CURRICULUM VITAE
Gansheng Tan, Ph.D. Candidate

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Address
Washington University School of Medicine
Department of Neurological Surgery
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Education

09/2022 – present **Ph.D.** **Biomedical Engineering**
Washington University in St. Louis, Missouri, USA

09/2019 – 03/2022 **M.Eng.** **Mechanical Engineering**
Shanghai Jiao Tong University, Shanghai, China

09/2015 – 09/2019 **Diplôme d'ingénieur (postgraduate degree in engineering) & B.Eng.**
CentraleSupélec, Île-de-France, France
Shanghai Jiao Tong University, Shanghai, China

Research Interest
My research is driven by a profound interest in dissecting the complex neural circuits that underpin human cognition and behavior, with a focus on their electrophysiological mechanisms. Employing an interdisciplinary strategy synthesizing principles from neuroscience, engineering, and computational modeling, I seek to translate this knowledge into tangible neurotechnological innovations. Central to my mission is a comprehensive research agenda that spans the spectrum from foundational neuroscience to developing neurotechnological applications and their validation in clinical settings.

Research and Professional Appointments

09/2022 – present **Graduate Research Assistant**
Department of Neurosurgery, Washington University School of Medicine, St. Louis, MO, USA

09/2021 – 09/2022 **Research Scholar**
Department of Neurosurgery, Washington University School of Medicine, St. Louis, MO, USA

Studied the neurophysiological effects of transcutaneous auricular vagus nerve stimulation

11/2019 – 03/2022 **Graduate Research Assistant**
Department of Rehabilitation Medicine (Ruijin Hospital) - State Key Laboratory of Mechanical Systems and Vibration, Shanghai Jiao Tong University, Shanghai, China

05/2019 – 09/2019 **Research Fellow**

Lyon Neuroscience Research Center, French National Institute of Health and Medical Research, Bron, France

01/2018 – 03/2021 **Graduate Research assistant**
Signals and Systems Laboratory, French National Centre for Scientific Research, Île-de-France, France

10/2015 – 05/2017 **Undergraduate Research assistant**
State Key Laboratory of Mechanical Systems, Shanghai Jiao Tong University, Shanghai, China

Skills

Software Engineering (Python, R, MATLAB, Github, Java, C/C++, HTML, CSS, 10 years)
Statistical Learning and Biomedical Data Analysis (7 years)
Clinical and Translational Research (4 years)
Scientific Writing and Illustration (Adobe Illustrator, MS Office, Latex, 5 years)

Awards

2021 2021 China National Scholarship (top 0.5%)
2020 Changjiang Siyuan Scholarship, Shanghai Jiao Tong University, China
2018 Top 10 in Huawei Big Data Challenge in France
2018 Innovative Project Award, CS² Congrès Scientifique du Campus de Saclay, France
2017 Écoles Centrales Group – Chinese Universities Double Degree Scholarship, China
2016 Honor Student, Shanghai Jiao Tong University, China
2015 Excellent Design, Engineering Design Showcase, Shanghai Jiao Tong University, China

Experience

11/2023 **Poster Presentation: Improving working memory through vibrotactile auricular vagus nerve stimulation**
Society for Neuroscience 2023, Washington, D.C., US

09/2023 **Oral Presentation: Improving working memory with vibrotactile transcutaneous vagus nerve stimulation**
BME Retreat 2023, St. Louis, MO, US

11/2022 **Poster Presentation: The Coupling between Brain Oscillation and Muscle Synergies in Patients with Hemiparesis**
Society for Neuroscience 2022, San Diego, CA, US

06/2022 **Invited Seminar: The interaction between cortical oscillation and muscle synergies.**
School of Computer Science and Engineering, Nanyang Technological University, Singapore

04/2022 **Poster presentation: Towards individualized Transcranial Magnetic Stimulation for motor recovery from hemiparesis: study of Corticomuscular Network**
2022 American Society of Neurorehabilitation (ASNR) Annual Meeting, St.Louis, MO, US

09/2021 – 09/2022 **Teaching Fellow (Instructor for Convergence, Integration, Probability, and Partial Differential Equation)**

Laboratory in Mathematics and Computer Science (MICS),
CentraleSupélec, Île-de-France, France

08/2018 – 05/2019 **Vice President of International Student Union**
CentraleSupélec, Île-de-France, France

