Wen Jin

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Second-year Master Student

Education

Master of Neural Engineering in Biomedical Engineering Sep.2017 - present

Shanghai Jiao Tong University (SJTU)

Major GPA: 3.87/4.0; Rank: 2/86

Bachelor of Engineering in Biomedical Engineering Sep.2013 - Jun.2017

Shanghai Jiao Tong University (SJTU)

Major GPA: 3.70/4.3; Rank: 2/45

Research Experience

Extracting Individual Neural Fingerprint Encoded in Functional Connectivity by Silencing Indirect Effects. Feb.2018 - Feb.2019

The Neural Engineering Lab (NEL) of SJTU

Advisor: Prof. Junfeng Sun, Prof. Shanbao Tong

- Silencing indirect effects in reliable edges increased their test-retest reliability.
- Better subject discriminability can be gained by edges with indirect effects silenced.
- Edges with indirect effects removed gained good discriminability with short fMRI data.
- Reliable edges dominated the subject discriminability of functional brain networks.
- **Wen Jin**, Hong Zhu, Pin Shu, Shanbao Tong, Junfeng Sun, Extracting individual neural fingerprint encoded in functional connectivity by silencing indirect effects, under review.

Inferring Vulnerable Nodes and Edges by Assessing Brain Network Resilience. Oct.2017 - Sep.2018

The Neural Engineering Lab (NEL) of SJTU

Advisor: Prof. Junfeng Sun, Prof. Shanbao Tong

- By resilience analysis, the inverted-U relationship between brain network resilience and age were observed in three different lifespan DTI datasets.
- Network density contributed more to maintaining resilience compared with the network heterogeneity.
- Bi-hemispheric putamens and precuneus were identified to be the most critical anatomical areas for brain network resilience.
- An arbitrary attack on homotopic edges had a high probability of inducing large decrease for brain network resilience.
- Pin Shu, **Wen Jin,** Hong Zhu, Shanbao Tong, Junfeng Sun, Inferring vulnerable nodes and edges by assessing brain network resilience, under review.

Neuromodulation Effects of Low-intensity Transcranial Ultrasound Stimulation. Jun.2017 - Sep.2017

The Neural Engineering Lab (NEL) of SJTU

Advisor: Prof. Junfeng Sun, Prof. Shanbao Tong

- Provided evidence for the antidepressant-like effects of transcranial ultrasound stimulation in rats for the first time.
- Neuromodulation effects of pulsed transcranial ultrasound stimulation were correlated with the initial brain state.
- Daqu Zhang, Hangdao Li, Junfeng Sun, Weiwei Hu, **Wen Jin**, Shengtian Li, and Shanbao Tong, "Antidepressant-like effect of low-intensity transcranial ultrasound stimulation", IEEE Transactions on Biomedical Engineering, 66(2): 411-420, 2019.
- Hangdao Li, Junfeng Sun, Hongyang Lu, **Wen Jin**, Peter A Lewin, Shanbao Tong, Pulsed transcranial ultrasound modulates the cortical response to the functional electrical stimulation: in vivo animal study using optical neurovascular imaging, under review.

Predicted and Validated the Effects of Transcranial Ultrasound Stimulation. Sep.2016 - May.2017

Chun-Tsung Program in 2016

Advisor: Prof. Junfeng Sun

- Repeated the Neuronal Intramembrane Cavitation Excitation (NICE) model in Matlab.
- Implemented the NICE model to predict suppression and excitation effects of different ultrasound parameters.
- Stimulated schizophrenia-modeled mice by suppressed ultrasound parameters.
- Validated the predictions by laser speckle imaging techniques and patch clamp recording potential techniques.

Brain Glioma Segmentation Using Convolutional Neural Networks. Aug.2016

5th SJTU-KTH Summer School of Biomedical Engineering

Advisor: Prof. Qian Wang (Biomedical Engineering Department, SJTU), Prof. Örjan Smedby (School of Technology and Health, Royal Institute of Technology in Stockholm), Dr. Chunliang Wang (STH, KTH)

- Implemented a multi-channel (TIC and T2 FLAIR MRI channel) CNN segmenting brain glioma with the Keras library in Python
- Evaluated segmentation performance using various metrics (classification accuracy, Dice score and visual inspection)

Fabrication of Microfluidic Biochip for Sepsis Diagnosis. Jul.2016 - Aug.2016

SJTU-UIUC Summer Research Exchange

Advisor: Prof. Rashid Bashir (Professor of Bioengineering, University of Illinois at Urbana-Champaign), Dr. Umer Hassan (UIUC)

- Made several microfluidic biochips.
- Applied microfluidic biochips for count CD64 neutrophils from a drop of blood.

Awards

Chun-Tsung Endowment Jul.2017
Shanghai Jiao Tong University (SJTU)

Outstanding graduates of Shanghai Jiao Tong University Jun.2017
Shanghai Jiao Tong University (SJTU)

Academic Excellence Scholarship Class-A (Top 5%) for 2015-2016 Dec.2016
Shanghai Jiao Tong University (SJTU)

LUYUEJIAO Scholarship for study abroad in 2016 Oct.2016
Shanghai Jiao Tong University (SJTU)

THREE GOOD STUDENT for 2014-2015 Oct.2015
Shanghai Jiao Tong University (SJTU)

THREE GOOD STUDENT for 2013-2014 Oct.2014
Shanghai Jiao Tong University (SJTU)

Skills

Courses in Master

Matrix theory. Biomedical Signal Processing. Optimization Estimation Theory and System Identification. Cognitive Visual Neuroscience.

Courses in Undergraduate

Biomedical Image Processing. Digital Signal Processing. Signals and Linear System. Digital Electronics Technology. Analog Electronic Technology. Microcomputer Principles. Principles of Automatic Control.

Programming Languages

Matlab, python, C++

Languages

Mandarin (native), English (fluent)