

WENYA LIU

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## Language

Native Chinese, proficient English

## Programming

Skilled Matlab, skilled Python

## Education

2017.08~2021.11, Ph.D. Mathematical Information Technology, Faculty of Information Technology, University of Jyväskylä, Finland.

Supervisor: Prof. Timo Hämäläinen, Prof. Fengyu Cong, Prof. Tapani Ristaniemi

2014.09~2017.06, M.S. Control Theory and Control Engineering, Faculty of Electronic Information and Electrical Engineering, Dalian University of Technology, China.

Supervisor: Assoc Prof. Qi Li.

2010.09~2014.06, B.S. Automation, Information Science and Technology, Dalian Maritime University, Dalian, China.

## Research Interests

I am currently working on the 'Plasticity Stimulation in the Treatment of Anhedonia' project, which is funded by the Wellcome Leap Multi-Channel Psych research program. In this project, my work focuses on behavioural phenotyping with the digital therapeutic product Meliora, which is a novel video game for depression treatment. I also work on resting state MEG and fMRI analysis to study neural mechanisms of depression and the effects of video game on brain dynamics. My research interests also include multi-modal data mining, multiway analysis of brain imaging data, dynamic brain networks, and naturalistic paradigms.

## Publications

### Papers as the first author

**Wenya Liu**, Chi Zhang, Xiaoyu Wang, Jing Xu, Yi Chang, Tapani Ristaniemi and Fengyu Cong. Functional connectivity of major depression disorder using ongoing EEG during music perception. *Clinical Neurophysiology*, 2020, 131(10): 2413-2422.

**Wenya Liu**, Xiulin Wang, Jing Xu, Yi Chang, Timo Hämäläinen and Fengyu Cong. Identifying Oscillatory Hyperconnectivity and Hypoconnectivity networks in Major Depression Using Coupled Tensor Decomposition. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 2021, 29, 1895-1904.

**Wenya Liu**, Xiulin Wang, Timo Hämäläinen and Fengyu Cong. Dysconnectivity of oscillatory Networks in Major Depression during Resting State. *IEEE Transactions on Biomedical Engineering*, 2022, 69 (8), 2691-2700

**Wenya Liu**, Xiulin Wang, Tapani Ristaniemi and Fengyu Cong. Identifying Task-Based Dynamic Functional Connectivity Using Tensor Decomposition. *27th International Conference on Neural Information Processing (ICONIP)*, Springer, Cham, 2020: 361-369.

**Wenya Liu**, Xiulin Wang, Timo Hämäläinen and Fengyu Cong. Alpha Band Dysconnectivity Networks in Major Depression during Resting State. *29th European Signal Processing Conference (EUSIPCO)*(*accepted, lecture*).

### Papers as a co-author

Xiulin Wang, **Wenya Liu**, Tapani Ristaniemi and Fengyu Cong. Group Analysis of Ongoing EEG Data Based on Fast Double-Coupled Nonnegative Tensor Decomposition. *Journal of Neuroscience Methods*, 2020, 330, pp.108502.

Xiulin Wang, **Wenya Liu**, Xiaoyu Wang, Zhen Mu, Jing Xu, Yi Chang, Qing Zhang, Jianlin Wu and Fengyu Cong. Shared and Unshared Feature Extraction in Major Depression during Music Listening using Constrained Tensor Factorization. *Frontiers in Human Neuroscience* (*accepted* )

Xiulin Wang, **Wenya Liu**, Fengyu Cong and Tapani Ristaniemi. Group Nonnegative Matrix Factorization with Sparse Regularization in Multi-set Data. *28th European Signal Processing Conference (EUSIPCO)*, 2020: 2125-2129.

Xiaoshuang Wang, Xiulin Wang, **Wenya Liu**, Zheng Chang, Tommi Kärkkäinen and Fengyu Cong. One dimensional convolutional neural networks for seizure onset detection using long-term scalp and intracranial EEG. *Neurocomputing*, 2021, 459, 212-222.

Chi Zhang, Fengyu Cong, Tuomo Kujala, **Wenya Liu**, Jia Liu, Tiina Parviainen and Tapani Ristaniemi. Network entropy for the sequence analysis of functional connectivity graphs of the brain. *Entropy*, 2018, 20(5): 311.

### Papers under review

Lili Tian, Hongjun Chen, Pyry Petteri Heikkinen, **Wenya Liu** and Tiina Parviainen. Temporal dynamics of motor and language areas reveal the compensatory role of the motor cortex in second language processing. (*submitted*)

## Academic activities

Computational Psychiatry Course Zurich 2021, virtual. September 13-18, 2021.

Brain and Language Virtual Conference & Methods Workshop 2021, virtual. August 24-27, 2021.

The 29th European Signal Processing Conference, EUSIPCO 2021, virtual. August 23-27, 2021.

1st International Conference on Social Neuroscience in Ecologically Valid Conditions, virtual. June 21-23, 2021.

The Brain Connectivity Workshop, BCW 2021, virtual. May 25-28, 2021.

The 27th International Conference on Neural Information Processing (ICONIP), Virtual Bangkok, Thailand, November 18-22, 2020.

China Biomedical Engineering Conference (BME2020) , Jinan, China, Nov 14-16, 2020. Oral.

The MESIO UPC-UB Summer School, July 2-6, 2018, Barcelona, Spain.

The 8th Annual Research Seminar of CIBR, December 11, 2020, Jyväskylä, Finland

The 7th Annual Research Seminar of CIBR, December 11, 2019. Jyväskylä, Finland.

The 6th Annual Research Seminar of CIBR, December 13, 2018, Jyväskylä, Finland.

MEG Nord 2019, May 8-10, 2019, Jyväskylä, Finland.

AI Health days-Seminar on Artificial Intelligence and Healthcare, January 16, 2019, Jyväskylä, Finland.

The 28th Jyväskylä Summer School, August 6-17, 2018, Jyväskylä, Finland.

## Research funding

China Government Scholarship, from China Scholarship Council, 2017.10~2021.09

Grants from University of Jyväskylä, 2021.10~2021.12

## Service

### **AD-HOC Reviewer**

*IEEE Transactions on Intelligent Transportation Systems*

*Artificial Intelligence In Medicine*

*Biomedical Signal Processing and Control*