Gansheng Tan, Master Student

Washington University School of Medicine,
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Research Interest

I am a **self-motivated** and **team-minded** master student with **4 years** of experience in **neuromodulation** research and bioelectrical signal processing. I seek to understand neural plasticity through electrophysiology, interact with these signals using an interdisciplinary approach, and thereby develop new effective treatments for nervous system injury or disease.

Education

09/2019 - present
Shanghai, China
M.Sc. Mechanical and Biomedical Engineering
Shanghai Jiao Tong University (Anticipated Completion: March 2022)

06/2017 – 09/2019
Île-de-France, France
Diplôme d'ingénieur (postgraduate degree in engineering)
CentraleSupélec
Topics: Advanced Statistics, Machine Learning, Signal Processing

09/2015 – 06/2017
Shanghai, China
B.Eng.
Shanghai Jiao Tong University

Research and Professional Appointments

09/2021 - present
St. Louis, MO, USA
Research Scholar
Department of Neurosurgery, Washington University School of Medicine
Studying the neurophysiological effects of transcutaneous vagus nerve stimulation

11/2019 – present
Shanghai, China
Graduate Research Assistant
Department of Rehabilitation Medicine (Ruijin Hospital) - State Key Laboratory of Mechanical Systems and Vibration, Shanghai Jiao Tong University
Developed a framework based on Electroencephalography and Electromyography for individualizing Transcranial Magnetic Stimulation to promote recovery from stroke

05/2019 – 09/2019
Bron, France
Research Fellow
Lyon Neuroscience Research Center, French National Institute of Health and Medical Research
Analyzed the cerebral oscillations underlying the meditative practices; developed semi-automatic EEG signal preprocessing pipeline for meditation research

01/2018 – 03/2021
Île-de-France, France
Graduate Research Assistant
Signals and Systems Laboratory, French National Centre for Scientific Research
Identified neural correlates of Focused Attention meditation and problem-solving state; developed a platform guiding meditators based on mental state classification

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

Skills

Software Engineering (Python, R, MATLAB, Github, Java, C/C++, HTML, CSS, 8 years)
Statistical Learning and Biomedical Data Analysis (5 years)
Clinical and Translational Research (3 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	Ecoles 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

10/2018 – 05/2019 Île-de-France, France	**Teaching Fellow** *Laboratory in Mathematics and Computer Science (MICS), CentraleSupélec* Instructor for Convergence, Integration, Probability and Partial Differential Equation
08/2018 – 05/2019 Île-de-France, France	**Vice President of International Student Union** *CentraleSupélec*
04/2018 - 05/2018 Cambridge, U.K.	**Exchange Student** *Department of Engineering, University of Cambridge*
10/2017 – 06/2018 Paris, France	**Project Manager** *Tech for Good Explorer & La Condamine*

Professional societies

Graduate Student Member of IEEE

Publications

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

Liu, J., **Tan, G.**, Sheng, Y., Wei, Y., & Liu, H. (2021). A novel delay estimation method for improving corticomuscular coherence in continuous synchronization events. In **IEEE Transactions on Biomedical Engineering**.

Liu, J., **Tan, G.**, Sheng, Y., & Liu, H. (2021). Multiscale Transfer Spectral Entropy for Quantifying Corticomuscular Interaction. In **IEEE Journal of Biomedical and Health Informatics** (Vol. 25, Issue 6, pp. 2281–2292).

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. In **IEEE Transactions on Biomedical Engineering** (Vol. 68, Issue 11, pp. 3261–3272).

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

Tan, G., Wang, J., Liu, J., Sheng, Y., Xie, Q., Liu, H. Post-stroke Plasticity, Motor Recovery, and Repetitive Transcranial Magnetic Stimulation based on a Generalized Corticomuscular Network **(Submitted)**.

Tan, G., Liu, J., Wang, J., Sheng, Y., Xie, Q., Liu, H. Towards Quantitative Post-Stroke Motor Function Rehabilitation: a generalized Corticomuscular Network **(Submitted)**.

Tan G., Wang S., Vierge V., Mu W., Wang M., Bergaoui K., Greco L., Mounier H., Chaillet A. An EEG classifier to discriminate between focused attention meditation and problem-solving task **(Submitted)**.