wang J., Zhang Y., Han W., Yu C., Jiang T. Connectivity-Based Parcellation of the Human Temporal Pole Using Diffusion Tensor Imaging. **Cerebral Cortex**. 2014, 24:3365-3378.

30. Liu B[#]., **Fan L.,** Cui Y., Zhang X., Hou B., Li Y., Qin W., Wang D., Yu C., Jiang T.: DISC1 Ser704Cys impacts thalamic-prefrontal connectivity. **Brain Structure and Function**. 2013,1-10. **([#]Co-first Author)**

31. Wang J[#]., **Fan L**[#]., Zhang Y., Liu Y., Jiang D., Zhang Y., Yu C., & Jiang T. Tractography-based parcellation of the human left inferior parietal lobule. **NeuroImage**, 2012, 63, 641-652.**([#]Co-first Author)**

32. **Fan L**., Tang Y., Sun B., Gong G., Chen Z.J., Lin X., Yu T., Li Z., Evans A.C., Liu S.: Sexual dimorphism and asymmetry in human cerebellum: an MRI-based morphometric study. **Brain Research**, 2010,1353, 60-73.

预印本与待发表论文(通讯作者(含共同))

1. Wang Y., Cheng L., Li D., Lu Y., Hopkins WD., Sherwood CC., Liu C., Jiang T., Chu C., **Fan L***., Evolutionary Convergence of the Arcuate Fasciculus in Marmosets and Humans. Under Review (***Corresponding author**)

2. Li D., Zalesky A., Wang Y., Wang H., Ma L., Cheng L., Banaschewski T., Barker G., Bokde A., Brühl R., Desrivières S., Flor H., Garavan H., Gowland P., Grigis A., Heinz A., Lemaître H., Martinot J.-L., Martinot M.-L., Artiges E., Nees F., Papadopoulos Orfanos D., Poustka L., Smolka M., Vaidya N., Walter H., Whelan R., Schumann G., Jia

T., Chu C*. **Fan L***. Mapping the coupling between tract reachability and cortical geometry of the human brain. Under Review (***Corresponding author**)

3. Li D., Wang Y., Cheng L., Eickhoff SB., Chu C*., **Fan L***. Mapping Early Brain Maturation: Anatomical Substrates of Cortical Connectivity Shifts in Neonates. bioRxiv 2025.01.07.627373; (***Corresponding author**)

4. Zhao Q., Xu J*., Li D., Wu X., **Fan L***., Chu C*. Unifying Object Category Representations in the Human Brain via Property-Defined Object Space: A Brain-Like ANN Paradigm. Under Review (***Corresponding author**)

5. Jia H., Wang K., Zhang P., Zhang M., Mai Y., Chu C., Yin X., **Fan L***., and Zhang L*. (2024) Normative Growth Modeling of Cortical Thickness Identify Neuroanatomical Variability and Distinct Subtypes in Brainstem Tumor Patients. bioRxiv:2024.08. 01.606270. (***Corresponding author**)

6. Jia H., Wang K., Zhang M., Gu G., Mai Y., Wu X., Chu C., Yin X., Zhang P., **Fan L***., and Zhang L. (2024) Uncovering Individualized Cerebellar Atrophy Pattern and Behavioral Links in Children with Brainstem Tumor. bioRxiv:2024.08. 01.606261. (***Corresponding author**)

其他共同作者论文 Other Co-author Peer Reviewed Articles

1. Zhong G., Jin F., Ma L. Yang Y, Zhang B, Cao D, Li J, Zuo N, **Fan L**, Yang Z, Jiang T. Stimulation Effects Mapping for Optimizing Coil Placement for Transcranial Magnetic Stimulation. **Neuroinformatics**. (2025). 23,1.
2. Yang Y, Cao TQ, He SH, Wang LC, He QH, Fan LZ, Huang YZ, Zhang HR, Wang Y, Dang YY, Wang N, Chai XK, Wang D, Jiang QH, Li XL, Liu C, Wang SY. Revolutionizing treatment for disorders of consciousness: a multidisciplinary review of advancements in deep brain stimulation. **Military Medical Research**. 2024 Dec 18;11(1):81. doi: 10.1186/s40779-024-00585-w.
3. Liu, H., Qi, Z., Wang, Y. Yang Z., Zuo N., **Fan L**., Jiang T. A Novel Real-time Phase Prediction Network in EEG Rhythm. **Neuroscience Bulletin**. (2024). https://doi.org/10.1007/s12264-024-01321-z
4. Zhang Y, **Fan L**, Hao Y, Dagher A, Jiang T and Bellec P (2024) Connectome-constrained neural decoding reveals a representational hierarchy from perception to cognition to action. **Science Bulletin**. 27:S2095-9273(24)00609-1. doi: 10.1016/j.scib.2024.08.029.
5. Ding C, Li A, Xie S, Tian X, Li K, **Fan L**, Yan H, Chen J, Chen Y and Wang H (2024) Mapping Brain Synergy Dysfunction in Schizophrenia: Understanding Individual Differences and Underlying Molecular Mechanisms. **Advanced Science**:2400929.
6. Wang M, Yan H, Tian X, Yue W, Liu Y, **Fan L**, Hu K, Sun Y, Zhao Y and Lou J (2023) Neuroimaging and multiomics reveal cross-scale circuit abnormalities in schizophrenia. **Nature Mental Health**. 1:633-654.
7. Xiong H, Chu C, **Fan L**, Song M, Zhang J, Ma Y, Zheng R, Zhang J, Yang Z and Jiang T (2023) The digital twin brain: A bridge between biological and artificial intelligence. **Intelligent Computing**. 2:0055.
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