

Shaoshi Zhang

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Education:

National University of Singapore 2020-2024

Ph.D.

Advisor: A/Prof. Thomas Yeo

National University of Singapore 2016-2020

BEng in Electrical Engineering, Minor in Theoretical Physics

CAP: 4.91/5.00 (Honors with Highest Distinction)

Research Experience:

Centre for Sleep and Cognition, NUS 2017-Now

Supervisor: A/Prof. Thomas Yeo

Scholarships:

ISEP Scholarship 2020-2024

Science & Technology Undergraduate Scholarship 2016-2020

Singapore SM1 Scholarship 2011-2015

Talks:

Gradients of Organization Workshop June 2023

Large-scale biophysical models and neuronal dynamics Canada

Organization for Human Brain Mapping June 2023

In-vivo estimation of whole-cortex excitation and inhibition: An fMRI perspective Canada

Rutgers University, Holmes Lab May 2024

In-vivo whole-cortex marker of neural excitation and inhibition Virtual

Asia-Pacific Computational and Cognitive Neuroscience Conference Nov 2024

In-vivo whole-cortex marker of neural excitation and inhibition Korea

Harvard Medical School, PsyNeT Lab Mar 2025

Neural excitation-inhibition and neuromaturation Virtual

Publications:

1. Ooi, L.Q.R.*, Orban, C.*, **Zhang, S.***, Nichols, T.E., Tan, T.W.K., Kong, R., Marek, S., Dosenbach, N.U., Laumann, T.O., Gordon, E.M. and Yap, K.H., 2025. Longer scans boost prediction and cut costs in brain-wide association studies. *Nature*, pp.1-10.
2. Xie, Y., **Zhang, S.**, Orban, C., Ooi, L.Q.R., Kong, R., Floris, D.L., Zuo, X.N., Dhamala, E., Holmes, A.J., Uddin, L.Q. and Nichols, T.E., 2025. Convergent and Divergent Brain–Cognition Development. *bioRxiv*, pp.2025-06.
3. Zeng, T., Tian, F., **Zhang, S.**, Li, X., Tan, A.P., Larsen, B., Gur, R.C., Gur, R.E., Moore, T.M., Satterthwaite, T.D. and Deco, G., 2025. Optimizing Biophysical Large-Scale Brain Circuit Models With Deep Neural Networks. *bioRxiv*, pp.2025-04.
4. Qu, Y.L., Chen, J., Tam, A., Ooi, L.Q.R., Dhamala, E., Cocuzza, C.V., **Zhang, S.**, Zeng, T., Lawhead, C., Yeo, B.T. and Holmes, A.J., 2025. Distinct brain network features predict internalizing and externalizing traits in children, adolescents and adults. *Nature Mental Health*, pp.1-12.
5. An, L., Zhang, C., Wulan, N., **Zhang, S.**, Chen, P., Ji, F., Ng, K.K., Chen, C., Zhou, J.H. and Yeo, B.T., 2025. DeepResBat: deep residual batch harmonization accounting for covariate distribution differences. *Medical Image Analysis*, 99, p.103354.
6. Dong, H.M., Zhang, X.H., Labache, L., **Zhang, S.**, Ooi, L.Q.R., Yeo, B.T., Margulies, D.S., Holmes, A.J. and Zuo, X.N., 2024. Ventral attention network connectivity is linked to cortical maturation and cognitive ability in childhood. *Nature Neuroscience*, 27(10), pp.2009-2020.
7. Chen, P., An, L., Wulan, N., Zhang, C., **Zhang, S.**, Ooi, L.Q.R., Kong, R., Chen, J., Wu, J., Chopra, S. and Bzdok, D., 2024. Multilayer meta-matching: translating phenotypic prediction models from multiple datasets to small data. *Imaging Neuroscience*, 2, pp.1-22.
8. **Zhang, S.***, Larsen, B.*, Sydnor, V.J.*, Zeng, T., An, L., Yan, X., Kong, R., Kong, X., Gur, R.C., Gur, R.E. and Moore, T.M., 2024. In vivo whole-cortex marker of excitation-inhibition ratio indexes cortical maturation and cognitive ability in youth. *Proceedings of the National Academy of Sciences*, 121(23), p.e2318641121.
9. Yang, S., Zhou, Y., Peng, C., Meng, Y., Chen, H., **Zhang, S.**, Kong, X., Kong, R., Yeo, B.T., Liao, W. and Zhang, Z., 2024. Macroscale intrinsic dynamics are associated with microcircuit function in focal and generalized epilepsies. *Communications Biology*, 7(1), p.145.
10. Chen, J., Ooi, L.Q.R., Tan, T.W.K., **Zhang, S.**, Li, J., Asplund, C.L., Eickhoff, S.B., Bzdok, D., Holmes, A.J. and Yeo, B.T., 2023. Relationship between prediction accuracy and feature importance reliability: An empirical and theoretical study. *NeuroImage*, 274, p.120115.
11. Ooi, L.Q.R., Chen, J., **Zhang, S.**, Kong, R., Tam, A., Li, J., Dhamala, E., Zhou, J.H., Holmes, A.J. and Yeo, B.T., 2022. Comparison of individualized behavioral predictions across anatomical, diffusion and functional connectivity MRI. *NeuroImage*, 263, p.119636.
12. Benkarim, O., Paquola, C., Park, B.Y., Kebets, V., Hong, S.J., Vos de Wael, R., **Zhang, S.**, Yeo, B.T., Eickenberg, M., Ge, T. and Poline, J.B., 2022. Population heterogeneity in clinical cohorts affects the predictive accuracy of brain imaging. *PLoS biology*, 20(4), p.e3001627.

13. Kong, X., Kong, R., Orban, C., Wang, P., **Zhang, S.**, Anderson, K., Holmes, A., Murray, J.D., Deco, G., van den Heuvel, M. and Yeo, B.T., 2021. Sensory-motor cortices shape functional connectivity dynamics in the human brain. *Nature communications*, 12(1), p.6373.