04/2018 - 05/2018 **Exchange Student**
Department of Engineering, University of Cambridge, Cambridge, U.K

10/2017 – 06/2018 **Project Manager**
Tech for Good Explorer & La Condamine, Île-de-France, France

Professional Societies

Graduate Student Member of IEEE

Reviewer of IEEE International Conference on Systems, Man, and Cybernetics

Graduate Student Member of American Society of Neurorehabilitation

Graduate Student Member of Society of Neuroscience

Peer Reviewed Publications

Tan, G., Adams, J., Donovan, K., Demarest, P., Willie, J. T., Brunner, P., Gorlewicz, J. L., Leuthardt, E. C. (2024). Does vibrotactile stimulation of the auricular vagus nerve enhance working memory? A behavioral and physiological investigation. **Brain Stimulation**, 17(2), 460-468.

Liu, J., Wang, J., **Tan, G.**, Sheng, Y., Feng, L., Tang, T., Li, X., Xie, Q., Liu, H., Wei, Y. A Generalized Cortico-Muscular-Cortical Network to Evaluate the Effects of Three-Week Brain Stimulation. **IEEE Transactions on Biomedical Engineering** vol. 71 195–206 (2024).

Huguenard, A., **Tan, G.**, Johnson G., Adamek M., Coxon A., Zipfel G., Vellimana A., Brunner P., Leuthardt E. Non-invasive auricular vagus nerve stimulation following spontaneous subarachnoid hemorrhage reduces rates of radiographic vasospasm and hospital-acquired infections. **Journal of NeuroInterventional Surgery** (2023)

Tan, G., Wang, S., Vierge, V., Mu, W., Wang, M., Greco, L., ... & Chaillet, A. (2022, October). An EEG Classifier to Discriminate Between Focused Attention Meditation and Problem-solving. **IEEE International Conference on Systems, Man, and Cybernetics** (SMC) (pp. 1954-1960).

Tan, G. et al. A framework for quantifying the effects of transcranial magnetic stimulation on motor recovery from hemiparesis: Corticomuscular Network. **Journal of Neural Engineering** (2022).

Tan, G., Wang, J., Liu, J., Sheng, Y., Xie, Q., Brunner, P., Liu, H. Towards the Optimization of Repetitive Transcranial Magnetic Stimulation for Motor Recovery from Hemiparesis: Study of Corticomuscular Network. **2022 American Society of Neurorehabilitation Annual Meeting**.

Tan, G., Xu, K., Liu, J. & Liu, H. A Trend on Autism Spectrum Disorder Research: Eye Tracking-EEG Correlative Analytics. **IEEE Transactions on Cognitive and Developmental Systems** 1–1 (2021).

Liu, J., **Tan, G.**, Wang, J., Wei, Y., Sheng, Y., Chang, H., Xie, Q., & Liu, H. Closed-loop construction and analysis of cortico-muscular-cortical functional network after stroke. **IEEE Transactions on Medical Imaging** 1–1 (2022).

Sheng, Y., **Tan, G.**, Liu, J., Chang, H., Wang, J., Xie, Q., & Liu, H. Upper Limb Motor Function Quantification in Post-Stroke Rehabilitation using Muscle Synergy Space Model. **IEEE Transactions on Biomedical Engineering** 1-1 (2022).

Liu, J., **Tan, G.**, Sheng, Y., Wei, Y. & Liu, H. A Novel Delay Estimation Method for Improving Corticomuscular Coherence in Continuous Synchronization Events. **IEEE Transactions on Biomedical Engineering** vol. 69 1328–1339 (2022).

Liu, J., **Tan, G.**, Sheng, Y. & Liu, H. Multiscale Transfer Spectral Entropy for Quantifying Corticomuscular Interaction. **IEEE Journal of Biomedical and Health Informatics** vol. 25 2281–2292 (2021).

Liu, J., Wang, J., **Tan, G.**, Sheng, Y., Chang, H., Xie, Q., & Liu, H. (2021). Correlation Evaluation of Functional Corticomuscular Coupling With Abnormal Muscle Synergy After Stroke. **IEEE Transactions on Biomedical Engineering** vol. 68 3261–3272 (2021).

Liu, J., **Tan, G.**, Sheng, Y., Wang, J., Lu, W., & Liu, H. Delay estimation for cortical-muscular interaction via the rate of voxels change. 2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC) (2020)